

DAN SCHONFELD

ECE Dept. (M/C 154)
University of Illinois at Chicago (UIC)
851 S. Morgan Street – 1020 SEO
Chicago, IL 60607-7053
URL: <http://www.ece.uic.edu/~ds>

Phone: (312) 996-5847
Fax: (312) 996-6465
Google: (872) 216-2844
Skype: dan_schonfeld
E-mail: dans@uic.edu

A. SUMMARY OF CREDENTIALS

- **Director, University-Industry Engineering Research Center (UIERC)**
- **Full Professor, Electrical & Computer Engineering, Computer Science, Bioengineering, University of Illinois at Chicago**
- **Consulting Services, Over 60 Companies**
- **University Scholar, University of Illinois**
- **Graduate Mentoring Award, University of Illinois at Chicago**
- **Fellow, IEEE**
- **Fellow, SPIE**
- **Editor-in-Chief, IEEE Transactions on Circuits and Systems for Video Technology**
- **Deputy Editor-in-Chief, IEEE Transactions on Circuits and Systems for Video Technology**
- **Area Editor, Special Issues, IEEE Signal Processing Magazine**
- **Guest Editor, 7 Special Issues (5 IEEE Transactions)**
- **Associate Editor, 4 IEEE Transactions**
- **Editorial Board, 6 Journals (1 IEEE Magazine)**
- **Member, 4 IEEE Technical Committees**
- **Member, ANSI/UL Standards Technical Panel**
- **Chair, 4 International Conferences (3 IEEE Conferences)**
- **Organizing Committee, 8 Conferences (6 IEEE Conferences)**
- **Presenter, 5 Keynote and Plenary Talks at International Conferences**
- **Author, Over 200 Technical Papers**
- **Co-Author and Advisor, 4 Best Paper Awards**
- **Advisor, 16 Doctoral and 9 Masters Thesis Students Graduated**
- **Inventor, 4 Patents (2 Issued)**
- **Funding, Over \$4 Million in Research Grants**
- **Instructor, Over 20 Different Undergraduate and Graduate Courses**

B. TABLE OF CONTENTS

A. SUMMARY OF CREDENTIALS.....	1
B. TABLE OF CONTENTS.....	1

C. PROFESSIONAL BIOGRAPHY.....	4
D. RESEARCH INTERESTS	5
E. SIGNIFICANT RESEARCH ACCOMPLISHMENTS.....	5
E.1. MORPHOLOGICAL IMAGE ANALYSIS	5
E.2. VIDEO TRACKING	6
E.3. VIDEO SEARCH AND RETRIEVAL	6
E.4. GENOMIC SIGNAL PROCESSING.....	7
F. HONORS AND AWARDS	7
G. IN THE NEWS	10
H. EDUCATION	10
I. WORK EXPERIENCE	11
J. CONSULTING EXPERIENCE	13
K. VISITING POSITIONS.....	14
L. INTERDISCIPLINARY PROGRAMS	14
M. PROFESSIONAL ACTIVITIES.....	15
M.1. EDITORSHIPS.....	15
M.2. COMMITTEES.....	17
M.3. REVIEW PANELS.....	19
M.4. PROGRAM CHAIR.....	21
M.5. ORGANIZING COMMITTEES	23
M.6. TECHNICAL PROGRAM COMMITTEES	24
M.7. SESSION ORGANIZER	30
M.8. SESSION CHAIR	31
M.9. PANELIST AND PARTICIPANT.....	34
N. PUBLICATIONS.....	35
N.1. THESIS	35
N.2. BOOKS.....	35
N.3. BOOK CHAPTERS.....	35
N.4. JOURNAL EDITORIALS.....	37
N.5. REFEREED JOURNAL PAPERS.....	37
N.6. REFEREED CONFERENCE PAPERS.....	43
N.7. PRESENTATIONS	55
N.8. PATENTS.....	56
O. KEYNOTE AND PLENARY TALKS.....	56
P. INVITED SEMINARS	57
Q. GRADUATE STUDENTS AND VISTING SCHOLARS.....	64
Q.1. VISITING SCHOLARS	64
Q.2. POSTDOCTORAL FELLOWS	65
Q.3. VISITING STUDENTS	65
Q.4. DOCTORAL STUDENTS	65
Q.5. MASTERS THESIS STUDENTS.....	70
Q.6. MASTERS PROJECT STUDENTS.....	72
R. RESEARCH GRANTS	74

S. ADMINISTRATIVE ACTIVITIES.....	77
S.1. ADMINISTRATIVE POSITIONS	78
S.2. UNIVERSITY COMMITTEES.....	78
S.3. COLLEGE COMMITTEES.....	79
S.4. DEPARTMENTAL COMMITTEES.....	80
S.5. CURRICULUM COMMITTEES.....	82
S.6. QUALIFIER COMMITTEES	85
S.7. RESEARCH LABORATORIES AND CENTERS.....	86
T. TEACHING ACTIVITIES.....	86
T.1. THE JOHNS HOPKINS UNIVERSITY	86
T.2. UNIVERSITY OF ILLINOIS AT CHICAGO	86
T.3. UNIVERSITY OF TRENTO.....	93

C. PROFESSIONAL BIOGRAPHY

Dr. Schonfeld received the B.S. degree in Electrical Engineering and Computer Science from the University of California, Berkeley, California, and the M.S. and Ph.D. degrees in Electrical and Computer Engineering from The Johns Hopkins University, Baltimore, Maryland, in 1986, 1988, and 1990, respectively.

In August 1990, he joined the Department of Electrical Engineering and Computer Science at the University of Illinois, Chicago, Illinois, where he is currently a Professor in the Departments of Electrical and Computer Engineering, Computer Science, and Bioengineering. He has also served as Director of the University-Industry Engineering Research Center (UIERC), formerly the Manufacturing Research Center (MRC). He is also Co-Director of the Multimedia Communications Laboratory (MCL) and member of the Signal and Image Research Laboratory (SIRL).

Dr. Schonfeld has been elevated to the rank of Fellow of the IEEE “for contributions to image and video analysis.” He was also elevated to the rank of Fellow of the SPIE “for specific achievements in morphological image processing and video analysis.” Dr. Schonfeld has been elected University Scholar of the University of Illinois.

Dr. Schonfeld has authored over 200 technical papers in various journals and conferences. He was co-author (with Carlo Giulietti and Rashid Ansari) of a paper that won the Best Paper Award at the ACM Multimedia Workshop on Advanced Video Streaming Techniques for Peer-to-Peer Networks and Social Networking 2010. He was also co-author (with Junlan Yang) of a paper that won the Best Student Paper Award in the IEEE International Conference on Image Processing 2007. He was also co-author (with Wei Qu) of a paper that won the Best Student Paper Award in the IEEE International Conference on Image Processing 2006. He was also co-author (with Nidhal Bouaynaya) of a paper that won the Best Student Paper Award in Visual Communications and Image Processing 2006.

Dr. Schonfeld is currently serving as Editor-in-Chief of the IEEE Transactions on Circuits and Systems for Video Technology. He has also served as Deputy Editor-in-Chief of the IEEE Transactions on Circuits and Systems for Video Technology and Area Editor for Special Issues of the IEEE Signal Processing Magazine. He has also served as Associate Editor of the IEEE Transactions on Image Processing (on image and video storage, retrieval and analysis), Associate Editor of the IEEE Transactions on Circuits and Systems for Video Technology (on video analysis), Associate Editor of the IEEE Transactions on Signal Processing (on multidimensional signal processing and multimedia signal processing), and Associate Editor of the IEEE Transactions on Image Processing (on nonlinear filtering). He has also served on the editorial board of various journal publications. He has also served as guest editor for numerous special issues in various journal publications.

Dr. Schonfeld is currently serving as Technical Program Chair of the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2018. He has served as General Co-Chair of the IEEE International Conference on Multimedia and Expo (ICME) 2012. He has also served as Technical Chair of the IEEE Workshop on Genomic Signal Processing and Statistics (GENSIPS) 2009. He has also served as Chair of the Workshop on Video Mining 2008. He has also served as Chair of the SPIE Conference on Visual Communications and Image Processing (VCIP) 2007. He was a member of the organizing committees of the IEEE International Conference on Image Processing (ICIP) 1998, 2012, and 2018, IEEE/SPIE International Conference on Visual Communications and Image Processing (VCIP) 2010, and IEEE Workshop on Nonlinear Signal and Image Processing (NSIP) 1997. He was also organizer of the Thematic Symposium on Multimedia Search and Retrieval at the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2009.

Dr. Schonfeld was keynote speaker at the International Conference on Intelligent Control and Information Processing (ICICIP) 2013 and International Conference on Brain Inspired Cognitive Systems (BICS) 2013. He was also plenary speaker at the IEEE/IET International Conference on Audio, Language and Image Processing (ICALIP), Shanghai, China, in 2010. He was also plenary speaker at the IEEE International Conference on Advanced Video and Signal Based Surveillance (AVSS), Genoa, Italy, in 2009. He was also plenary speaker at the INPT/ASME International Conference on Communications, Signals, and Systems (ICCS), Rabat Morocco, in 1995 and 2001.

Dr. Schonfeld has served as Representative of Regions 1-6 in the Chapters Committee of the IEEE Signal Processing Society. He has also served as Chairman of the Chicago Chapter of the IEEE Signal Processing Society. He has also served on the IEEE Image, Video, and Multidimensional Signal Processing (IVMSP) Technical Committee, formerly the IEEE Image and Multidimensional Signal Processing (IMDSP) Technical Committee, as well as the IEEE Multimedia Communications Technical Committee. He also served on the American National Standards Institute (ANSI)/Underwriters Laboratory (UL) Standards Technical Panel (“STP”) on Multimedia Systems.

Dr. Schonfeld has served as President of Multimedia Systems Corporation (MSC) and provided services as a consultant and expert witness for over 60 companies.

D. RESEARCH INTERESTS

Signal Processing, Image and Video Analysis, Video Retrieval and Communications, Multimedia Systems, Computer Vision, Medical Imaging, and Genomic Signal Processing.

E. SIGNIFICANT RESEARCH ACCOMPLISHMENTS

E.1. Morphological Image Analysis

We have been working in the area of mathematical morphology since the mid-1980s. In the course of our work, we have solved several fundamental problems in morphological image analysis. Our initial work was devoted to image restoration using morphological filters. We proved that the alternating sequential filter is the optimal morphological filter for image restoration. The proof introduced a new approach to optimization of nonlinear filters and solved a fundamental problem which had been posed several decades earlier. We later provided an analytical solution to the fundamental open problem of characterization of the optimal structuring element (window) in morphological image analysis.

We have also addressed the problem of morphological representation and skeletonization. We presented a unified approach to image representation and demonstrated its relation to the medial axis transform which is used for pattern recognition and image coding. We also established necessary and sufficient conditions for the invertibility of image representations and determined the optimal skeleton for image coding. We finally investigated the robustness of the skeleton to noise degradation and used random set theory and stochastic geometry to prove that redundancy in skeleton representations is beneficial in low-noise environments, whereas sparsity provides superior performance in high-noise systems.

More recently, we have focused on the topic of spatially-variant and adaptive morphological image analysis. We demonstrated a dramatic improvement in the performance of skeletons for pattern recognition and image coding as well as image restoration by using an adaptive structuring element (window). We later introduced a theoretical foundation for a new approach to morphological image

analysis based on spatially-varying structuring elements (windows) and illustrated the enormous improvement of this theory over classical methods in image analysis.

We have also presented several important practical solutions to various image processing applications. For instance, we have developed an algorithm for the implementation of morphological operations represented as thresholded linear convolution based on FFTs.

E.2. Video Tracking

In the late-1990s, we started to work in the area of video tracking. Our initial focus was on tracking in the compressed domain. We showed that we can exploit the structure of coded video sequences – motion vectors in MPEG-2 (HDTV) – to provide efficient target tracking in the compressed domain and thus improve the computational speed more than 4,000 times. We later extended the approach to an adaptive block matching algorithm for real-time video tracking. The proposed approach to video tracking on raw image sequences provides speed that is more than 10 times faster than previous methods for video tracking. The algorithm has been presented in consumer shows and incorporated into the software suite of the MiMagic Associate Processor Array (APA) by NeoMagic Corporation (two patents have been filed and issued on the adaptive block matching algorithm).

In the past few years, we have concentrated on the use of particle filtering for video tracking. We showed both theoretically and experimentally that we can achieve a dramatic improvement in the computational speed by using motion-based particle filters to reduce the number of particles required for efficient tracking from 1,000-4,000 down to 30-50 particles. We proposed techniques to improve the efficiency and accuracy of particle filters by adaptively determining the mean and covariance of the proposal (importance) density function. We finally derived a closed-form solution based on rate-distortion theory for particle allocation among multiple frames and objects for video tracking.

Our main focus on video tracking has been devoted to distributed tracking. We proposed a method for decomposition of graphical models used for the representation of the interaction among multiple objects and cameras in image sequences. We then derived a distributed particle filter for multiple object tracking based on statistical collaboration among interactive particle filters. The proposed approach can be used track occluded objects while its complexity grows linearly with the number of targets (compared to the exponential growth in computational complexity of methods that rely on joint representations). We have extended the approach to distributed particle filtering to tracking using multiple networked cameras as well as articulated object tracking by collaboration within units (e.g. hand and forearm) and among units (e.g. arm and leg) (two patents have been filed on the distributed particle filter algorithm).

E.3. Video Search and Retrieval

In the early 2000s, we began to work on retrieval and recognition in video databases. One of the key problems in video analysis is segmentation of image sequences into coherent visual scenes. We introduced statistical change detection theory to solve the classical problem of scene change detection in video sequences. This approach has been shown to yield far superior results for this fundamental problem for videos with both special effects and abrupt changes alike. It provides a single algorithm for scene change detection and avoids the need to use different methods for distinct special effects.

Since 2003, we focused on retrieval and recognition based on motion trajectories in video and sensor databases. We first proposed a framework based on principal component analysis for indexing and retrieval of segmented motion trajectories in video databases. We then extended the use of hidden

Markov models from speech recognition to address the problem of motion trajectory classification in video sequences. We later adapted tools from shape analysis to address the problem of view-invariance of motion trajectories for unknown and moving cameras. We finally proposed a new approach to view-invariance based on a null-space representation of motion trajectory information.

In the past few years, we have focused primarily on retrieval and recognition of motion events in video and sensor databases characterized by multiple interactive motion trajectories. We first presented an approach to multiple motion trajectory indexing and retrieval based on tensor decomposition. We later provided an efficient method for extraction and insertion of partial information in video database used for multiple motion trajectory representation based on high-order singular value decomposition of tensors. We also extended the null-space representation to tensors for view-invariant indexing and retrieval of multiple motion trajectories from unknown and moving cameras.

We finally provided a solution to classification and recognition of multiple interactive motion trajectories by deriving an extension of hidden Markov models to multiple dimensions. We provided a closed-form solution for the training and classification – general forward-backward, expectation-maximization, and Viterbi algorithms – for multiple dimensions in a causal system. We then presented an approach to multiple motion trajectory classification based on distributed multi-dimensional hidden Markov models for non-causal systems.

E.4. Genomic Signal Processing

Over the past few years, we have begun to work in the area of genomic and proteomic signal processing. Our aim thus far has been to address fundamental problems in system biology by using tools from signal processing and communications. We proposed a model of protein evolution as a communication system represented by a Markov chain and proved that it will converge to a probability distribution of amino acids that matches nearly perfectly the natural abundance of amino acids in nature. We further investigated the capacity and rate-distortion bounds of the protein communication model and showed it is consistent with an evolutionary pattern whereby the size of introns increases through time.

We also addressed the rationale for the presence of introns (junk DNA) in the genomic sequence by hypothesizing that introns serve as decoys that reduce the effect of mutations in gene expression. We showed that the exon length distribution that minimizes the probability of error due to mutations yields a long-tail density that is nearly identical to the histogram of exon lengths among eukaryotes. We finally investigated the statistical structure of genomic sequences and showed that coding and non-coding segments of the DNA can be distinguished by a measure of randomness defined based on tools from non-stationary analysis.

F. HONORS AND AWARDS

IAM Patent 1000 2015: The World's Leading Patent Practitioners

The Worlds Leading Patent Litigation Expert Witnesses

Fourth Edition

2015

www.iam-media.com/patent1000/rankings/Detail.aspx?g=4ef1eed2-a82c-415c-bbf9-d18270385a39

Graduate Mentoring Award

University of Illinois at Chicago

2014

University Scholar

University of Illinois

2010

Fellow

International Society for Optics and Photonics (SPIE)

“For Specific Achievements in Morphological Image Processing and Video Analysis”

2011

Fellow

Institute of Electrical and Electronics Engineers (IEEE)

“For Contributions to Image and Video Analysis”

2010

Senior Member

Institute of Electrical and Electronics Engineers (IEEE)

2005

Best Paper Award

C. Giulietti, D. Schonfeld, and R. Ansari

“A Novel Cache Optimization Algorithm and Protocol
for Video Streaming in Pure Peer-to-Peer Networks”

ACM Multimedia Workshop on Advanced Video Streaming Techniques
for Peer-to-Peer Networks and Social Networking

2010

Best Student Paper Award

J. Yang, D. Schonfeld and M. Mohamed

“Robust Focused Image Estimation from Multiple Images in Video Sequences”

IEEE International Conference on Image Processing

2007

Best Student Paper Award

W. Qu and D. Schonfeld

“Robust Kernel-Based Tracking Using Optimal Control”

IEEE International Conference on Image Processing

2006

Best Student Paper Award

N. Bouaynaya and D. Schonfeld

“Spatially-variant morphological image processing: Theory and applications”

SPIE Conference on Visual Communications and Image Processing

2006

Advising Award

College of Engineering

University of Illinois at Chicago

2013

Outstanding Associate Editor Award – IEEE Circuits and Systems Society

IEEE Circuits and Systems Society
IEEE Transactions on Circuits and Systems for Video Technology
2009

Most Active Chapter Award – IEEE Signal Processing Chicago Chapter Chair

IEEE – Region 4
2008

Service Award – IEEE Signal Processing Chicago Chapter Chair

IEEE – Chicago Section
2007

Certificate of Appreciation – IEEE Signal Processing Society

Chair, IEEE Signal Processing Chapter
Chicago Section
2006-2012

Certificate of Appreciation – IEEE Circuits and Systems Society

IEEE Circuits and Systems Society
Prize Paper Award Subcommittee
2010

Certificate of Appreciation – IEEE Circuits and Systems Society

IEEE Circuits and Systems Society
Deputy Editor-in-Chief of the IEEE Transactions on Circuits and Systems for Video Technology
2008 – 2010

Certificate of Appreciation – IEEE Circuits and Systems Society

IEEE Circuits and Systems Society
Associate Editor of the IEEE Transactions on Circuits and Systems for Video Technology
2008 – 2010

Certificate of Appreciation – IEEE Signal Processing Chicago Chapter Chair

IEEE – Chicago Section
2006

Worldwide Who's Who

2014 Edition

Who's Who in America (WWA)

2012 Edition

Who's Who in America (WWA)

2011 Edition

Who's Who in America (WWA)

2010 Edition

Who's Who in Engineering Education (WWE)

2002 Edition

University Fellowship
The Johns Hopkins University
1986—1990

G. IN THE NEWS

IEEE Fellow Dan Schonfeld: Helping Catch Thieves & Read Fuzzy Faxes

e-Scanfax: IEEE Chicago Section Newsletter

January 2010

<http://www.ieeechicago.org/LinkClick.aspx?fileticket=Py81tdr4GTM%3D&tabid=390&mid=884>

IEEE-Chicago Fellows Provide Words of Wisdom to New IEEE Members

e-Scanfax: IEEE Chicago Section Newsletter

May 2010

http://www.ieeechicago.org/LinkClick.aspx?fileticket=2GIDPZnZQ_M%3D&tabid=390&mid=884

What You See, What You Get

University Scholar Dan Schonfeld

Paul Francuch

UIC News

November 10, 2010

<http://www.uic.edu/htbin/cgiwrap/bin/uicnews/articledetail.cgi?id=14769>

Genomic Signal Processing May Yield Clues to Cancer Treatment

Paul Francuch

UIC News Release

November 17, 2010

<http://tiger.uic.edu/htbin/cgiwrap/bin/newsbureau/cgi-bin/index.cgi?from=Releases&to=Release&id=3073&start=1232172000&end=1329285600&topic=2&dept=64>

New Camera Focuses Photos After They Are Taken

Morgen Peck

InnovationNewsDaily Contributor

November 4, 2011

<http://www.innovationnewsdaily.com/camera-focuses-photos-after-2358/>

H. EDUCATION

Ph.D. July 1990

The Johns Hopkins University

Department of Electrical & Computer Engineering

Concentration: Nonlinear Signal Processing / Image Analysis

Thesis Title: “Optimal Morphological Representation and Restoration of Binary Images: Theory and Applications”

First Reader: Prof. John Goutsias; Second Reader: Prof. Victor Solo

M.S. May 1988
The Johns Hopkins University
Department of Electrical & Computer Engineering
Concentration: Speech Processing / Biomedical Signal Processing
Advisor: Prof. Moise H. Goldstein

B.S. May 1986
University of California at Berkeley
Department of Electrical Engineering & Computer Science
Concentration: Computer Engineering / Systems Engineering
Advisor: Prof. Michael J. Sabin

I. WORK EXPERIENCE

Director
University-Industry Engineering Research Center (UIERC)
College of Engineering
University of Illinois at Chicago
Chicago, Illinois
2008—2011

Professor with Tenure
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2007—Present

Professor (Courtesy Appointment)
Department of Computer Science
University of Illinois at Chicago
Chicago, Illinois
2007— Present

Professor
Department of Bioengineering
University of Illinois at Chicago
Chicago, Illinois
2007— Present

Associate Professor with Tenure
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2001—2007

Associate Professor (Courtesy Appointment)
Department of Computer Science
University of Illinois at Chicago
Chicago, Illinois

2001—2007

Associate Professor

Department of Bioengineering
University of Illinois at Chicago
Chicago, Illinois
1998—2007

Associate Professor with Tenure

Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
Chicago, Illinois
1996—2001

Co-Director

Multimedia Communications Laboratory (MCL)
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
1997—Present

Assistant Professor

Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
Chicago, Illinois
1990—1996

Member

Signal and Image Research Laboratory (SIRL)
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
1990—2002

Instructor

Department of Electrical and Computer Engineering
The Johns Hopkins University
Baltimore, Maryland
1987—1990

Teaching Assistant

Department of Electrical and Computer Engineering
The Johns Hopkins University
Baltimore, Maryland
1986—1990

Software Engineer

Computer Aided Design
Teledyne Systems
Northridge, California
Summer 1984—85—86

J. CONSULTING EXPERIENCE

Consultant & Expert Witness

2001—Present

Consulting Activities:

Deposition and Trial Testimony

Patent Litigation

Copyright Litigation

Trade Secret Litigation

International Trade Litigation

Customs Litigation

Contract Litigation

Areas of Expertise:

Multimedia Systems

Multimedia Retrieval, Storage, and Communication Systems

Image and Video Processing

Signal Processing and Communications

Examples of Previous Litigation Experience:

Cable Systems

Camera Systems

Graphics Processors

Image Compression Systems

Image Processing Systems

Internet Advertising

Internet Streaming

Jukebox Systems

Medical Imaging

Signal Processing

Smartphones and Tablets

Television Systems

Video-on Demand (VoD) Systems

Video Compression Systems

Video Storage Systems

Video Streaming Systems

Wireless Systems

Companies:

Served as a consultant and expert witness for over 60 companies

(including Arris, Broadcom, Cablevision, Cisco, Google, Hewlett-Packard, Motorola, Panasonic, Samsung, Time Warner, etc.).

Consultant & President

Multimedia Systems Corporation

Multimedia Systems

Glenview, Illinois

2002—2005

Consultant

Chicago Merchantile Exchange
Multimedia Communication Networks
Chicago, Illinois
1998

Consultant

PrairieComm Corp.
Multimedia Wireless Networks
Arlington Heights, Illinois
1997

K. VISITING POSITIONS

Distinguished Visiting Scholar

Advanced Analytics Institute (AAI)
University of Technology
Sydney, Australia
2012

Visiting Professor

Department of Information Engineering and Computer Science - DISI
University of Trento
Trento, Italy
May 2010

Visiting Professor

School of Computer Engineering
Nanyang Technological University
Singapore
July 2009

Visiting Associate Professor

Department of Electrical Engineering—Systems
Tel-Aviv University
Tel-Aviv, Israel
December 1996—January 1997

L. INTERDISCIPLINARY PROGRAMS

Collaborative Neuroimaging Environment for Connectomics (CoNECT)

University of Illinois at Chicago
2013—Present

Clinical and Translational Science (CCTS)

Biomedical Informatics Core Consult Group

University of Illinois at Chicago
2009—Present

Graduate Program in Neuroscience
University of Illinois at Chicago
2001—Present

Bioinformatics Program
Department of Bioengineering
University of Illinois at Chicago
2000—Present

M. PROFESSIONAL ACTIVITIES

M.1. Editorships

Editor-in-Chief (EIC)
IEEE Transactions on Circuits and Systems for Video Technology
2014—Present

Deputy Editor-in-Chief (DEIC)
IEEE Transactions on Circuits and Systems for Video Technology
2010—2013

Area Editor, Special Sections
Special Issues
IEEE Signal Processing Magazine
2009—2011

Editor
Video Search and Mining
Studies in Computational Intelligence Series
Springer-Verlag
2009

Associate Editor
IEEE Transactions on Image Processing
Image and Video Storage, Retrieval and Analysis
2007—2009

Associate Editor
IEEE Transactions on Circuits and Systems for Video Technology
Video Analysis
2006—2009

Associate Editor
IEEE Transactions on Signal Processing
Multidimensional Signal Processing &
Multimedia Signal Processing

1999—2000

Associate Editor

IEEE Transactions on Image Processing
Filtering and Enhancement
1994—1996

Guest Editor

IEEE Journal of Special Topics in Signal Processing
Special Issue on Mathematical Morphology
and Its Applications to Image and Signal Processing
2011—2012

Guest Editor

IEEE Transactions on Image Processing
Special Issue on Distributed Camera Networks:
Sensing, Processing, Communication and Computing
2010—2011

Guest Editor

EURASIP Journal on Image and Video Processing
Special Issue on Advanced Video-Based Surveillance
2010—2011

Lead Guest Editor

IEEE Journal of Special Topics in Signal Processing
Special Issue on Recent Advances in Video Processing for Consumer Displays
2009—2011

Guest Editor

IEEE Transactions on Circuits and Systems for Video Technology
Special Issue on Event Analysis in Videos
2008

Lead Guest Editor

IEEE Journal of Special Topics in Signal Processing
Special Issue on Genomic and Proteomic Signal Processing
2007—2008

Guest Editor

Journal of Advances in Multimedia
Special Issue on Plenoptic Signal and Image Processing
2007—2008

Editorial Board

Journal of Electrical and Computer Engineering
Hindawi Publishing Corporation
2009— Present

Editorial Board

EURASIP Journal of Image and Video Processing

2009—2013

Editorial Board

IEEE Signal Processing Magazine
2008—2011

Editorial Board

Research Letters in Signal Processing
Hindawi Publishing Corporation
2007—2009

Editorial Board

Recent Patents on Computer Science
Bentham Science Publishers, Ltd.
2007—Present

Editorial Board

Recent Patents on Electrical Engineering
Bentham Science Publishers, Ltd.
2007—2012

Contributor

Science and Technology: SPIE Newsroom
Electronic Imaging and Signal Processing
2005—2008

M.2. Committees

Best Paper Award Selection Committee

CSVT Best Paper Award
IEEE Circuits and Systems Society
2013

Travel Grant Selection Committee

IEEE Signal Processing Society
IEEE International Conference on Image Processing
2011

Steering Committee

International Society of Mathematical Morphology (ISMM)
International Symposium on Mathematical Morphology (ISMM)
2011—Present

Advisory Committee

IEEE Circuits and Systems Society
Visual Signal Processing and Communication (VSPC) Technical Committee
IEEE Conference on Visual Communications and Image Processing (VCIP)
2010—Present

Steering Committee

SPIE and IEEE Circuits and Systems Society
Conference on Visual Communications and Image Processing
2008—2010

Scientific Advisory Board

World Congress of NeuroTalk
From Nervous Functions to Treatment
Singapore Expo, Singapore
2010

Chair

Nominations and Elections Subcommittee
Image, Video, and Multidimensional Signal Processing (IVMSP) Technical Committee
IEEE Signal Processing Society
2010— 2011

Member

Visual Signal Processing and Communications (VSPC) Technical Committee
IEEE Circuits and Systems Society
2015— Present

Associate Member

Image, Video, and Multidimensional Signal Processing (IVMSP) Technical Committee
IEEE Signal Processing Society
2014— Present

Member

IEEE Multimedia Communications Technical Committee (MMTC) Technical Committee
IEEE Communications Society
2009— Present

Member

Image, Video, and Multidimensional Signal Processing (IVMSP) Technical Committee
IEEE Signal Processing Society
2009— 2012

Member

Image and Multidimensional Signal Processing (IMDSP) Technical Committee
IEEE Signal Processing Society
2007—2008

Member

Signal and Image Processing in Medicine Technical Committee
IEEE Circuits and Systems Society
1990—1996

Member

P2P Communication and Networking Technical Subcommittee
Multimedia Communications Technical Committee
IEEE Communications Society
2006—Present

Representative

Regions 1-6
Chapters Committee
IEEE Signal Processing Society
2006—2012

Chairman

Chicago IEEE Signal Processing Chapter
2006—2012

Member

American National Standards Institute/Underwriters Laboratory (ANSI/UL)
Standards Technical Panel (STP)
STP 0469: Musical Instruments and Accessories
STP 0813: Commercial Audio Equipment
STP 1492: Audio/Video Products and Accessories
STP 6500: Audio/Video and Musical Instrument Apparatus for Household, Commercial, and Similar General Use
STP 60065: Audio, Video and Similar Electronic Apparatus – Safety Requirements
STP 62368: Audio/Video, Information Technology, and Communication Technology Equipment
STP 62368-1: Audio/video, information and communication technology equipment – Part 1: Safety requirements
2002—Present

M.3. Review Panels

Member

Expert Panel
Faculty of Computing and Electrical Engineering
Tampere University of Technology (TUT)
Tampere, Finland
2011

Member

Paper Award Committee
IEEE International Conference on Advanced Video and Signal-Based Surveillance (AVSS)
Genoa, Italy
2009

Member

Technical Jury
NTT DoCoMo USA Labs Most Innovative Paper Awards
IEEE International Conference on Image Processing
San Diego, California
2008

Member

Technical Jury

NTT DoCoMo USA Labs Most Innovative Paper Awards
IEEE International Conference on Image Processing
San Antonio, Texas
2007

Member

Technical Jury
NTT DoCoMo USA Labs Most Innovative Paper Awards
IEEE International Conference on Image Processing
Atlanta, Georgia
2006

Member

NSF Review Panel
Computer & Information Science & Engineering (CISE)
Computing and Communication Foundations (CCF)
Image and Multi-Dimensional Signal Processing (IMDSP)
2015

Member

NSF Review Panel
Computer & Information Science & Engineering (CISE)
Computing and Communication Foundations (CCF)
Communications and Information Foundations (CIF)
2012

Member

NSF Review Panel
Computer & Information Science & Engineering (CISE)
Computing and Communication Foundations (CCF)
Communications and Information Foundations (CIF)
2011

Member

NSF Review Panel
Computer & Information Science & Engineering (CISE)
Information & Intelligent Systems (IIS)
Databases and Data Mining (DB/DM)
2007

Member

NSF Review Panel
Small Business Innovation Research (SBIR) Program
Robotics II
Phase II
2007

Member

NSF Review Panel
Computer & Information Science & Engineering (CISE)
Information & Intelligent Systems (IIS)

Information Management (IM)
2006

Member

NSF Review Panel
Computer & Information Science & Engineering (CISE)
Information & Intelligent Systems (IIS)
Information & Knowledge Management (IKM)
2005

Member

NSF Review Panel
Small Business Innovation Research (SBIR) Program
Robotics II
Phase I
2005

Member

NSF Review Panel
Computer & Information Science & Engineering (CISE)
Advanced Networking Infrastructure and Research (ANIR)
Information Technology Research (ITR)
Networking Research
Small Grants
2002

Member

NSF Review Panel
Small Business Innovation Research (SBIR) Program
Diagnostic Systems and Signal Processing
Phase I
2002

Member

NSF Review Panel
Computer & Information Science & Engineering (CISE)
Information Technology Research (ITR)
Biology & Information Technology
Computational Biology / Biocomputation
Medium Grants
2003

M.4. Program Chair

Technical Program Chair

IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)
Seoul, Korea
2018

Program Chair

IEEE Conference on Visual Communications and Image Processing (VCIP)
Singapore
2015

General Co-Chair

Workshop on Big Data in 3D Computer Vision
Held in conjunction with the IEEE International Conference on Computer Vision (ICCV)
Melbourne, Australia
2013

General Co-Chair

IEEE International Conference on Multimedia and Expo
Melbourne, Australia
2012

Technical Program Chair

IEEE International Workshop on Genomic Signal Processing and Statistics
Minneapolis, Minnesota
2009

Chair

Workshop on Video Mining
IEEE International Conference on Data Mining
Held in conjunction with the IEEE International Conference on Data Mining (ICDM)
Pisa, Italy
2008

Chair

SPIE International Conference on Visual Communications and Image Processing
San Jose, California
2007

Multimedia Content Analysis Track Chair

IEEE International Conference on Multimedia and Expo
New York, New York
2009

Technical Program Committee / Area Chair

IEEE International Conference on Image Processing
San Diego, California
2008

Technical Program Committee / Area Chair

IEEE International Conference on Acoustics, Speech, and Signal Processing
Las Vegas, Nevada
2008

Technical Program Committee / Area Chair

IEEE International Conference on Image Processing
San Antonio, Texas
2007

Associate Program Chair

ACM Multimedia
Juan Les Pins, France
2002

M.5. Organizing Committees

Technical Program Chair

IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)
Seoul, Korea
2018

Program Chair

IEEE Conference on Visual Communications and Image Processing (VCIP)
Singapore
2015

General Co-Chair

Workshop on Big Data in 3D Computer Vision
Held in conjunction with the IEEE International Conference on Computer Vision (ICCV)
Melbourne, Australia
2013

General Co-Chair

IEEE International Conference on Multimedia and Expo
Melbourne, Australia
2012

Plenary Chair

IEEE International Conference on Image Processing
Plenary Chair
Orlando, Florida
2012

Publications Chair

IEEE Conference on Advanced Video and Signal-based Surveillance (AVSS)
Beijing, China
2012

USA Liaison Chair

IEEE Conference on Advanced Video and Signal-based Surveillance (AVSS)
Klagenfurt, Austria
2011

Publicity Co-Chair

IEEE/SPIE International Conference on Visual Communications and Image Processing
Huang Shan, An Hui, China
2010

Technical Program Chair

IEEE International Workshop on Genomic Signal Processing and Statistics
Minneapolis, Minnesota
2009

Organizer

IEEE International Conference on Acoustics, Speech, and Signal Processing
Thematic Symposium on Multimedia Search and Retrieval
Taipei, Taiwan
2009

Chair

Workshop on Video Mining
Held in conjunction with the IEEE International Conference on Data Mining (ICDM)
Pisa, Italy
2008

Chair

SPIE International Conference on Visual Communications and Image Processing
San Jose, California
2007

Technical Organizing Committee

IS&T/SPIE Annual Symposium on Electronic Imaging: Science and Technology
San Jose, California
2007

Publications Chair

IEEE International Conference on Image Processing
Chicago, Illinois
1998

Plenary Talks and Special Session Chair

IEEE/EURASIP Workshop on Nonlinear Signal and Image Processing
Mackinac Island, Michigan
1997

M.6. Technical Program Committees

Technical Program Committee

SPIE Conference on Video Surveillance and Transportation Imaging
San Francisco, California
2015

Technical Program Committee

SPIE Conference on Video Surveillance and Transportation Imaging
San Francisco, California
2014

Program Committee

IEEE International Conference on Automatic Face and Gesture Recognition (FG 2013)
Shanghai, China
2013

Technical Program Committee

SPIE Conference on Video Surveillance and Transportation Imaging
San Francisco, California
2013

Technical Program Committee

SPIE Conference on Visual Information Processing and Communication
San Francisco, California
2013

Technical Program Committee

ICST International Conference on
Wireless Mobile Communication and Healthcare (MobiHealth)
Paris, France
2012

Technical Program Committee

SPIE Conference on Visual Information Processing and Communication
San Francisco, California
2012

Program Committee

International Workshop on Video Event Categorization, Tagging and Retrieval (VECTaR)
Held in conjunction with the International Conference on Computer Vision
Barcelona, Spain
2011

Technical Program Committee

ICST International Conference on
Wireless Mobile Communication and Healthcare (MobiHealth)
Kos Island, Greece
2011

Technical Program Committee

SPIE Conference on Visual Information Processing and Communication
San Francisco, California
2011

Technical Program Committee

IEEE International Workshop on Genomic Signal Processing and Statistics
Cold Spring Harbor Laboratory, New York
2010

Technical Program Committee

IEEE International Conference on Multimedia and Expo (ICME)
Singapore
2010

Technical Program Committee

International Conference on Pattern Recognition (ICPR)
Track I: Computer Vision
Istanbul, Turkey
2010

Technical Program Committee

ACM/IEEE International Conference on Distributed Smart Cameras (ICDSC)
Atlanta, Georgia
2010

Technical Program Committee

IEEE Workshop on Multimedia Computing and Communications (MCC)
Held in conjunction with the International Conference on Computer Communications and Networks (ICCCN)
Zurich, Switzerland
2010

Program Committee

ACM International Conference on Bioinformatics and Computational Biology (ACM-BCB)
Niagara Falls, New York
2010

Technical Program Committee

IEEE/SPIE International Conference on Visual Communications and Image Processing
Huang Shan, An Hui, China
2010

Technical Program Committee

ICST International Conference on
Wireless Mobile Communication and Healthcare (MobiHealth)
Ayia Napa, Cyprus
2010

Technical Program Committee

SPIE International Conference on Visual Information Processing and Communications
San Jose, California
2010

Program Committee

International Workshop on Video Event Categorization, Tagging and Retrieval (VECTaR)
Held in conjunction with the Asian Conference on Computer Vision
Xi'an, China
2009

Program Committee

IEEE International Workshop on Video-Oriented Object and Event Classification (VOEC)
Held in conjunction with the International Conference on Computer Vision (ICCV)
Kyoto, Japan
2009

Program Committee / Reviewer

IEEE International Conference on Computer Vision
Kyoto, Japan
2009

Technical Program Committee

IEEE International Conference on Advanced Video and Signal-Based Surveillance (AVSS)
Genoa, Italy
2009

Technical Program Committee

IEEE Workshop on Multimedia Computing and Communications (MCC)
Held in conjunction with the International Conference on Computer Communications and Networks (ICCCN)
San Francisco, California
2009

Technical Program Committee

International Conference on Image and Graphics
Xi'an, China
2009

Program Committee

International Conference on Advances in Multimedia (MMEDIA)
Colmar, France
2009

Technical Program Committee

IEEE International Workshop on Computational Advances
in Multi-Sensor Adaptive Processing (CAMSAP)
Dominican Republic
2009

Technical Program Committee

SPIE International Conference on Visual Communications and Image Processing
San Jose, California
2009

Technical Program Committee / Reviewer

IEEE International Conference on Image Processing
San Diego, California
2008

Program Committee

IEEE Conference on Computer Vision and Pattern Recognition
Anchorage, Alaska
2008

Technical Program Committee / Reviewer

IEEE International Conference on Acoustics, Speech, and Signal Processing

Las Vegas, Nevada
2008

Technical Program Committee

IEEE International Workshop on Genomic Signal Processing and Statistics
Phoenix, Arizona
2008

Technical Program Committee

International Workshop on Multimedia Analysis & Processing (IMAP)
U.S. Virgin Islands
2008

Technical Program Committee

SPIE International Conference on Visual Communications and Image Processing
San Jose, California
2008

Program Committee

IEEE International Conference on Computer Vision
Rio de Janeiro, Brazil
2007

Technical Program Committee / Reviewer

IEEE International Conference on Image Processing
San Antonio, Texas
2007

Technical Program Committee

IEEE International Workshop on Genomic Signal Processing and Statistics
Tuusula, Finland
2007

Technical Program Committee

SPIE International Conference on Visual Communications and Image Processing
San Jose, California
2007

Technical Program Committee

IEEE International Conference on Image Processing
Atlanta, Georgia
2006

Technical Program Committee

IEEE International Workshop on Genomic Signal Processing and Statistics
College Station, Texas
2006

Technical Program Committee

SPIE International Conference on Visual Communications and Image Processing
San Jose, California

2006

Technical Program Committee / Reviewer

IEEE International Conference on Acoustics, Speech, and Signal Processing
Toulouse, France

2006

Technical Program Committee

IEEE International Conference on Image Processing
Genova, Italy

2005

Technical Program Committee / Reviewer

IEEE International Conference on Acoustics, Speech, and Signal Processing
Philadelphia, Pennsylvania

2005

Technical Program Committee

IEEE International Conference on Image Processing
Singapore

2004

Technical Program Committee

IEEE International Conference on Image Processing
Barcelona, Spain

2003

Technical Program Committee

IEEE International Conference on Image Processing
Rochester, New York

2002

Technical Program Committee

IEEE International Conference on Image Processing
Thessaloniki, Greece

2001

Technical Program Committee

IEEE International Conference on Image Processing
Vancouver, Canada

2000

Technical Program Committee

IEEE International Conference on Image Processing
Kobe, Japan

1999

Technical Program Committee

IEEE International Conference on Image Processing
Chicago, Illinois

1998

Technical Program Committee

International Symposium on Mathematical Morphology
Amsterdam, The Netherlands
1998

Technical Program Committee

SPIE International Conference on Visual Communications and Image Processing
San Jose, California
1998

Technical Program Committee

SPIE International Conference on Visual Communications and Image Processing
San Jose, California
1997

Technical Program Committee

SPIE International Conference on Visual Communications and Image Processing
Orlando, Florida
1996

Technical Program Committee

IEEE International Conference on Image Processing
Austin, Texas
1994

Technical Program Committee

IEEE International Symposium on Circuits and Systems
Chicago, Illinois
1993

M.7. Session Organizer

Chair

IEEE International Conference on Image Processing
Special Session on Face Recognition II
Orlando, Florida
2012

Organizer and Chair

IEEE International Conference on Acoustics, Speech, and Signal Processing
Special Session on Video Search and Event Analysis
Taipei, Taiwan
2009

Organizer

Workshop on Global Multimedia Mobile Communications
University of Illinois at Chicago
Chicago, Illinois
2005

Organizer and Chair

IEEE International Conference on Image Processing
Special Session on Nonlinear Filtering
Austin, Texas
1994

Organizer and Chair

IEEE International Symposium on Circuits and Systems
Special Session on Medical Image and Signal Processing
Singapore
1991

Organizer and Chair

Conference on Information Sciences and Systems
Session on Nonlinear Image and Signal Processing I
Baltimore, Maryland
1991

M.8. Session Chair

Chair

IEEE International Conference on Acoustics, Speech, and Signal Processing
Session on Image and Video Indexing and Retrieval
Prague, Czech Republic
2011

Chair

IEEE International Conference on Acoustics, Speech, and Signal Processing
Session on Image/Video Semantic Understanding
Dallas, Texas
2010

Chair

IEEE International Conference on Advanced Video and Signal-Based Surveillance (AVSS)
Session on Trajectory Analysis and Learning
Genoa, Italy
2009

Chair

IEEE International Conference on Multimedia and Expo
Session on Multimedia Content Analysis and Synthesis IV
New York, New York
2009

Chair

IEEE International Conference on Acoustics, Speech, and Signal Processing
Session on Stereoscopic and 3-D Processing
Taipei, Taiwan
2009

Chair

IEEE International Conference on Image Processing
Session on Enhancement and Denoising II
San Diego, California
2008

Chair

IEEE International Conference on Acoustics, Speech, and Signal Processing
Session on Restoration and Enhancement
Las Vegas, Nevada
2008

Chair

SPIE Electronic Imaging Conference on Visual Communications and Image Processing
Session on Image Processing
San Jose, California
2008

Chair

IEEE International Conference on Image Processing
Session on Image and Video Restoration and Enhancement I
San Antonio, Texas
2007

Chair

IEEE International Conference on Image Processing
Session on Image and Video Filtering
Atlanta, Georgia
2006

Chair

IEEE International Conference on Multimedia and Expo
Session on Media Signal Processing
Toronto, Canada
2006

Chair

IEEE International Conference on Multimedia and Expo
Session on Multimedia Database Applications
Toronto, Canada
2006

Chair

IEEE International Conference on Multimedia and Expo
Session on Peer-to-Peer Multimedia Streaming
Toronto, Canada
2006

Chair

SPIE Electronic Imaging Conference on Visual Communications and Image Processing

Session on Computer Vision
San Jose, California
2006

Chair

IEEE International Conference on Acoustics, Speech, and Signal Processing
Session on Video Segmentation and Tracking
Philadelphia, Pennsylvania
2005

Chair

SPIE Electronic Imaging Conference on Image and Video Communications and Processing
Session on Selective Encryption for Image/Video
San Jose, California
2005

Chair

SPIE Electronic Imaging Conference on Image and Video Communications and Processing
Session on Object Tracking
San Jose, California
2005

Chair

INPT/ASME International Conference on Communications, Signals and Systems
Session on Signals and Data
Rabat, Morocco
2001

Chair

SPIE Conference on Multimedia Storage and Archiving Systems III
Session on Video Segmentation
Boston, Massachusetts
1998

Chair

IEEE International Conference on Image Processing
Session on Image Sequence Segmentation
Chicago, Illinois
1998

Chair

International Symposium on Mathematical Morphology
Session on Theory
Atlanta, Georgia
1996

Chair

INPT/ASME International Conference on Communications, Signals and Systems
Session on Signals and Data
Rabat, Morocco
1995

Chair

IEEE Workshop on Nonlinear Signal and Image Processing
Session on Mathematical Morphology and Fuzzy DSP
Neos Marmaras, Halkidiki, Greece
1995

Chair

IEEE International Conference on Image Processing
Session on Shape Representation and Image Modeling
Austin, Texas
1994

Chair

SPIE Conference on Visual Communications and Image Processing
Session on Mathematical Morphology
Boston, Massachusetts
1992

Chair

Conference on Information Sciences and Systems
Session on Signal Representation, Modeling, and Analysis
Baltimore, Maryland
1991

M.9. Panelist and Participant

Panelist

DOD Tri-Service Workshop on Stochastic Methods in Image Analysis
Session on Mathematical Morphology
U.S. Army Harry Diamond Laboratories
Adelphi, Maryland
1992

Participant

Institute for Mathematics and its Applications (IMA)
Workshop on Large Data Sets in Medical Informatics
Minneapolis, Minnesota
2011

Participant

NSF Workshop on Improving Domestic Student Participation
in Electrical and Computer Engineering Graduate Programs
University of Tennessee
Knoxville, Tennessee
2009

Participant

Workshop on Global Multimedia Mobile Communications
University of Illinois at Chicago

Chicago, Illinois
2005

Participant

Workshop on Extraction of Visual Information by Biological and Non-Biological Systems
University of Illinois at Chicago
Chicago, Illinois
2002

Participant

Workshop on Multimedia Information Systems
Capri, Italy
2001

Participant

NSF Advanced Networking Infrastructure Support
National Workshop on Developing Guidance
Research Competitiveness Program
Washington, D.C.
1999

Participant

Institute for Mathematics and its Applications (IMA)
Workshop on Applications and Theory of Random Sets
Minneapolis, Minnesota
1996

N. PUBLICATIONS

N.1. Thesis

- [1] D. Schonfeld, *Optimal Morphological Representation and Restoration of Binary Images: Theory and Applications*. Department of Electrical and Computer Engineering, The Johns Hopkins University, Baltimore, Maryland, 1990.

N.2. Books

- [1] C.-W. Chen, D. Schonfeld, and J. Liu, (Eds.), *Proceedings of the SPIE/IS&T International Conference on Visual Communications and Image Processing*. SPIE Press, 2007.
- [2] D. Schonfeld, C. Shan, D. Tao, and L. Wang, (Eds.), *Video Search and Mining*. Studies in Computational Intelligence Series, Springer-Verlag, 2010.

N.3. Book Chapters

- [1] M. Charif-Chefchaoui and D. Schonfeld, "Spatially-Variant Mathematical Morphology: Minimal Basis Representation," *Mathematical Morphology and Its Applications to Image and Signal*

- Processing*. P. Maragos, R.W. Schafer, and M.K. Butt, (ed.), pp. 49-56, Kluwer Academic Publishers: Boston, Massachusetts, 1996.
- [2] D. Schonfeld, “Weighted Composite Order-Statistics Filters: Optimal Morphological Pattern Recognition,” *Mathematical Morphology and Its Applications to Image and Signal Processing*. P. Maragos, R.W. Schafer, and M.K. Butt, (ed.), pp. 163-170, Kluwer Academic Publishers: Boston, Massachusetts, 1996.
- [3] D. Schonfeld, “Image and Video Communication Networks,” (**Invited Chapter**). *Handbook of Image and Video Processing*. A. Bovik (ed.), Academic Press: San Diego, California, Chapter 9.3, pp. 717-732, 2000.
- [4] D. Lelescu and D. Schonfeld, “Video skimming and summarization based on principal component analysis,” *Management of Multimedia on the Internet*, Lecture Notes in Computer Science, E.S. Al-Shaer and G. Pacifici (Eds.), Springer-Verlag, pp. 128-141, 2001.
- [5] F. Bashir, S. Khanvilkar, A. Khokhar, and D. Schonfeld, “Multimedia systems: Content based indexing and retrieval,” (**Invited Chapter**). *Electrical Engineering Handbook*. W-K. Chen (ed.), Academic Press: San Diego, California, pp. 379-400, 2004.
- [6] S. Khanvilkar, F. Bashir, D. Schonfeld, and A. Khokhar, “Multimedia networks and communication,” (**Invited Chapter**). *Electrical Engineering Handbook*. W-K. Chen (ed.), Academic Press: San Diego, California, pp. 401-425, 2004.
- [7] D. Schonfeld, “Video Communication Networks,” (**Invited Chapter**). *Handbook of Image and Video Processing. Second Edition*. A. Bovik (ed.), Academic Press: San Diego, California, Chapter 9.3, pp. 1031-1064, 2005.
- [8] D. Schonfeld, “Video Communication Networks,” (**Invited Chapter**). *The Essential Guide to Video Processing*. A. Bovik (ed.), Elsevier: Chennai, India, Chapter 16, pp. 473-526, 2009.
- [9] X. Ma, X. Chen, A. Khokhar, and D. Schonfeld, “Motion trajectory-based video retrieval, classification, and summarization,” *Video Search and Mining*. Studies in Computational Intelligence Series, Springer-Verlag, pp. 53-82, 2010.
- [10] J. J. GadElkarim, D. Schonfeld, O. Ajilore, L. Zhan, A. Zhang, J.D. Feusner, P. M. Thompson, T. J. Simon, A. Kumar, and A. D. Leow, “A framework for quantifying node-level community structure group differences in brain connectivity networks,” *Medical Image Computing and Computer-Assisted Intervention – MICCAI, Lecture Notes in Computer Science*. Vol. 7511, pp. 196-203, 2012.
- [11] N. Bouaynaya, R. Shterenberg, D. Schonfeld, and H. M. Fathallah-Shaykh, “Intervention and Control of Gene Regulatory Networks: Theoretical Framework and Application to Human Melanoma Gene Regulation,” F. Emmert-Streib, and M. Dehmer, Matthias (eds.), *Statistical Diagnostics for Cancer: Analyzing High-Dimensional Data*. Wiley-VCH, Quantitative and Network Biology, 2013.
- [12] S. Friedland, Q. Li, D. Schonfeld, and E. A. Bernal, “Two algorithms for compressed sensing of sparse tensors,” *Compressed Sensing and its Applications*. Springer-Verlag, to appear.

N.4. Journal Editorials

- [1] D. Schonfeld, J. Goutsias, I. Shmulevich, I. Tabus, and A.H. Tewfik, "Introduction to the issue on genomic and proteomic signal processing," *IEEE Journal of Selected Topics in Signal Processing*, Special Issue on Genomic and Proteomic Signal Processing, vol. 2, pp. 257-260, 2008.
- [2] S.-F. Chang, J. Luo, S. Maybank, D. Schonfeld, and D. Xu, "An Introduction to the special issue on event analysis in videos," *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 18, pp. 1469-1472, 2008.
- [3] D. Schonfeld, "Perspectives on special issues," *IEEE Signal Processing Magazine*, vol. 26, issue 5, 2009.
- [4] D. Schonfeld, "The evolution of signal processing," *IEEE Signal Processing Magazine*, vol. 27, issue 5, 2010.
- [5] R. Chellappa, W. Heinzelman, J. Konrad, D. Schonfeld, and M. Wolf, "Introduction to Special Section on Distributed Camera Networks: Sensing, Processing, Communication, and Implementation," Special Section on Distributed Camera Networks: Sensing, Processing, Communication, and Implementation, *IEEE Transactions on Image Processing*, vol. 19, pp. 2513-2515, 2010.
- [6] D. Schonfeld, J. Biemond, G. de Haan, and A. Kaup, "Introduction to the issue on recent advances in video processing for consumer displays," *IEEE Journal of Selected Topics in Signal Processing*, Special Issue on Recent Advances in Video Processing for Consumer Displays, vol. 5, pp. 213-216, 2011.
- [7] L. Di Stefano, C. Regazzoni, and D. Schonfeld, "Advanced Video-Based Surveillance," *EURASIP Journal on Image and Video Processing*, Special Issue on Advanced Video-Based Surveillance, Volume 2011, Article ID 857084, 2 pages, 2011.
- [8] D. Schonfeld and D. Li, "Signal Processing Trends in Media, Mobility, and Search," *IEEE Signal Processing Magazine*, vol. 28, issue 4, 2011.
- [9] L. Najman, J. Barrera, B. S. D. Sagar, P. Maragos, and D. Schonfeld, "Introduction to the issue on filtering and segmentation with mathematical morphology," *IEEE Journal of Selected Topics in Signal Processing*, vol. 6, pp. 737-738, 2012.
- [10] D. Schonfeld, "Editor-in-chief message," *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 24, pp. 181-182, 2014.
- [11] D. Schonfeld, "Editor-in-chief message," *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 25, p. 181, 2015.

N.5. Refereed Journal Papers

- [1] D. Schonfeld and J. Goutsias, "Optimal morphological pattern restoration from noisy binary images," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 13, pp. 14-29, 1991.

- [2] D. Schonfeld and J. Goutsias, "On the morphological representation of binary images in a noisy environment," *Journal of Visual Communication and Image Representation*, vol. 2, pp. 17-30, 1991.
- [3] J. Goutsias and D. Schonfeld, "Morphological representation of discrete and binary images," *IEEE Transactions on Signal Processing*, vol. 39, pp. 1369-1379, 1991.
- [4] D. Schonfeld, "On the hysteresis and robustness of Hopfield neural networks," *IEEE Transactions on Circuits and Systems---II: Analog and Digital Signal Processing*, vol. 40, pp. 745-748, 1993.
- [5] D. Schonfeld, "Optimal structuring elements for the morphological pattern restoration of binary images," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 16, pp. 589-601, 1994.
- [6] M. Charif-Chefchaoui and D. Schonfeld, "Morphological representation of nonlinear filters," *Journal of Mathematical Imaging and Vision*, vol. 4, pp. 215-232, 1994.
- [7] B. Kisacanin and D. Schonfeld, "A fast thresholded linear convolution representation of morphological operations," *IEEE Transactions on Image Processing*, vol. 3, pp. 455-457, 1994.
- [8] M. Charif-Chefchaoui and D. Schonfeld, "On the invertibility of the morphological representation of binary images," *IEEE Transactions on Image Processing*, vol. 3, pp. 847-849, 1994.
- [9] M. Charif-Chefchaoui and D. Schonfeld, "Morphological representation of order-statistics filters," *IEEE Transactions on Image Processing*, vol. 4, pp. 838-845, 1995.
- [10] M. Charif-Chefchaoui and D. Schonfeld, "On the convergence and roots of order-statistics filters," *IEEE Transactions on Signal Processing*, vol. 43, pp. 1990-1993, 1995.
- [11] B.K. Jang, R.T. Chin, M. Charif-Chefchaoui, and D. Schonfeld, "Comments on the invertibility of the morphological representation," *IEEE Transactions on Image Processing*, vol. 5, pp. 529-532, 1996.
- [12] A. Abu-Naser, N.P. Galatsanos, M.N. Wernick and D. Schonfeld, "Object recognition based on impulse restoration with use of the expectation-maximization algorithm," *Journal of the Optical Society of America A: Optics, Image Science, and Vision*, vol. 15, pp. 2327-2340, 1998.
- [13] K.A. Matkowskyj, D. Schonfeld, and R.V. Benya, "Quantitative immunohistochemistry by measuring cumulative signal strength using commercially available software Photoshop and Matlab," *The Journal of Histochemistry & Cytochemistry*, vol. 48(2), pp. 303-311, 2000.
- [14] D. Schonfeld, "On the relation of order-statistics filters and template matching," *IEEE Transactions on Image Processing*, vol. 9, pp. 945-949, 2000.
- [15] D. Schonfeld and D. Lelescu, "VORTEX: Video retrieval and tracking from compressed multimedia databases—multiple object tracking from MPEG-2 bitstream," **(Invited Paper)**. *Journal of Visual Communication and Image Representation*, Special Issue on Multimedia Database Management, vol. 11, pp. 154-182, 2000.

- [16] D. Lelescu and D. Schonfeld, "Statistical sequential analysis for real-time scene change detection on compressed multimedia bitstream," *IEEE Transactions on Multimedia*, vol. 5, pp. 106-117, 2003.
- [17] V. Pavlovic, D. Schonfeld, and G. Friedman, "Stochastic noise process enhancement of Hopfield neural networks," *IEEE Transactions on Circuits and Systems*, vol. 52, no. 4, pp. 213-217, 2005.
- [18] N. Bouaynaya and D. Schonfeld, "Motion-based particle filtering for head tracking applications," (**Invited Paper**). *Electronic Imaging Newsletter*, vol. 15, no. 2, p. 8, 2005.
- [19] N. Balakrishnan, K. Hariharakrishnan, and D. Schonfeld, "A new image representation algorithm inspired by image submodality models, redundancy reduction, and learning in biological vision," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 27, no. 9, pp. 1367-1378, 2005.
- [20] K. Hariharakrishnan and D. Schonfeld, "Fast object tracking using adaptive block matching," *IEEE Transactions on Multimedia*, vol. 7, no. 5, pp. 853-859, 2005.
- [21] B. Cavusoglu, D. Schonfeld, R. Ansari, and D.K. Bal, "Real-time low-complexity adaptive approach for enhanced QoS and error resilience in MPEG-2 video transport over RTP networks," *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 15, no. 12, pp. 1604-1614, 2005.
- [22] D. Schonfeld and G. Friedman, "On the optimality of hysteresis in signal processing and communication systems," *The Journal of the Franklin Institute*, vol. 342, pp. 749-759, 2005.
- [23] S. Balam and D. Schonfeld, "Associative processors for video coding applications," *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 16, pp. 241-250, 2006.
- [24] F.I. Bashir, A.A. Khokhar, and D. Schonfeld, "Real-time affine-invariant motion trajectory-based retrieval and classification of video sequences from arbitrary camera view," *ACM Multimedia Systems Journal*, Special Issue on Machine Learning Approaches to Multimedia Information Retrieval, vol. 12, pp. 45-54, 2006.
- [25] D. Schonfeld and N. Bouaynaya, "A new method for multidimensional optimization and its application in image and video processing," *IEEE Signal Processing Letters*, vol. 13, pp. 485-488, 2006.
- [26] N. Bouaynaya, M. Charif-Chefchaoui and D. Schonfeld, "Spatially-Variant Morphological Restoration and Skeleton Representation," *IEEE Transactions on Image Processing*, vol. 15, pp. 3579-3591, 2006.
- [27] F.I. Bashir, A.A. Khokhar, and D. Schonfeld, "Real-time motion trajectory-based indexing and retrieval of video sequences," *IEEE Transactions on Multimedia*, vol. 9, pp. 58-65, 2007.
- [28] W. Qu, D. Schonfeld, and M. Mohamed, "Distributed Bayesian multiple target tracking in crowded environments using multiple collaborative cameras," *EURASIP Journal on Applied Signal Processing*, Special Issue on Tracking in Video Sequences of Crowded Scenes, pp. 21-36, 2007.

- [29] W. Qu, D. Schonfeld, and M. Mohamed, "Real-time distributed multi-object tracking using multiple interactive trackers and a magnetic-inertia potential model," *IEEE Transactions on Multimedia*, vol. 9, pp. 511-519, 2007.
- [30] F.I. Bashir, A.A. Khokhar, and D. Schonfeld, "Object trajectory-based activity classification and recognition using hidden Markov models," *IEEE Transactions on Image Processing*, vol. 16, pp. 1912-1919, 2007.
- [31] N. Bouaynaya and D. Schonfeld, "Protein communication system: Evolution and genomic structure," *Algorithmica*, Special issue on Algorithmic Methodologies for Processing Protein Structures, Sequences and Networks, vol. 48, pp. 375-397, 2007.
- [32] W. Qu and D. Schonfeld, "Real-time decentralized articulated motion analysis and object tracking from videos," *IEEE Transactions on Image Processing*, vol. 16, pp. 2129-2138, 2007.
- [33] S. Liao, M. Dutta, D. Schonfeld, T. Yamanaka and M.A. Strosio, "Quantum dot blinking: relevance to physical limits for nanoscale optoelectronic device," *Journal of Computational Electronics*, 2008.
- [34] P. Pan and D. Schonfeld, "Image reconstruction and multi-dimensional field estimation from randomly scattered sensors," *IEEE Transactions on Image Processing*, vol. 17, pp. 94-99, 2008.
- [35] N. Bouaynaya, M. Charif-Chefchaoui and D. Schonfeld, "Theoretical foundations of spatially-variant mathematical morphology – Part I: Binary images," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 30, pp. 823-836, 2008.
- [36] N. Bouaynaya and D. Schonfeld, "Theoretical foundations of spatially-variant mathematical morphology – Part II: Gray-level images," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 30, pp. 837-850, 2008.
- [37] H. Hong and D. Schonfeld, "Maximum-entropy expectation-maximization algorithm for image reconstruction and sensor field estimation," *IEEE Transactions on Image Processing*, vol. 17, pp. 897-907, 2008.
- [38] N. Bouaynaya and D. Schonfeld, "Non-stationary analysis of coding and noncoding regions in nucleotide sequences," *IEEE Journal of Selected Topics in Signal Processing*, Special Issue on Genomic and Proteomic Signal Processing, vol. 2, pp. 357-364, 2008.
- [39] P. Pan and D. Schonfeld, "Dynamic proposal variance and optimal particle allocation in particle filtering for video tracking," *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 18, pp. 1268-1279, 2008.
- [40] W. Qu and D. Schonfeld, "Robust control-based object tracking," *IEEE Transactions on Image Processing*, vol. 17, pp. 1721-1726, 2008.
- [41] J. S. Zielinski, N. Bouaynaya, D. Schonfeld, and W. O'Neill, "Time-dependent ARMA modeling of genomic sequences," *BMC Bioinformatics*, vol. 9, 9 pages, 2008.
- [42] X. Ma, F. Bashir, A. Khokhar, and D. Schonfeld, "Event analysis based on multiple interactive motion trajectories," *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 19, pp. 397-406, 2009.

- [43] J. Yang, D. Schonfeld, and M. Mohamed, "Robust video stabilization based on particle filtering tracking of projected camera motion," *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 19, pp. 945-954, 2009.
- [44] N. Bouaynaya and D. Schonfeld, "Motion-based particle filtering for object tracking applications," *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 19, pp. 1068-1072, 2009.
- [45] X. Ma, D. Schonfeld, and A. Khokhar, "Video event classification and image segmentation based on non-causal multi-dimensional hidden Markov models," *IEEE Transactions on Image Processing*, vol. 18, pp. 1304-1313, 2009.
- [46] H. Hong and D. Schonfeld, "Attractive-repulsive expectation-maximization algorithm for density estimation," *IEEE Transactions on Image Processing*, vol. 18, pp. 2004-2011, 2009.
- [47] X. Chen, D. Schonfeld, and A. Khokhar, "Localization and trajectory estimation of mobile objects using minimum samples," *IEEE Transactions on Vehicular Technology*, vol. 58, pp. 4439-4446, 2009.
- [48] L. Wang and D. Schonfeld, "Mapping equivalence for symbolic sequences: Theory and applications," *IEEE Transactions on Signal Processing*, vol. 57, pp. 4895-4905, 2009.
- [49] J. Yang and D. Schonfeld, "Virtual focus and depth estimation from defocused video sequences," *IEEE Transactions on Image Processing*, vol. 19, pp. 668-679, 2010.
- [50] C. Chen and D. Schonfeld, "Pose estimation from multiple cameras based on Sylvester's equation," Special Issue on Multi-Camera and Multi-Modal Sensor Fusion, *Journal of Computer Vision and Image Understanding*, vol. 114, pp. 652-666, 2010.
- [51] C. Chen and D. Schonfeld, "A particle filtering framework for joint video tracking and pose estimation," *IEEE Transactions on Image Processing*, vol. 19, pp. 1625-1634, 2010.
- [52] L. Gong, N. Bouaynaya, and D. Schonfeld, "Information-theoretic model of evolution over protein communication channel," *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, vol. 8, pp. 143-151, 2011.
- [53] P. Pan and D. Schonfeld, "Visual tracking using high-order particle filtering," *IEEE Signal Processing Letters*, vol. 18, pp. 51-54, 2011.
- [54] N. Bouaynaya, R. Shterenberg, and D. Schonfeld, "Inverse perturbation for optimal intervention in gene regulatory networks," *Bioinformatics*, vol. 27, pp. 103-110, 2011.
- [55] P. Pan and D. Schonfeld, "Video tracking based on sequential particle filtering on graphs," *IEEE Transactions on Image Processing*, vol. 20, pp. 1641-1651, 2011.
- [56] N. Bouaynaya, R. Shterenberg, and D. Schonfeld, "Signal processing methods for optimal intervention in gene regulatory networks," *IEEE Signal Processing Magazine*, vol. 29, pp. 158-163, 2012.

- [57] N. Bouaynaya, M. Charif-Chefchaoui, and D. Schonfeld, "M-idempotent and self-dual morphological filters," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 34, pp. 805-813, 2012.
- [58] S. Zhao, D. Tuninetti, R. Ansari, and D. Schonfeld, "Multiple description coding over multiple correlated erasure channels," *European Transactions on Telecommunications*, 2012. DOI: 10.1002/ett.2507.
- [59] N. Bouaynaya, R. Shterenberg, and D. Schonfeld, "Optimal perturbation control of general topology molecular networks," *IEEE Transactions on Signal Processing*, vol. 61, pp. 1733-1742, 2013.
- [60] Q. Li, X. Shi, and D. Schonfeld, "Robust HOSVD-based higher-order data indexing and retrieval," *IEEE Signal Processing Letters*, vol. 20, pp. 984-987, 2013.
- [61] J. J. GadElkarim, O. Ajilore, D. Schonfeld, L. Zhan, P. M. Thomspson, J. D. Feusner, A. Kumar, L. L. Altshuler, and A. D. Leow, "Investigating brain community structure abnormalities in bipolar disorder using path length associated community estimation," *Human Brain Mapping*, vol. 35, pp. 2253-2264, 2014.
- [62] Q. Li, S. Friedlander, and D. Schonfeld, "Compressive sensing of sparse tensors," *IEEE Transactions on Image Processing*, vol. 23, pp. 4438-4447, 2014.
- [63] Q. Li and D. Schonfeld, "Multilinear discriminant analysis for higher-order tensor data classification," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, accepted.
- [64] X. Chen, D. Schonfeld, and A. Khokhar, "Robust closed-form tracking of moving targets using a single sensor with arbitrary noise degradation," *IEEE Transactions on Vehicular Technology*, submitted.
- [65] X. Ma, D. Schonfeld, and A. Khokhar, "Dynamic updating and downdating matrix SVD and tensor HOSVD for adaptive indexing and retrieval of motion trajectories," *IEEE Transactions on Image Processing*, submitted.
- [66] X. Chen, D. Schonfeld, and A. Khokhar, "Robust view-invariant null-space representation and sampling for classification and retrieval of video sequences," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, submitted.
- [67] X. Chen, D. Schonfeld, and A. Khokhar, "View-invariant tensor null space representation for classification and retrieval of multi-dimensional motion events," *IEEE Transactions on Multimedia*, submitted.
- [68] X. Chen, D. Schonfeld, and A. Khokhar, "Robust localized null space representation for view invariant dynamic video classification and retrieval," *IEEE Transactions on Image Processing*, submitted.
- [69] G. Friedman, D. Schonfeld, and N. Bouaynaya, "The impact of action costs on dynamic systems: Why is hysteresis ubiquitous in nature and technology?" *Proceedings of the IEEE*, submitted.
- [70] L. Gong and D. Schonfeld, "Space kernel analysis: A unified representation of kernel estimation," *IEEE Transactions on Signal Processing*, submitted.

- [71] X. Shi and D. Schonfeld, "Fast statistical methods for cross-correlation analysis in video classification and mining," *IEEE Transactions on Image Processing*, submitted.

N.6. Refereed Conference Papers

- [1] D. Schonfeld and J. Goutsias, "A fast algorithm for the morphological coding of binary images," *Proceedings of the SPIE Conference on Visual Communications and Image Processing*, vol. 1001, pp. 138-145, Cambridge, Massachusetts, 1988.
- [2] J. Goutsias and D. Schonfeld, "Image coding via morphological transformations: A general theory," *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition*, pp. 178-183, San Diego, California, 1989.
- [3] D. Schonfeld and J. Goutsias, "Parametric morphological filters for pattern restoration," *IEEE 6th Multidimensional Signal Processing Workshop*, pp. 188-189, Pacific Grove, California, 1989.
- [4] D. Schonfeld and J. Goutsias, "Optimal morphological filters for pattern restoration," *Proceedings of the SPIE Conference on Visual Communications and Image Processing*, vol. 1199, pp. 158-169, Philadelphia, Pennsylvania, 1989.
- [5] D. Schonfeld and J. Goutsias, "Robust morphological representation of binary images," *Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing*, vol. 4, pp. 2065-2068, Albuquerque, New Mexico, 1990.
- [6] A. Goshtasby and D. Schonfeld, "Signal processing based on a Gaussian decomposition," *Proceedings of the Conference on Information Sciences and Systems*, pp. 613-618, Baltimore, Maryland, 1991.
- [7] D. Schonfeld, "Morphological processing of medical images: An introduction," (**Invited Paper**), *Proceedings of the IEEE International Symposium on Circuits and Systems*, vol. 1, pp. 746-749, Singapore, 1991.
- [8] D. Schonfeld, "Discrete representation of continuous signals: The Huggins transform," *Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing*, vol. 5, pp. 5-8, San Francisco, California, 1992.
- [9] D. Schonfeld, "Optimal nonlinear pattern restoration from noisy binary images," *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition*, pp. 579-584, Champaign, Illinois, 1992.
- [10] M. Charif-Chefchaoui and D. Schonfeld, "Optimal morphological representation of binary images," *Proceedings of the SPIE Workshop on Image Algebra and Morphological Image Processing III*, vol. 1769, pp. 387-392, San Diego, California, 1992.
- [11] M. Charif-Chefchaoui and D. Schonfeld, "Morphological bounds on nonlinear filters," *Proceedings of the SPIE Conference on Visual Communications and Image Processing*, vol. 1818, pp. 414-425, Boston, Massachusetts, 1992.

- [12] M. Charif-Chefchaoui and D. Schonfeld, "Image coding via morphological transformations: A lossless approach," (**Invited Paper**), *Proceedings of the SPIE Optical Engineering Midwest Conference*, vol. 1778, pp. 182-186, Chicago, Illinois, 1992.
- [13] M. Charif-Chefchaoui and D. Schonfeld, "Convergence criteria for iterative nonlinear filters," (**Invited Paper**), *Proceedings of the IEEE International Conference on Systems, Man, and Cybernetics*, vol. 2, pp. 1580-1583, Chicago, Illinois, 1992.
- [14] M. Charif-Chefchaoui and D. Schonfeld, "Morphological bounds on order-statistics filters," *Proceedings of the SPIE Workshop on Image Algebra and Morphological Image Processing IV*, vol. 2030, pp. 24-32, San Diego, California, 1993.
- [15] D. Schonfeld, "Pattern estimation: A random set theory approach," (**Invited Paper**), *Proceedings of the Conference on Information Sciences and Systems*, pp. 217-222, Baltimore, Maryland, 1993.
- [16] M. Charif-Chefchaoui and D. Schonfeld, "Spatially-variant morphological skeleton representation," *Proceedings of the SPIE Workshop on Image Algebra and Morphological Image Processing V*, vol. 2300, pp. 290-299, San Diego, California, 1994.
- [17] M. Charif-Chefchaoui and D. Schonfeld, "Generalized morphological center: Self-duality," *Proceedings of the SPIE Workshop on Image Algebra and Morphological Image Processing V*, vol. 2300, pp. 300-304, San Diego, California, 1994.
- [18] D. Schonfeld, "Morphological pattern restoration: Optimal structuring elements," *Proceedings of the SPIE Conference on Visual Communications and Image Processing*, vol. 2308, pp. 88-96, Chicago, Illinois, 1994.
- [19] M. Charif-Chefchaoui and D. Schonfeld, "Generalized morphological center: Idempotence," *Proceedings of the SPIE Conference on Visual Communications and Image Processing*, vol. 2308, pp. 119-123, Chicago, Illinois, 1994.
- [20] M. Charif-Chefchaoui and D. Schonfeld, "Spatially-variant mathematical morphology," (**Invited Paper**), *Proceedings of the IEEE International Conference on Image Processing*, pp. 555-559, Austin, Texas, 1994.
- [21] D. Schonfeld and Yi Qiao, "A new stochastic projection-based image recovery method," *Proceedings of the IEEE International Conference on Image Processing*, pp. 466-469, Washington, D.C., 1995.
- [22] M. Charif-Chefchaoui, D. Schonfeld, and H.J.A.M. Heijmans, "Construction d'operateurs morphologiques auto-duaux et idempotents," *INPT/ASME International Conference on Communications, Signals and Systems*, pp. 32, Rabat, Morocco, 1995.
- [23] M. Charif-Chefchaoui and D. Schonfeld, "Generalized morphological center: Convergence," (**Invited Paper**), *Proceedings of the IEEE Workshop on Nonlinear Signal and Image Processing*, pp. 325-328, Neos Marmaras, Halkidiki, Greece, 1995.
- [24] D. Schonfeld, "Fast parallel nonlinear filtering based on the FFT," (**Invited Paper**), *International Conference on Digital Signal Processing*, pp. 338-341, Limassol, Cyprus, 1995.

- [25] D. Schonfeld, "Stochastic noise process enhancement of nonlinear filtering," (**Invited Paper**), *INPT/ASME International Conference on Communications, Signals and Systems*, pp. 39, Rabat, Morocco, 1995.
- [26] M. Charif-Chefchaoui and D. Schonfeld, "Spatially-Variant Mathematical Morphology: Minimal Basis Representation," *Mathematical Morphology and Its Applications to Image and Signal Processing*. P. Maragos, R.W. Schafer, and M.K. Butt, (ed.), pp. 49-56, Kluwer Academic Publishers: Boston, Massachusetts, 1996.
- [27] D. Schonfeld, "Weighted Composite Order-Statistics Filters: Optimal Morphological Pattern Recognition," *Mathematical Morphology and Its Applications to Image and Signal Processing*. P. Maragos, R.W. Schafer, and M.K. Butt, (ed.), pp. 163-170, Kluwer Academic Publishers: Boston, Massachusetts, 1996.
- [28] M. Choi, N.P. Galatsanos, and D. Schonfeld, "Image restoration-based template matching with application to motion estimation," *Proceedings of the SPIE International Conference on Visual Communications and Image Processing*, vol. 2727, pp. 375-386, Orlando, Florida, 1996.
- [29] M. Choi, N.P. Galatsanos, and D. Schonfeld, "On the relation of image restoration and template matching: Application to block-matching motion estimation," *Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing*, pp. 2112-2115, Atlanta, Georgia, 1996.
- [30] M. Choi, N.P. Galatsanos, and D. Schonfeld, "Image restoration based template-matching for multi-channel restoration of image sequences," *Proceedings of the Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, California, 1996.
- [31] D. Schonfeld and D. Lelescu, "VORTEX: Video retrieval and tracking from compressed multimedia databases," *Proceedings of the IEEE International Conference on Image Processing*, Compact Disk, pp. 1-5, Chicago, Illinois, 1998.
- [32] D. Schonfeld and D. Lelescu, "VORTEX: Video retrieval and tracking from compressed multimedia databases—template matching from MPEG-2 video compression standard," *Proceedings of the SPIE Conference on Multimedia Storage and Archiving Systems III*, Vol. 3527, pp. 233-244, Boston, Massachusetts, 1998.
- [33] D. Schonfeld and D. Lelescu, "VORTEX: Video retrieval and tracking from compressed multimedia databases—visual search engine," *Proceedings of the 32nd Annual Hawaii International Conference on System Sciences*, Personal Booklet, pp. 1-12, Maui, Hawaii, 1999.
- [34] D. Schonfeld and D. Lelescu, "VORTEX: Video retrieval and tracking from compressed multimedia databases—affine transformation and occlusion invariant tracking from MPEG-2 video," *Proceedings of the SPIE Conference on Storage and Retrieval for Image and Video Databases VII*, Vol. 3656, pp. 131-142, San Jose, California, 1999.
- [35] D. Lelescu and D. Schonfeld, "Real-time scene change detection on compressed multimedia bitstream based on statistical sequential analysis," *Proceedings of the IEEE International Conference on Multimedia and Expo*, pp. 1141-1144, New York, New York, 2000.

- [36] D. Schonfeld, "VORTEX: Video retrieval and tracking from compressed multimedia databases," (**Invited Paper**), *INPT/ASME International Conference on Communications, Signals and Systems*, pp. 3, Rabat, Morocco, 2001.
- [37] J. Leigh, O. Yu, D. Schonfeld, R. Ansari, et al., "Adaptive networking for tele-immersion," *Proc. Immersive Projection Technology/Eurographics Virtual Environments Workshop (IPT/EGVE)*, Stuttgart, Germany, 2001.
- [38] V. Pavlovic, D. Schonfeld, and G. Friedman, "Enhancement of Hopfield neural networks using stochastic noise processes," *IEEE International Workshop on Neural Networks for Signal Processing*, pp. 173-182, Falmouth, Massachusetts, 2001.
- [39] D. Lelescu and D. Schonfeld, "Video skimming and summarization based on principal component analysis," *Proceedings of the IFIP/IEEE International Conference on Management of Multimedia Networks and Services*, pp. 128-141, Chicago, Illinois, 2001.
- [40] F. Yassa and D. Schonfeld, "System on a chip with MPEG-4 capability," *Proceedings of the SPIE Conference on ITCOM: The Convergence of Information Technologies and Communications*, pp. 50-58, Boston, Massachusetts, 2002.
- [41] F. Yassa and D. Schonfeld, "A system-on-chip with MPEG-4 capabilities for wireless applications," (**Invited Paper**), *Proceedings of the SPIE Conference on Multimedia Systems and Applications*, Boston, Massachusetts, 2002.
- [42] E. Mulabegovic, D. Schonfeld, and R. Ansari, "Lightweight Streaming Protocol (LSP)," *ACM Multimedia Conference*, Juan Les Pins, France, 2002.
- [43] K. Hariharakrishnan, D. Schonfeld, P. Raffy, F. Yassa, "Object tracking using adaptive block matching," *Proceedings of the IEEE International Conference on Multimedia and Expo*, Baltimore, Maryland, 2003.
- [44] B. Cavusoglu, D. Schonfeld, and R. Ansari, "Real-time adaptive forward error correction for MPEG-2 video communications over RTP networks," *Proceedings of the IEEE International Conference on Multimedia and Expo*, Baltimore, Maryland, 2003.
- [45] K. Hariharakrishnan, D. Schonfeld, P. Raffy, F. Yassa, "Visual tracking using block matching," *Proceedings of the IEEE International Conference on Image Processing*, pp. 945-948, Barcelona, Spain, 2003.
- [46] F. Bashir, A. Khokhar, and D. Schonfeld, "Segmented trajectory based indexing and retrieval of video data," *Proceedings of the IEEE International Conference on Image Processing*, Barcelona, Spain, 2003.
- [47] B. Subhash, K. Hariharakrishnan, and D. Schonfeld, "Programmable inner-product enhanced associative processor array," *SPIE Proceedings of Electronic Imaging: Science and Technology. Conference on Embedded Processors for Multimedia and Communications*, Vol. 5309, pp. 22-29, San Jose, California, 2004.
- [48] F. Bashir, A. Khokhar, and D. Schonfeld, "A Hybrid System for Affine-Invariant Trajectory Retrieval," *Proceedings of the 6th ACM SIGMM International Workshop on Multimedia Information Retrieval*, New York, New York, 2004.

- [49] B. Subhash and D. Schonfeld, "New algorithm for computation of DCT through pyramidal addition," *SPIE Proceedings of Electronic Imaging: Science and Technology. Conference on Embedded Processors for Multimedia and Communications II*, San Jose, California, 2005.
- [50] N. Bouaynaya and D. Schonfeld, "Complete system for head tracking using motion-based particle filter and randomly perturbed active contour," (**Finalist for Best Student Paper Award**). *SPIE Proceedings of Electronic Imaging: Science and Technology. Conference on Image and Video Communications and Processing III*, San Jose, California, 2005.
- [51] W. Qu and D. Schonfeld, "Detection-based particle filtering for real-time multiple head tracking applications," *SPIE Proceedings of Electronic Imaging: Science and Technology. Conference on Image and Video Communications and Processing III*, San Jose, California, 2005.
- [52] N. Bouaynaya, W. Qu, and D. Schonfeld, "An online motion-based particle filter for head tracking applications," *Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing*, Philadelphia, Pennsylvania, 2005.
- [53] W. Qu, N. Bouaynaya, and D. Schonfeld, "Automatic multi-head detection and tracking system using a novel detection-based particle filter and data fusion," *Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing*, Philadelphia, Pennsylvania, 2005.
- [54] F. Bashir, A. Khokhar, and D. Schonfeld, "Automatic object trajectory-based motion recognition using Gaussian mixture models," *Proceedings of the IEEE International Conference on Multimedia and Expo*, Amsterdam, The Netherlands, 2005.
- [55] B. Cavusoglu, D. Schonfeld, and R. Ansari, "Real-time network-aware optimal rate control for video communication networks using an augmented state feedback controller," *Proceedings of the European Signal Processing Conference*, Antalya, Turkey, 2005.
- [56] W. Qu, F. Bashir, D. Graupe, A. Khokhar, and D. Schonfeld, "A motion-trajectory-based video retrieval system using parallel adaptive self-organizing maps," *Proceedings of the International Joint Conference on Neural Networks*, Montreal, Canada, 2005.
- [57] F. Bashir, W. Qu, A. Khokhar, and D. Schonfeld, "HMM-based motion recognition system using segmented PCA," *Proceedings of the IEEE International Conference on Image Processing*, Genova, Italy, 2005.
- [58] W. Qu, D. Schonfeld, and M. Mohamed, "Real-time interactively distributed multi-object tracking using a magnetic-inertia potential model," *Proceedings of the International Conference on Computer Vision*, Beijing, China, 2005.
- [59] W. Qu, D. Schonfeld, and M. Mohamed, "Parallel multiple target tracking using multiple cooperative trackers," *SPIE Proceedings of Electronic Imaging: Science and Technology. Conference on Visual Communications and Image Processing*, vol. 6077, pp. 0V1-0V8, San Jose, California, 2006.
- [60] N. Bouaynaya and D. Schonfeld, "Active surfaces for video tracking and 3D segmentation based on a new method for multidimensional optimization," *SPIE Proceedings of Electronic Imaging:*

Science and Technology. Conference on Visual Communications and Image Processing, vol. 6077, pp. 24-1-24-12, San Jose, California, 2006.

- [61] N. Bouaynaya and D. Schonfeld, "Spatially-variant morphological image processing: Theory and applications," (**Best Student Paper Award**). *SPIE Proceedings of Electronic Imaging: Science and Technology. Conference on Visual Communications and Image Processing*, vol. 6077, pp. 1Y1-1Y12, San Jose, California, 2006.
- [62] N. Balakrishnan and D. Schonfeld, "A maximum entropy kernel density estimator with applications to function interpolation and texture segmentation," *SPIE Proceedings of Electronic Imaging: Science and Technology. Conference on Computational Imaging IV*, San Jose, California, 2006.
- [63] N. Bouaynaya and D. Schonfeld, "Analysis of protein evolution as a communication system," *IEEE International Workshop on Genomic Signal Processing and Statistics*, College Station, Texas, 2006.
- [64] W. Qu and D. Schonfeld, "Efficient object tracking using control-based observer design," *IEEE International Conference on Multimedia and Expo*, Toronto, Ontario, Canada, 2006.
- [65] W. Qu, D. Schonfeld, and M. Mohamed, "Decentralized multiple camera multiple object tracking," *IEEE International Conference on Multimedia and Expo*, Toronto, Ontario, Canada, 2006.
- [66] P. Pan and D. Schonfeld, "Power-aware particle filtering for video tracking," *IEEE International Conference on Multimedia and Expo*, Toronto, Ontario, Canada, 2006.
- [67] X. Ma, F. Bashir, A. Khokhar, and D. Schonfeld, "Tensor-based multiple object trajectory indexing and retrieval," *IEEE International Conference on Multimedia and Expo*, Toronto, Ontario, Canada, 2006.
- [68] A. De Mauro, D. Schonfeld and C. Casetti, "A peer-to-peer overlay network for real-time video communication using multiple paths," *IEEE International Conference on Multimedia and Expo*, Toronto, Ontario, Canada, 2006.
- [69] N. Bouaynaya and D. Schonfeld, "Biological evolution: Distribution and convergence analysis of amino acids," *IEEE International Conference of the Engineering in Medicine and Biology Society*, New York, New York, 2006.
- [70] N. Bouaynaya and D. Schonfeld, "The genomic structure: Proof of the role of non-coding DNA," *IEEE International Conference of the Engineering in Medicine and Biology Society*, New York, New York, 2006.
- [71] W. Qu and D. Schonfeld, "Robust kernel-based tracking using optimal control," (**Best Student Paper Award**). *IEEE International Conference on Image Processing*, Atlanta, Georgia, 2006.
- [72] P. Pan and D. Schonfeld, "Adaptive particle-distortion tradeoff control in particle filtering for video tracking," *IEEE International Conference on Image Processing*, Atlanta, Georgia, 2006.
- [73] J. Yang, D. Schonfeld, C. Chen and M. Mohamed, "Online video stabilization based on particle filters," *IEEE International Conference on Image Processing*, Atlanta, Georgia, 2006.

- [74] C. Rossi, C. Casetti, M. Fiore and D. Schonfeld, "A partially reliable transport protocol for multiple-description real-time multimedia traffic," *IEEE International Conference on Image Processing*, Atlanta, Georgia, 2006.
- [75] C. Chen, J. Yang, D. Schonfeld, and M. Mohamed, "Pose estimation from video sequences based on Sylvester's equation," *SPIE Proceedings of Electronic Imaging: Science and Technology. Conference on Visual Communications and Image Processing*, San Jose, California, 2007.
- [76] H. Hong and D. Schonfeld, "Maximum-entropy expectation-maximization algorithm for image processing and sensor networks," *SPIE Proceedings of Electronic Imaging: Science and Technology. Conference on Visual Communications and Image Processing*, San Jose, California, 2007.
- [77] W. Qu and D. Schonfeld, "Bayesian distributed articulated object tracking using multiple collaborative trackers," (**Invited Paper**), *SPIE Proceedings of Electronic Imaging: Science and Technology. Conference on Visual Communications and Image Processing*, San Jose, California, 2007.
- [78] X. Shi and D. Schonfeld, "Video classification and mining based on statistical methods for cross-correlation analysis," *IEEE Statistical Signal Processing Workshop*, Madison, Wisconsin, 2007.
- [79] P. Pan and D. Schonfeld, "Multi-dimensional image reconstruction and field estimation from randomly scattered sensors," *IEEE Statistical Signal Processing Workshop*, Madison, Wisconsin, 2007.
- [80] X. Chen, D. Schonfeld, and A. Khokhar, "Localization and trajectory estimation of mobile objects with a single sensor," *IEEE Statistical Signal Processing Workshop*, Madison, Wisconsin, 2007.
- [81] N. Bouaynaya and D. Schonfeld, "Non-stationary analysis of genomic sequences," *IEEE Statistical Signal Processing Workshop*, Madison, Wisconsin, 2007.
- [82] L. Gong, N. Bouaynaya, and D. Schonfeld, "Information-theoretic bounds of evolutionary processes modeled as a protein communication system," (**Invited Paper**), *IEEE Statistical Signal Processing Workshop*, Madison, Wisconsin, 2007.
- [83] X. Ma, D. Schonfeld, and A. Khokhar, "A general two-dimensional hidden Markov model and its application in image classification," *IEEE International Conference on Image Processing*, San Antonio, Texas, 2007.
- [84] J. Yang, D. Schonfeld, and M. Mohamed, "Robust focused image estimation from multiple images in video sequences," (**Best Student Paper Award**). *IEEE International Conference on Image Processing*, San Antonio, Texas, 2007.
- [85] P. Pan and D. Schonfeld, "Optimal particle allocation in particle filtering for multiple object tracking," *IEEE International Conference on Image Processing*, San Antonio, Texas, 2007.
- [86] W. Qu, D. Schonfeld, and M. Mohamed, "A Distributed Architecture for Collaborative Real-Time Video Tracking," *IEEE International Conference on Systems, Man, and Cybernetics*, Montreal, Canada, 2007.

- [87] C. Chen, D. Schonfeld, and M. Mohamed, "Distributed pose estimation from multiple views," *SPIE Proceedings of Electronic Imaging: Science and Technology. Conference on Visual Communications and Image Processing*, San Jose, California, 2008.
- [88] H. Hong and D. Schonfeld, "Attraction-repulsion expectation maximization algorithm for image processing and sensor field networks," *SPIE Proceedings of Electronic Imaging: Science and Technology. Conference on Visual Communications and Image Processing*, San Jose, California, 2008.
- [89] X. Ma, D. Schonfeld, and A. Khokhar, "Image segmentation and classification based on a 2D distributed hidden Markov model," *SPIE Proceedings of Electronic Imaging: Science and Technology. Conference on Visual Communications and Image Processing*, San Jose, California, 2008.
- [90] P. Pan and D. Schonfeld, "Resource management in particle filtering for multiple object tracking," *SPIE Proceedings of Electronic Imaging: Science and Technology. Conference on Visual Communications and Image Processing*, San Jose, California, 2008.
- [91] J. Yang, D. Schonfeld, and M. Mohamed, "Focused video estimation from defocused video sequences," *SPIE Proceedings of Electronic Imaging: Science and Technology. Conference on Visual Communications and Image Processing*, San Jose, California, 2008.
- [92] X. Ma, D. Schonfeld, and A. Khokhar, "Distributed multidimensional hidden Markov model: theory and application in multiple-object trajectory classification and recognition," *SPIE Proceedings of Electronic Imaging: Science and Technology. Conference on Multimedia Content Access: Algorithms and Systems*, San Jose, California, 2008.
- [72] J. S. Zielinski, N. Bouaynaya, D. Schonfeld, and W. O'Neill, "Time-dependent ARMA modeling of genomic sequences," *Proceedings of the Fifth Annual MidSouth Computational Biology and Bioinformatics Society (MCBIOS) Conference, Systems Biology: Bridging the Omics*, Oklahoma City, Oklahoma, 2008.
- [93] S. Zhao, D. Tuninetti, R. Ansari, and D. Schonfeld, "Multiple description coding over erasure channels," *IEEE International Conference on Communications*, Beijing, China, 2008.
- [94] X. Ma, D. Schonfeld, and A. Khokhar, "Distributed multi-dimensional hidden Markov models for image and trajectory-based video classification," *IEEE International Conference on Acoustics, Speech, and Signal Processing*, Las Vegas, Nevada, 2008.
- [95] H. Hong and D. Schonfeld, "A new approach to constrained expectation-maximization for density estimation," *IEEE International Conference on Acoustics, Speech, and Signal Processing*, Las Vegas, Nevada, 2008.
- [96] C. Chen, D. Schonfeld, and M. Mohamed, "Robust pose estimation based on Sylvester's equation: Single and multiple collaborative cameras," *IEEE International Conference on Acoustics, Speech, and Signal Processing*, Las Vegas, Nevada, 2008.
- [97] P. Pan and D. Schonfeld, "Adaptive resource allocation in particle filtering for articulated object tracking," *IEEE International Conference on Acoustics, Speech, and Signal Processing*, Las Vegas, Nevada, 2008.

- [98] E. Ustunel, X. Chen, D. Schonfeld, and A. Khokhar, "Null-space representation for view-invariant motion trajectory classification-recognition and indexing-retrieval," *IEEE International Conference on Acoustics, Speech, and Signal Processing*, Las Vegas, Nevada, 2008.
- [99] S. Zhao, D. Tuninetti, R. Ansari, and D. Schonfeld, "Multiple description coding over correlated multipath erasure channels," *IEEE International Conference on Acoustics, Speech, and Signal Processing*, Las Vegas, Nevada, 2008.
- [100] N. Bouaynaya and D. Schonfeld, "Emergence of new structure from non-stationary analysis of genomic sequences," *IEEE International Workshop on Genomic Signal Processing and Statistics*, Phoenix, Arizona, 2008.
- [101] X. Chen, D. Schonfeld, and A. Khokhar, "Robust null space representation and sampling for view invariant motion trajectory analysis," *IEEE Conference on Computer Vision and Pattern Recognition*, Anchorage, Alaska, 2008.
- [102] X. Chen, D. Schonfeld, and A. Khokhar, "Robust closed-form localization of mobile targets using a single sensor based on a non-linear measurement model," *IEEE Workshop on Signal Processing Advances in Wireless Communications*, Recife, Pernambuco, Brazil, 2008.
- [103] X. Chen, D. Schonfeld, and A. Khokhar, "Robust multi-dimensional null space representation for image retrieval and classification," *IEEE Conference on Image Processing*, San Diego, California, 2008.
- [104] P. Pan and D. Schonfeld, "Visual tracking using high-order Monte Carlo Markov Chain," *IEEE Conference on Image Processing*, San Diego, California, 2008.
- [105] L. Gao, G. Mittal, D. Zaretsky, D. Schonfeld, and P. Banerjee, "A software pipelining algorithm in high-level synthesis for FPGA architectures," *International Symposium and Exhibits on Quality Electronic Design*, San Jose, California, 2009.
- [106] X. Chen, D. Schonfeld, and A. Khokhar, "View-invariant tensor null space representation for multiple motion trajectory retrieval and classification," (**Invited Paper**), *IEEE International Conference on Acoustics, Speech, and Signal Processing*, Taipei, Taiwan, 2009.
- [107] L. Gong and D. Schonfeld, "Space kernel analysis," *IEEE International Conference on Acoustics, Speech, and Signal Processing*, Taipei, Taiwan, 2009.
- [108] X. Ma, D. Schonfeld, and A. Khokhar, "Dynamic updating and downdating matrix SVD and tensor HOSVD for adaptive indexing and retrieval of motion trajectories," *IEEE International Conference on Acoustics, Speech, and Signal Processing*, Taipei, Taiwan, 2009.
- [109] P. Pan, F. Porikli, and D. Schonfeld, "A new method for tracking performance evaluation based on a reflective model and perturbation analysis," *IEEE International Conference on Acoustics, Speech, and Signal Processing*, Taipei, Taiwan, 2009.
- [110] D. Tuninetti, S. Zhao, R. Ansari, and D. Schonfeld, "The effect of fading correlation on average source MMSE distortion," *IEEE International Conference on Communications*, Dresden, Germany, 2009.

- [111] L. Gao, G. Mittal, D. Zaretsky, D. Schonfeld, and P. Banerjee, "An automated algorithm to generate stream programs," *IEEE International Symposium on Circuits and Systems*, Taipei, Taiwan, 2009.
- [112] N. Bouaynaya, D. Schonfeld, and R. Nagarajan, "Analysis of temporal gene expression profiles using time-dependent MUSIC algorithm," *IEEE International Workshop on Genomic Signal Processing and Statistics*, Minneapolis, Minnesota, 2009.
- [113] L. Wang and D. Schonfeld, "Consistency in Representation and Transformation of Genomic Sequences," *IEEE International Workshop on Genomic Signal Processing and Statistics*, Minneapolis, Minnesota, 2009.
- [114] P. Pan, F. Porikli, and D. Schonfeld, "Recurrent Tracking using Multifold Consistency," *IEEE International Workshop on Performance Evaluation of Tracking and Surveillance*, Miami, Florida, 2009.
- [115] S. Zhao, D. Tuninetti, R. Ansari, and D. Schonfeld, "Distortion exponent for multiple description coding," *Allerton Conference on Communication, Control, and Computing*, Monticello, Illinois, 2009.
- [116] L. Gao, G. Mittal, D. Zaretsky, D. Schonfeld, and P. Banerjee, "Automatically generating streaming architectures from ordinary programs," *IASTED International Conference on Parallel and Distributed Computing and Systems*, Cambridge, Massachusetts, 2009.
- [117] N. Bouaynaya and D. Schonfeld, "Adaptive mathematical morphology: A unified representation theory," *IEEE Conference on Image Processing*, Cairo, Egypt, 2009.
- [118] C. Chen and D. Schonfeld, "Geometrical plenoptic sampling," *IEEE Conference on Image Processing*, Cairo, Egypt, 2009.
- [119] C. Chen and D. Schonfeld, "Robust 3D pose estimation from multiple video cameras," *IEEE Conference on Image Processing*, Cairo, Egypt, 2009.
- [120] X. Chen, D. Schonfeld, and A. Khokhar, "Localized null space representation for dynamic updating and dwn dating in image and video databases," *IEEE Conference on Image Processing*, Cairo, Egypt, 2009.
- [121] X. Ma, A. Khokhar, and D. Schonfeld, "Robust video mining based on local similarity alignment of motion trajectories," *IEEE Conference on Image Processing*, Cairo, Egypt, 2009.
- [122] P. Pan and D. Schonfeld, "Sequential particle filtering for conditional density propagation on graphs," *IEEE Conference on Image Processing*, Cairo, Egypt, 2009.
- [123] J. Yang and D. Schonfeld, "New results on performance analysis of super-resolution image reconstruction," *IEEE Conference on Image Processing*, Cairo, Egypt, 2009.
- [124] X. Chen, D. Schonfeld, and A. Khokhar, "Non-linear kernel space invariant representation for view-invariant motion trajectory retrieval and classification," *IEEE International Conference on Acoustics, Speech, and Signal Processing*, Dallas, Texas, 2010.

- [125] L. Gong and D. Schonfeld, "Learning from high-dimensional noisy data via projections onto multi-dimensional ellipsoids," *IEEE International Conference on Acoustics, Speech, and Signal Processing*, Dallas, Texas, 2010.
- [126] X. Shi, D. Schonfeld, and D. Tuninetti, "Message error analysis of loopy belief propagation," *IEEE International Conference on Acoustics, Speech, and Signal Processing*, Dallas, Texas, 2010.
- [127] L. Wang and D. Schonfeld, "Game theoretic model for control of gene regulatory networks," *IEEE International Conference on Acoustics, Speech, and Signal Processing*, Dallas, Texas, 2010.
- [128] J. Zielinski, N. Bouaynaya, and D. Schonfeld, "Two-Dimensional ARMA Modeling for Breast Cancer Detection and Classification," *International Conference on Signal Processing and Communications*, Bangalore, India, 2010.
- [129] X. Chen, D. Schonfeld, and A. Khokhar, "Bilinear Invariant Representation for Video Classification and Retrieval," *IEEE International Conference on Image Processing*, Honk Kong, 2010.
- [130] L. Gao, D. Zaretsky, G. Mittal, D. Schonfeld, and P. Banerjee, "Automatic Generation of Stream Descriptors for Streaming Architectures," *International Conference on Parallel Processing*, San Diego, California, 2010.
- [131] C. Giulietti, D. Schonfeld, and R. Ansari, "A Novel Cache Optimization Algorithm and Protocol for Video Streaming in Pure Peer-to-Peer Networks," (**Best Paper Award**). *ACM Multimedia Workshop on Advanced Video Streaming Techniques for Peer-to-Peer Networks and Social Networking*, Firenze, Italy, 2010.
- [132] N. Bouaynaya, R. Shterenberg, and D. Schonfeld, "Optimal perturbation control of gene regulatory networks," *IEEE International Workshop on Genomic Signal Processing and Statistics*, Cold Spring Harbor, New York, 2010.
- [133] L. Wang and D. Schonfeld, "Dynamics, stability and consistency in representation of genomic sequences," *IEEE International Workshop on Genomic Signal Processing and Statistics*, Cold Spring Harbor, New York, 2010.
- [134] J. Huang and D. Schonfeld, "Particle filtering with missing frames and its application to video tracking over lossy networks," *SPIE Proceedings of Electronic Imaging: Science and Technology. Conference on Visual Information Processing and Communication*, San Francisco, California, 2011.
- [135] Q. Li, X. Shi, and D. Schonfeld, "Robust HOSVD-based multi-camera motion trajectory indexing and retrieval," *SPIE Proceedings of Electronic Imaging: Science and Technology. Conference on Visual Information Processing and Communication*, San Francisco, California, 2011.
- [136] J. Huang and D. Schonfeld, "Graph-based sequential particle filtering in lossy network: Single and multiple collaborative cameras," *IEEE International Conference on Acoustics, Speech, and Signal Processing*, Prague, Czech Republic, 2011.
- [137] Q. Li, X. Shi, and D. Schonfeld, "A general framework for robust HOSVD-based indexing and retrieval with high-order tensor data," *IEEE International Conference on Acoustics, Speech, and Signal Processing*, Prague, Czech Republic, 2011.

- [138] L. Wang, V. Krishnamurthy, and D. Schonfeld, "Factor graph-based structural equilibria in dynamical games," *IEEE International Conference on Acoustics, Speech, and Signal Processing*, Prague, Czech Republic, 2011.
- [139] N. Bouaynaya, R. Shterenberg, and D. Schonfeld, "Robustness of inverse perturbation for discrete event control," *IEEE International Conference of the Engineering in Medicine and Biology Society*, Boston, Massachusetts, 2011.
- [140] N. Bouaynaya, M. Rasheed, R. Shterenberg, and D. Schonfeld, "Intervention in general topology gene regulatory networks," *IEEE International Workshop on Genomic Signal Processing and Statistics*, Boston, Massachusetts, 2011.
- [141] L. Wang and D. Schonfeld, "Stability of an iterative dynamical system," *American Control Conference*, Montréal, Canada, 2012.
- [142] J. Huang and D. Schonfeld, "Graph-based sequential particle filtering framework for articulated motion analysis," *IEEE International Conference on Multimedia and Expo (ICME)*, Melbourne, Australia, 2012.
- [143] G. Rasool, N. Bouaynaya, H. Fathallah-Shaykh, and D. Schonfeld, "Inference of genetic regulatory networks using regularized likelihood with covariance estimation," *IEEE Statistical Signal Processing Workshop*, Ann Arbor, Michigan, 2012.
- [144] L. Wang, N. Piotta, and D. Schonfeld, "Boosting quantization for Lp norm distortion measure," *IEEE Statistical Signal Processing Workshop*, Ann Arbor, Michigan, 2012.
- [145] L. Wang and D. Schonfeld, "Mapping equivalence under iterative dynamics for symbolic sequences," *IEEE Statistical Signal Processing Workshop*, Ann Arbor, Michigan, 2012.
- [146] J. Huang, D. Schonfeld, and V. Krishnamurthy, "Complex trajectory classification based on a new context-sensitive grammar learning algorithm," *IEEE International Conference on Image Processing (ICIP)*, Orlando, Florida, 2012.
- [147] J. J. GadElkarim, D. Schonfeld, O. Ajilore, L. Zhan, A. Zhang, J.D. Feusner, P. M. Thompson, T. J. Simon, A. Kumar, and A. D. Leow, "A framework for quantifying node-level community structure group differences in brain connectivity networks," *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, Nice, France, 2012.
- [148] J. Huang, D. Schonfeld, and V. Krishnamurthy, "A new context-sensitive grammars learning algorithm and its application in trajectory classification," *Visual Communications and Image Processing (VCIP)*, San Diego, California, 2012.
- [149] J. Huang and D. Schonfeld, "A novel particle filtering framework for 2D-TO-3D conversion from a monoscopic 2D image sequence," *Visual Communications and Image Processing (VCIP)*, San Diego, California, 2012.
- [150] J. Huang, L. Wang, and D. Schonfeld, "Compressed-sensing game theory (CSGT): A novel polynomial complexity solution to Nash equilibria in dynamical games," *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Vancouver, British Columbia, Canada, 2013.

- [151] H. Wang, N. Bouaynaya, R. Shterenberg, and D. Schonfeld, "Sparse biologically-constrained optimal perturbation of gene regulatory networks," *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Vancouver, British Columbia, Canada, 2013.
- [152] Q. Li, D. Schonfeld, and S. Friedland, "Generalized tensor compressive sensing," *IEEE International Conference on Multimedia and Expo (ICME)*, San Jose, California, 2013.
- [153] Q. Li and D. Schonfeld, "General stereoscopic distortion rectification due to arbitrary viewer motion in binocular stereoscopic display," *SPIE Proceedings of Electronic Imaging: Science and Technology. Conference on Stereoscopic Displays and Applications*, San Francisco, California, 2014.
- [154] L. Sha, D. Schonfeld, and Q. Li, "Parallax multi-viewer auto-stereoscopic three-dimensional display," *SPIE Proceedings of Electronic Imaging: Science and Technology. Conference on Stereoscopic Displays and Applications*, San Francisco, California, 2014.

N.7. Presentations

- [1] N. Bouaynaya and D. Schonfeld, "Protein communication channel: Analysis of proteomics and genomics based on signal processing and communication," *The Fourth Annual Chicago Biomedical Consortium Symposium*, Chicago, Illinois, 2006.
- [2] N. Bouaynaya and D. Schonfeld, "Protein communication channel: Analysis of proteomics and genomics based on signal processing and communication," *Biomedical Informatics Workshop*, Chicago, Illinois, 2006.
- [3] M. Dutta, D. Schonfeld, S. Liao, and M. Stroschio, "Quantum Dot Blinking: Physical Limit for Nanoscale Optoelectronic Device," *International Workshop of Computational Electronics*, Amherst, Massachusetts, 2007.
- [4] C. Chen and D. Schonfeld, "Spectral analysis of unstructured plenoptic sampling," *Illinois Computer Vision Workshop*, Toyota Technological Institute at Chicago, Chicago, Illinois, 2009.
- [5] S. Zhao, D. Tuninetti, R. Ansari, and D. Schonfeld, "On the distortion exponent of block-fading Gaussian channels," *Proceedings of the Information Theory and Applications Workshop*, San Diego, California, 2010.
- [6] N. Bouaynaya and D. Schonfeld, "Inverse perturbation for optimal intervention in genetic regulatory networks," *Institute for Mathematics and its Applications (IMA) Workshop on Large Data Sets in Medical Informatics*, Minneapolis, Minnesota, 2011.
- [7] N. Bouaynaya and D. Schonfeld, "Intervention and control of large-scale gene regulatory networks," *Institute for Mathematics and its Applications (IMA) Workshop on Large Data Sets in Medical Informatics*, Minneapolis, Minnesota, 2011.
- [8] J. J. GadElkarim, D. Schonfeld, O. Adjilore, A. Kumar, P. M. Thompson, and A. D. Leow, "Partition the human brain with binary trees using simulated annealing," *Annual Meeting of the Organization for Human Brain Mapping (OHBM)*, Beijing, China, 2012.

- [9] Q. Li, D. Schonfeld, and S. Friedland, “Generalized tensor compressive sensing,” *Matheon-Workshop Compressed sensing and its Applications*, (Invited Lecture), Berlin, Germany, 2013.

N.8. Patents

- [1] D. Schonfeld, K. Hariharakrishnan, P. Raffy, and F. Yassa, “Object tracking using adaptive block-size matching along object-boundary and frame skipping when object motion is low,” U.S. Patent No. 7095786, Patent Issued August 28, 2006.
- [2] D. Schonfeld, K. Hariharakrishnan, P. Raffy, and F. Yassa, “Occlusion/disocclusion detection using K-means clustering near object boundary with comparison of average motion of clusters to object and background motions,” U.S. Patent No. 7142600, Patent Issued November 28, 2006.
- [3] W. Qu, D. Schonfeld, and M. Mohamed, “Method and Apparatus to Disambiguate State Information for Multiple Items Tracking,” Patent Application, Filed October 13, 2006.
- [4] W. Qu, D. Schonfeld, and M. Mohamed, “Method and Apparatus to facilitate use of conditional probabilistic analysis of multi-point-of-reference samples of an item to disambiguate state information as pertains to the item,” Patent Application, Filed December 15, 2006.
- [5] D. Schonfeld and N. Bouaynaya, “Dynamic tree programming – Extension of the Viterbi algorithm to multidimensional systems,” Provisional Patent, Filed February 19, 2006.
- [6] D. Schonfeld, K. Hariharakrishnan, P. Raffy, and F. Yassa, “Object tracking using adaptive block-size matching along object-boundary and frame skipping when object motion is low,” Patent Application 12/324,481, Filed November 26, 2008.
- [7] D. Schonfeld, K. Hariharakrishnan, P. Raffy, and F. Yassa, “Occlusion/disocclusion detection using K-means clustering near object boundary with comparison of average motion of clusters to object and background motions,” U.S. Patent No. RE42790 E, Patent Issued October 4, 2011.

O. KEYNOTE AND PLENARY TALKS

Stochastic noise process enhancement of nonlinear filtering

INPT/ASME International Conference on Communications, Signals and Systems

Rabat, Morocco

1995

VORTEX: Video Retrieval and Tracking from Compressed Multimedia Databases

INPT/ASME International Conference on Communications, Signals and Systems

Rabat, Morocco

2001

MotionSearch: Content-Based Video Retrieval and Activity Recognition in Video Surveillance

IEEE International Conference on Advanced Video and Signal Based Surveillance (AVSS)

Genoa, Italy

2009

Distributed Multi-Camera Networks: Graphical Models, Tensor Representation, and Plenoptic Functions

IEEE International Conference on Networking, Sensing, and Control (ICNSC)
Chicago, Illinois
2010

Signal Processing for Distributed Multi-Camera Networks: Theory and Applications

IEEE/IET International Conference on Audio, Language and Image Processing (ICALIP)
Shanghai, China
2010

The Visual Brain: Biologically-Inspired Imaging and Vision

International Conference on Intelligent Control and Information Processing (ICICIP)
International Conference on Brain Inspired Cognitive Systems (BICS)
Beijing, China
2013

P. INVITED SEMINARS

Optimal morphological representation and detection of binary images

Department of Electrical Engineering and Computer Science
Northeastern University
Boston, Massachusetts
1990

Optimal morphological representation and detection of binary images

The Johns Hopkins University
Applied Physics Laboratory
Laural, Maryland
1990

Optimal morphological representation and detection of binary images

Center for Automation Research
University of Maryland
College Park, Maryland
1990

Optimal morphological representation and restoration of binary images: Theory and applications

Department of Electrical and Computer Engineering
Illinois Institute of Technology
Chicago, Illinois
1990

Optimal morphological representation and restoration of binary images: Theory and applications

Department of Electrical and Computer Engineering
University of California
Santa Barbara, California

1990

Optimal morphological representation and restoration of binary images: Theory and applications

Department of Electrical Engineering and Computer Science
Northwestern University
Evanston, Illinois
1991

Morphological image processing and analysis: Theory and applications

Department of Electrical and Computer Engineering
University of Illinois
Urbana-Champaign, Illinois
1992

Morphological image representation: Theory and applications

DOD Tri-Service Workshop on Stochastic Methods in Image Analysis
U.S. Army Harry Diamond Laboratories
Adelphi, Maryland
1992

Morphological representation of nonlinear filters: Theory and applications

Department of Electrical and Computer Engineering
Illinois Institute of Technology
Chicago, Illinois
1993

Morphological image representation: Theory and applications

ONR Workshop on Vision and Optical Information Processing
Arlington, Virginia
1994

Nonlinear Signal and Image Processing

Department of Electrical Engineering and Computer Science
University of Illinois
Chicago, Illinois
1996

Nonlinear Operators: Theory and Application to Image Processing and Communications

School of Electrical and Computer Engineering
Technion – Israel Institute of Technology
Haifa, Israel
1996

Stochastic Noise Process Enhancement of Nonlinear Filtering

Department of Electrical Engineering
Northern Illinois University
DeKalb, Illinois
1996

Morphological Signal and Image Processing: Theory and Applications

Department of Electrical Engineering—Systems
University of Tel-Aviv
Tel-Aviv, Israel
1997

VORTEX: Video Retrieval and Tracking from Compressed Multimedia Databases

Department of Electrical and Computer Engineering
Illinois Institute of Technology
Chicago, Illinois
2001

Mathematical Morphology and Computer Vision

University of Illinois at Chicago
Chicago, Illinois
2002

VORTEX: Video Retrieval and Tracking from Compressed Multimedia Databases

Department of Electrical and Computer Engineering
Drexel University
Philadelphia, Pennsylvania
2002

**Time-Series Analysis Based on Statistical Signal Processing:
Segmentation, Prediction, and Tracking**

Global Electronic Trading Company (Getco)
Chicago, Illinois
2004

Particle Filtering for Head Tracking in Wireless Communications

Motorola Research Labs
Schaumburg, Illinois
2004

Real-Time Video Communications: Compression, Tracking, Retrieval, and Networking

University of Illinois
Chicago, Illinois
2005

Real-Time Video Tracking and Retrieval from Multimedia Databases

Motorola Research Labs
Schaumburg, Illinois
2005

**Real-Time Multiple Object Tracking and Motion Trajectory-Based Video Databases:
Indexing, Retrieval, and Activity Recognition**

Hewlett-Packard Research Labs
Haifa, Israel
2005

Real-Time Video Tracking Based on Particle Filtering

University of Illinois

Chicago, Illinois
2005

Real-Time Collaborative Distributed Tracking and Trajectory Analysis from Multiple Camera and Sensor Networks

School of Electrical and Computer Engineering
Purdue University
West Lafayette, Indiana
2005

A New Method for Multidimensional Optimization and Its Application in Image and Video Processing

Department of Electrical Engineering and Computer Science
Northwestern University
Evanston, Illinois
2006

Protein Communication System: Evolution and Genomic Structure

Department of Electrical and Computer Engineering
University of Illinois at Urbana-Champaign
Urbana-Champaign, Illinois
2006

Protein Communication System: Evolution and Genomic Structure

Bioinformatics Group
Mathematics and Computer Science Division
Argonne National Laboratory
Argonne, Illinois
2006

**Distributed Image and Video Processing:
Directed Graphs, Bayesian Estimation, and Hidden Markov Models**

College of Information Science and Engineering
Graduate School
Chinese Academy of Science
Beijing, P.R. China
2007

**Distributed Image and Video Processing:
Directed Graphs, Bayesian Estimation, and Hidden Markov Models**

Visual Computing Group
Microsoft Research Asia
Beijing, P.R. China
2007

**Distributed Image and Video Processing:
Directed Graphs, Bayesian Estimation, and Hidden Markov Models**

School of Electronic and Information Institute
Tongji University
Shanghai, P.R. China
2007

**Distributed Image and Video Processing:
Directed Graphs, Bayesian Estimation, and Hidden Markov Models**
School of Automation
Institute of Automation
Hangzhou Dianzi University
Hangzhou, P.R. China
2007

**Distributed Image and Video Processing:
Directed Graphs, Bayesian Estimation, and Hidden Markov Models**
Department of Information Science and Electronic Engineering
Institute of Information and Communication Systems
Zhejiang University
Hangzhou, P.R. China
2007

Interactive Vision: Distributed Image and Video Processing
Intellectual Property Technical Lecture Series
McAndrews, Held & Malloy, Ltd.
Chicago, Illinois
2007

**Distributed Image and Video Processing:
Directed Graphs, Bayesian Estimation, and Hidden Markov Models**
Departments of Computer Science and Electrical & Computer Engineering
Technion, Israel Institute of Technology
Haifa, Israel
2007

MotionSearch: Content-Based Video Retrieval and Classification
Joint Chapters of the IEEE
Rochester, New York
2008

Evolution and Genomic Structure: A Signal Processing Perspective
Bioinformatics Cluster
University of Rochester
Rochester, New York
2008

Evolution and Genomic Structure: A Signal Processing Perspective
Department of Electrical Engineering
Columbia University
New York, New York
2008

Evolution and Genomic Structure: A Signal Processing Perspective
Department of Electrical Engineering and Computer Science
Northwestern University
Evanston, Illinois

2008

MotionSearch: Content-Based Video Retrieval and Classification

Distinguished Speaker in the Joint College Colloquium Series
College of Engineering and Information Technology and College of Science and Mathematics
Department of Applied Science
University of Arkansas at Little Rock
Little Rock, Arkansas
2008

Evolution and Genomic Structure: A Signal Processing Perspective

Department of Electrical and Computer Engineering
University of Wisconsin – Madison
Madison, Wisconsin
2008

MotionSearch: Content-Based Video Retrieval and Classification

Department of Electrical & Computer Engineering
Tufts University
Medford, Massachusetts
2009

MotionSearch: Content-Based Video Retrieval and Classification

Department of Electrical & Microelectronics Engineering
Rochester Institute of Technology
Rochester, New York
2009

MotionSearch: Content-Based Video Retrieval and Classification

School of Computer Engineering
Nanyang Technological University
Singapore
2009

**Distributed Multi-Camera Networks: Graphical Models, Tensor Representation,
and Plenoptic Functions**

Department of Electrical and Computer Engineering
Illinois Institute of Technology
Chicago, Illinois
2010

**Personalized Visual Interaction: Robust Video-Conferencing and
Human-Computer Interaction Using a Two-Camera Computer System**

Qualcomm Corp.
San Diego, California
2010

Evolution and Genomic Structure: A Signal Processing Perspective

Department of Information Engineering and Computer Science - DISI
Microsoft Research-University of Trento Centre for Computational and Systems Biology
University of Trento

Trento, Italy
2010

**A Novel Cache Optimization Algorithm and Video Streaming Protocol
for Pure Peer-to-Peer Networks**

Motorola Research Labs
Schaumburg, Illinois
2010

**Distributed Multi-Camera Networks: Graphical Models, Tensor Representation,
and Plenoptic Functions**

Research Center of Automation
Northeastern University
Shenyang, P.R. China
2010

**Distributed Multi-Camera Networks: Graphical Models, Tensor Representation,
and Plenoptic Functions**

School of Automation and Electric Engineering
Zhejiang University of Science and Technology
Hangzhou, P.R. China
2010

**Distributed Multi-Camera Networks: Graphical Models, Tensor Representation,
and Plenoptic Functions**

Center for OPTical IMagery Analysis and Learning (OPTIMAL)
State Key Laboratory of Transient Optics and Photonics
Xi'an Institute of Optics and Precision Mechanics
Chinese Academy of Sciences
Xi'an, P.R. China
2010

Distributed Multi-Camera Networks: Graphs, Grammars, and Tensors

Dean's Leadership in Innovation Seminar Series
Advanced Analytics Institute (AAI)
University of Technology
Sydney, Australia
2012

Genomic Signal Processing: Evolution, Structure, and Regulation

Dean's Leadership in Innovation Seminar Series
Advanced Analytics Institute (AAI)
University of Technology
Sydney, Australia
2012

Distributed Multi-Camera Networks: Theory and Applications

Harbin Engineering University (HEU)
Harbin, China
2014

Distributed Multi-Camera Networks: Theory and Applications

Electrical and Computer Engineering Graduate Program

Ryerson University

Toronto, Canada

2014

Genomic Signal Processing: Evolution, Structure, and Regulation

Distinguished Lecturer Seminar Series

Electrical Engineering Department

The Pennsylvania State University

University Park, Pennsylvania

2015

Q. GRADUATE STUDENTS AND VISTING SCHOLARS

Q.1. Visiting Scholars

Mohammed Charif-Chefchaoui

Department of Electrical Engineering and Computer Science

University of Illinois at Chicago

Chicago, Illinois

1995

Position: Director and Professor, National Institute of Postes and Telecommunications, Morocco.

Yuesong Lin

Department of Electrical and Computer Engineering

University of Illinois at Chicago

Chicago, Illinois

2007

Position: Professor, Institute of Information and Control, Hangzhou Dianzi University, Hangzhou, P.R. China.

Haihong Chi

Department of Electrical and Computer Engineering

University of Illinois at Chicago

Chicago, Illinois

2010

Position: Associate Professor, College of Automation, Harbin Engineering University (HEU), Harbin, P.R. China.

Claudio Piciarelli

Department of Electrical Engineering and Computer Science

University of Illinois at Chicago

Chicago, Illinois

2010

Position: Postdoctoral Fellow, Department of Mathematics and Computer Science, University of Udine, Udine, Italy.

Q.2. Postdoctoral Fellows

Mohammed Charif-Chefchaoui

Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
1994

Position: Director and Professor, National Institute of Postes and Telecommunications, Morocco.

Q.3. Visiting Students

Alessio Dore

Department of Electrical and Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2008

Former Position: Doctoral Candidate, DIBE - Department of Biophysical and Electronic Engineering, University of Genova, Genoa, Italy.

Current Position: Postdoctoral Fellow, Imaging Sciences Centre, Institute of Biomedical Engineering, Imperial College, London, United Kingdom.

Yunmei Gong

Department of Electrical and Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2008-09

Current Position: Doctoral Candidate, Information and Communication Engineering, College of Electronics and Information Engineering, Tongji University, Shanghai, P.R. China.

Nicola Piatto

Department of Electrical and Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2010

Current Position: Doctoral Candidate, Department of Engineering and Computer Science – DISI, Multimedia Signal Processing and Understanding Lab – MMLab, University of Trento, Trento, Italy.

Q.4. Doctoral Students

Mohammed Charif-Chefchaoui

“Morphological Representation of Nonlinear Filters: Theory and Applications”

Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
1993

Former Position: Professor, National Institute of Postes and Telecommunications, Rabat, Morocco.

Current Position: Director, National Institute of Postes and Telecommunications, Rabat, Morocco.

Dan Lelescu

“VORTEX: Video Retrieval and Tracking from Compressed Multimedia Databases”

Department of Electrical Engineering and Computer Science

University of Illinois at Chicago

Chicago, Illinois

2000

Former Position(s): Senior Research Scientist, Lead of Algorithms Group, Compression Sciences, Campbell, California, USA; Senior Researcher, NTT DoCoMo Communications Laboratories USA, San Jose, California, USA; Principal Scientist, Advanced Imaging Research & Development Laboratory, Micron Technology, California, USA; Principal Engineer, Signal Processing, Pelican Imaging Corporation, Mountain View, California, USA.

Current Position: Senior Director, Imaging and Signal Processing, Pelican Imaging Corporation, Mountain View, California, USA.

Bulent Cavusoglu

“Real-Time Content-Based Video Communications over Heterogeneous Networks”

(Jointly Supervised with Prof. Rashid Ansari)

Department of Electrical & Computer Engineering

University of Illinois at Chicago

Chicago, Illinois

2005

Current Position: Assistant Professor, Ataturk University, Erzurum, Turkey.

Faisal Bashir

“MotionSearch: Object Motion Trajectory-Based Video Search and Classification System”

(Jointly Supervised with Prof. Ashfaq Khokhar)

Department of Electrical & Computer Engineering

University of Illinois at Chicago

Chicago, Illinois

2006

Internship: Mitsubishi Electric Research Laboratory (MERL), USA.

Former Position(s): Intern, Mitsubishi Electric Research Laboratory (MERL), Cambridge, Massachusetts, USA; Senior Imaging Scientist, Retica Systems, Inc., Waltham, Massachusetts, USA; Senior Vision Engineer, Heartland Robotics, Cambridge, Massachusetts, USA.

Current Position: Principal Engineer - Advanced Development Group, Security and Detection Systems, L-3 Communications, Woburn, Massachusetts, USA.

Wei Qu

“Real-Time Distributed Video Tracking of Multiple Objects from Single and Multiple Cameras”

Department of Electrical & Computer Engineering

University of Illinois at Chicago

Chicago, Illinois

2006

Internship: Mitsubishi Electric Research Laboratory (MERL), USA; Siemens Medical Systems, USA.

Former Position(s): Senior Research Scientist, Motorola Research Labs, Schaumburg, Illinois, USA; Senior Scientist, Siemens Medical Solutions USA, Hoffman Estates, Illinois, USA; Associate Professor, Graduate University of Chinese Academy of Sciences, Beijing, China; CEO Special Assistant, Director of Technology, President of CSST Research, Hong Kong.

Current Position: Vice President, R&D, Special Assistant to CEO, President of Beijing Research Institute, Beijing, China.

Nidhal Bouaynaya

“Analysis of Proteomics and Genomics Based on Signal Processing and Communication Theory”

Department of Electrical & Computer Engineering

University of Illinois at Chicago

Chicago, Illinois

2007

Current Position: Assistant Professor, Department of Systems Engineering, University of Arkansas at Little Rock, Little Rock, Arkansas, USA.

Hunsop Hong

Constrained and Hierarchical Density Estimation for Image Reconstruction and Sensor Networks

Department of Electrical & Computer Engineering

University of Illinois at Chicago

Chicago, Illinois

2008

Current Position: Senior Research Engineer, Samsung Information Systems America, Irvine, California, USA.

Pan Pan

Video Tracking Based on Particle Filters: Particle Allocation, Graphical Models, and Performance Evaluation

Department of Electrical & Computer Engineering

University of Illinois at Chicago

Chicago, Illinois

2009

Internship: NTT Research Laboratory, Japan; Mitsubishi Electric Research Laboratory (MERL), USA.

Former Position: Project Manager, Fujitsu Research and Development, Beijing, China.

Current Position: Technical Expert, Alibaba Group, Beijing, China.

Xiang Ma

Motion Trajectory-Based Video Retrieval and Recognition: Tensor Analysis and Multi-Dimensional Hidden Markov Models

(Jointly Supervised with Prof. Ashfaq Khokhar)

Department of Electrical & Computer Engineering

University of Illinois at Chicago

Chicago, Illinois

2009

Internship: Knowledge Media Institute, Open University, United Kingdom; Siemens Medical Solutions USA, Hoffman Estates, Illinois, USA; Computer Vision Research Engineer, IntuVision, Inc., Woburn, Massachusetts, USA.

Former Position: Senior Research Scientist and Engineer, IntuVision, Inc., Woburn, Massachusetts, USA.

Current Position: Senior Engineer - R&D Computer Vision, Nokia Location and Commerce, Chicago, Illinois, USA.

Junlan Yang

Virtual Video Enhancement for Handheld Mobile Cameras: Stabilization, Auto-Focus, and Super-Resolution

Department of Electrical & Computer Engineering

University of Illinois at Chicago

Chicago, Illinois

2009

Internship: Ricoh Research Laboratory, Menlo Park, California, USA; Sharp Laboratories of America, USA.

Former Position: Research Engineer, iKoa Corporation, Menlo Park, California, USA.

Current Position: Algorithm Engineer, Marseille Networks, Santa Clara, California, USA.

Chong Chen

Multi-Camera Vision Systems: Distributed Pose Estimation and Plenoptic Imaging

Department of Electrical & Computer Engineering

University of Illinois at Chicago

Chicago, Illinois

2009

Internship: Siemens Research Laboratory, USA; FX Palo Alto Laboratory (FXPAL), USA; Abbott Laboratories, USA.

Former Position: Senior Research Engineer, Samsung Information Systems America, Irvine, California, USA.

Current Position: Video Engineer, Apple, Cupertino, California, USA.

Xu Chen

Localization and Trajectory Estimation of Mobile Objects from a Single Sensor

(Jointly Supervised with Prof. Ashfaq Khokhar)

Department of Electrical & Computer Engineering

University of Illinois at Chicago

Chicago, Illinois

2010

Internship: Institute of Electrical Engineering, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland; Kodak Research Laboratories, USA.

Former Position(s): Postdoctoral Fellow, Department of Electrical Engineering and Computer Science, University of Michigan, Ann Arbor, Michigan, USA; Postdoctoral Fellow, Department of Electrical and Computer Engineering, Duke University, Durham, North Carolina, USA.

Current Position: Senior Researcher, Sharp Laboratories of America, Camas, Washington, USA.

Lei Gao

Compiler Optimization for Translating Software Binaries onto FPGAs

(Jointly Supervised with Prof. Prith Banerjee)

Department of Electrical & Computer Engineering

University of Illinois at Chicago

Chicago, Illinois

2010

Internship: Binachip, Inc., Chicago, Illinois, USA.

Former Position: Senior Engineer, Binachip, Inc., Chicago, Illinois, USA.

Current Position: Senior R&D Engineer, Synopsis, Inc., Marlborough, Massachusetts, USA.

Liuling Gong

Machine Learning for Signal Processing:

Geometry, Kernels, and Symbolic Sequences

Department of Electrical & Computer Engineering

University of Illinois at Chicago

Chicago, Illinois

2010

Internship: eBay Research Labs, USA.

Former Position: Postdoctoral Fellow, Center for the Study of Complex Systems, University of Michigan, Ann Arbor, Michigan, USA.

Current Position: Seismic Imager, CGGVeritas, Houston, Texas, USA.

Songqing Zhao

Multiple Description Coding for Correlated Multi-Path Networks

(Ex-Officio; Jointly Supervised by Profs. Rashid Ansari and Daniela Tuninetti)

Department of Electrical & Computer Engineering

University of Illinois at Chicago

Chicago, Illinois

2010

Internship: Mitsubishi Electric Research Laboratory (MERL), USA.

Former Position: Voice and Data Quality Engineer, Voice & Data Quality and Performance Analysis Group, Alcatel-Lucent, Murray Hill, New Jersey, USA.

Current Position: Wireless Engineer, Apple, Cupertino, California, USA.

Xiangqiong Shi

Bayesian Networks: Performance Analysis of Loopy Belief Propagation

(Jointly Supervised with Prof. Daniela Tuninetti)

Department of Electrical & Computer Engineering

University of Illinois at Chicago

Chicago, Illinois

2011

Internship: Motorola Research Labs, Schaumburg, Illinois, USA; Technicolor, Research & Innovation, Princeton, New Jersey, USA; Nokia Research Center, Palo Alto, California, USA.

Liming Wang

Genomic Signal Processing and Regulatory Networks: Representation, Dynamics and Control

Department of Electrical & Computer Engineering

University of Illinois at Chicago

Chicago, Illinois

2011

Former Position: Postdoctoral Fellow, Department of Electrical Engineering, Columbia University, New York, New York, USA.

Former Position: Postdoctoral Associate, Department of Electrical and Computer Engineering, Duke University, Durham, North Carolina, USA.

Jing Huang

Distributed Signal and Image Processing:

Particle Filters, Context Grammars, and Dynamic Games

Department of Electrical & Computer Engineering

University of Illinois at Chicago

Chicago, Illinois

2013

Internship: Fuji Xerox Palo Alto Laboratory (FXPAL), Palo Alto, California, USA; Motorola Mobility, Applied Research Center, Libertyville, Illinois, USA; Nokia Research Center, Berkeley, California, USA.

Current Position: Software Development Engineer, TeraRecon, Inc., Foster City, California, USA.

Qun Li

Multilinear Algebra in High-Order Data Analysis: Retrieval, Classification and Representation

Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2013

Internship: Xerox Research Center, Xerox Innovations Group, Webster, New York, USA.
Current Position: Postdoctoral Fellow, Xerox Research Center, Xerox Innovations Group, Webster, New York, USA.

Johnson Jonaris GadElkarim Keiriz

From Micro to Macro: A Study of Human Brain Structure Based on Diffusion MRI and Neuronal Networks

(Jointly Supervised by Profs. Alex Leow and Richard Magin)

Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2013

Former Position: Postdoctoral Fellow, Department of Psychiatry, University of Illinois, Chicago, Illinois, USA.

Current Position: Lead Developer, nView medical Inc., Salt Lake City, Utah, USA.

Lingdao Sha

Three-Dimensional Television Systems
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2015 (exp.)

Haoyu Wang

Genomic Signal Processing
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2015 (exp.)

Q.5. Masters Thesis Students

Vladimir Pavlovic

“Stochastic Noise Process Enhancement of Hopfield Neural Networks”

(Jointly Supervised with Prof. Gary Friedman)

Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
1993

Position: Associate Professor, Department of Computer Science, Rutgers University, New Jersey, USA.

Deepak K. Bal

“Transmission of Real-Time MPEG-2 Video Over Differentiated Services Networks”

(Jointly Supervised with Prof. Rashid Ansari)

Department of Electrical & Computer Engineering

University of Illinois at Chicago
Chicago, Illinois
2003
Position: Takata, Inc., Michigan, USA.

Karthik Hariharakrishnan

“Visual Tracking: New Methods Using Adaptive Block Matching and Particle Filters”
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2003
Internship: NeoMagic Corp., USA.
Previous Position(s): National Instruments, India; Motorola, India; Senior Design Engineer, ARM, Ltd., United Kingdom.
Current Position: Staff Software Engineer, ARM, Ltd., United Kingdom.

Subhash Balam

“Associative Processors for Video Coding”
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2004
Position: Senior Staff Engineer/Manager, Qualcomm Corp., California, USA.

Emir Mulabegovic

“Lightweight Streaming Protocol for Real-Time Video Communications”
(Jointly Supervised with Prof. Rashid Ansari)
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2005
Former Position: PCTEL, Illinois, USA.
Current Position: Systems Architect, Personal, Inc., Sarajevo, Bosnia and Herzegovina.

Andrea De Mauro

“A Peer-to-Peer Network for Real-Time Multiple-Description Video Communications Using Multiple Paths”
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2006
Former Position: Financial Solutions Systems Analyst, Procter & Gamble, Newcastle, United Kingdom.
Current Position: Business Intelligence Manager, Procter & Gamble, Newcastle, Rome, Italy.

Claudio Rossi

“A Partially-Reliable Multihomed Transport Protocol for Real-Time Multiple-Description Multimedia Traffic”
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2006

Position: Area Manager, IBM, Milan, Italy.

Amita Talati

Design and Evaluation of Data Compression and Decompression Applications on Field Programmable Gate Arrays

(Jointly Supervised with Prof. Prith Banerjee)

Department of Electrical & Computer Engineering

University of Illinois at Chicago

Chicago, Illinois

2008

Former Position: Customer Applications Engineer, Newark Corporation, Cleveland, Ohio, USA.

Current Position: Senior Engineer, Newark Corporation, Cleveland, Ohio, USA.

Carlo Giulietti

A Novel Cache Optimization Algorithm and Protocol for Video Streaming in Pure Peer-to-Peer Networks

Department of Electrical & Computer Engineering

University of Illinois at Chicago

Chicago, Illinois

2010

Position: Software Engineer, Astek, Sophia Antipolis, France.

Edmond Gjondrekaj

Clustering and Similarity Analyses of miRNA Assay by Means of Reprogrammable Devices

Department of Electrical & Computer Engineering

University of Illinois at Chicago

Chicago, Illinois

2010

Q.6. Masters Project Students

Neil Zalut

“Linear Restoration of Medical Images: An Overview”

Department of Electrical Engineering and Computer Science

University of Illinois at Chicago

Chicago, Illinois

1993

Branislav Kisacanin

“A Fast Thresholded Linear Convolution Representation of Morphological Operations”

Department of Electrical Engineering and Computer Science

University of Illinois at Chicago

Chicago, Illinois

1993

Alan Baumgartner

“Morphological Segmentation of Computed Tomography Images”

Department of Electrical Engineering and Computer Science

University of Illinois at Chicago

Chicago, Illinois

1994

Alvin Ng

“Spatially-Variant Morphological Skeleton Representation”
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
1994

Smriti Anand

“Efficient Fast Reconstruction Algorithms in Computerized Tomography”
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois, May 1995

Stephan W. Wegerich

“Subband Image Restoration and Blur Identification Using the EM Algorithm and Cross-Filtering”
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
1995

Robert Werckmeister

“Performance Analysis of Video Communications in Multimedia Networks”
(Jointly Supervised with Prof. Ouri Wolfson)
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
1996

Margaret Kelton

“A Fast Method for Transform Conversion for Use in Image Processing”
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
1998

Kailash Ravishankar

“Frequency Prediction of High-Order Autoregressive Moving Average Sequences”
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
1998

Amir Yafe

“Transmission of MPEG-2 Streams Over Packet-Switched Networks”
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
1998

Steven J. Doering

“Digital Modulation: Applications to CDMA Communication Systems (IS-95)”
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
1999

Abhijit Bhattacharya

“MPEG-1 and H.263 Video Decoding on Motorola GSM Cellular Phone”
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
1999

Qin Cai

“Differentiated Transmission of MPEG-2 Video Bitstream Over Communication Networks”
(Jointly Supervised with Prof. Rashid Ansari)
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
2000

R. RESEARCH GRANTS

D. Schonfeld (PI)

“Morphological image representation: Theory and applications”
Office of Naval Research (ONR)
\$150,000
1991-1995

S. Corson (PI) and D. Schonfeld (Co-PI)

“Parallel processing research”
University of Illinois
Campus Research Board (CRB)
\$14,995
1994-1995

R. Ansari (PI), P. Hesketh (Co-PI), and D. Schonfeld (Co-PI)

“One-step process for instant ticket validation”
GTECH Corporation
\$5,000
1997

D. Schonfeld (PI)

“National Communications Forum”
International Engineering Consortium (IEC)
\$500
2000

D. Schonfeld (PI)
“Real-Time Very-Low Bit-Rate MPEG-4 Video Compression for Wireless Communication Application”
Neomagic Corporation
\$69,553
2001-2003

A. Khokhar (PI), R. Ansari (Co-PI), R. Grossman (Co-PI), D. Schonfeld (Co-PI), and C. Yu (Co-PI)
“High-Speed Terabyte Storage Server Based on Intelligent Disk Technology”
Army Research Office (ARO)
DURIP Program
\$422,626
2002-2004

D. Schonfeld (PI)
“Computer Architectures for Real-Time Video Communications”
Neomagic Corporation
\$76,075
2002-2004

M. Dutta (PI) et al.
“Design of a Super-Biological Eye Sensor System”
Defense Advanced Research Projects Agency (DARPA)
Army Research Office (ARO)
\$200,000 (Seed Project)
2002-2003

D. Schonfeld (PI)
“OMAP Code Composure Studio Software for Real-Time Video Communications”
Texas Instruments, Inc.
DSP University Program
\$4,500
2003

D. Schonfeld (PI)
“Real-Time Object Tracking of Video Sequences on Associative Processor Arrays”
Neomagic Corporation
\$68,750
2003-2005

D. Schonfeld (PI)
“Real-Time Low-Power High-Quality Interactive Video Telephony for Wireless Communication Applications”
Motorola, Inc.
\$19,331
2004-2005

D. Schonfeld (PI)
“Real-Time Low-Power High-Quality Interactive Video Communications for Video Animation and Stereography”
Motorola, Inc.

\$22,000
2005-2006

D. Schonfeld (PI)
“Real-Time High-Quality Video Communications from Handheld Cameras
Using Video Stabilization and Auto-Focus”
Motorola, Inc.
\$75,000
2005-2008

D. Schonfeld (PI)
“Interactive Video Communications Based on Stereographic Imaging
From a Single Camera”
Motorola, Inc.
\$22,000
2006-2007

A. Khokhar (PI) and D. Schonfeld (Co-PI)
“MotionSearch: Motion Trajectory-Based Object Activity Retrieval and Recognition from Video
and Sensor Databases”
National Science Foundation (NSF)
\$410,000
2006-2009

D. Schonfeld (PI)
“Real-Time Financial Forecasting Based on Statistical Signal Processing:
Correlation Analysis and Fast Algorithms”
Gelber Group
\$66,522
2006-2007

D. Schonfeld (PI)
“Signal Communication and Processing in a RFID Sensor Network System”
Your Life Essentials
\$4,000
2006-2008

D. Schonfeld (PI)
“MobilePlenoptics: Panoramic Video Communications in Mobile Devices”
Motorola, Inc.
\$22,000
2007-2008

D. Schonfeld (PI)
“Machine Learning and Event Detection in Biological Systems”
VG Bioinformatics, Inc.
\$40,000
2007-2008

A. Khokhar (PI) and D. Schonfeld (Co-PI)

“International Supplement to MotionSearch: Motion Trajectory-Based Object Activity Retrieval and Recognition from Video and Sensor Databases”

National Science Foundation (NSF)

\$37,468

2007-2008

D. Schonfeld (PI)

“InteractiveVision: Collaborative Multiple-Input-Multiple-Output Inverse Problems with Application in Image and Video Processing”

National Science Foundation (NSF)

\$232,496

2007-2010

A. Khokhar (PI) and D. Schonfeld (Co-PI)

“Research Experiences for Undergraduates (REU) Supplement to MotionSearch: Motion Trajectory-Based Object Activity Retrieval and Recognition from Video and Sensor Databases”

National Science Foundation (NSF)

\$12,000

2008-2009

D. Schonfeld (PI)

“Real-time Superresolution for Enhanced Video Streaming”

iKoa Corporation

\$25,000

2008-2009

D. Schonfeld (PI)

“Tracking Performance Evaluation based on a Reflective Model and Perturbation Analysis”

Mitsubishi Electric Research Laboratories (MERL)

\$1,228

2009

R. Magin (PI), M. Ragozzino (Co-PI), K. Rockne (Co-PI), T. Royston (Co-PI), and D. Schonfeld (Co-PI)

“Acquisition of a High Field Magnetic Resonance Imaging System for Science and Engineering Research”

National Science Foundation (NSF)

\$1,995,000

2009

D. Schonfeld (PI), N. Bouaynaya (Key/Senior Personnel), and H.M. Fathallah-Shaykh (Key/Senior Personnel)

“Minimal-Perturbation Dynamic Control of the Melanoma Gene Regulatory Network” (R01)

National Institutes of Health (NIH)

\$1,200,000

2010-1014

S. ADMINISTRATIVE ACTIVITIES

S.1. Administrative Positions

Director

University-Industry Engineering Research Center (UIERC)

College of Engineering
University of Illinois at Chicago
2008—2011

Supervisor

Web Development

Department of Electrical & Computer Engineering
University of Illinois at Chicago
2001—2002

Director

Timetable Schedule

Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1999—2000

S.2. University Committees

Co-Chair

University All-Campus Promotion and Tenure Committee

University of Illinois at Chicago
2010—2011

Member

Graduate Mentor Award Committee

University of Illinois at Chicago
2014—Present

Member

Chancellor's Graduate Research Fellowship Program

University of Illinois at Chicago
2014—Present

Member

University Vision and Strategy

University of Illinois at Chicago
2012—Present

Member

University Ad-Hoc Advisory Committee for the Office of Faculty Affairs

University of Illinois at Chicago
2012—2013

Member

University Task Force to Review Non-Tenure Promotion Guidelines

University of Illinois at Chicago

2011—2012

Member

University Promotion and Tenure Norms and Criteria Committee

University of Illinois at Chicago

2011—2012

Member

University Honorary Degree Nominating Committee

University of Illinois at Chicago

2010—2011

Member

University Promotion and Tenure Seminar Panel

Natural Science, Health Science, and Engineering

University of Illinois at Chicago

2010—2011

Member

University All-Campus Promotion and Tenure Committee

University of Illinois at Chicago

2008—2011

Member

University Campus Research Board Committee

University of Illinois at Chicago

2001—2004

Member

University Awards Committee

University of Illinois at Chicago

1998—2001

Member

Student Appeals Board

University of Illinois at Chicago

2004—2005

S.3. College Committees

Member

College Executive Committee

College of Engineering

University of Illinois at Chicago

2009-2012

Member

Dean of the College of Engineering Search Committee

College of Engineering

University of Illinois at Chicago

2007-2008

Member

Wexler Chair in Information Technology Search Committee

College of Engineering
University of Illinois at Chicago
2006

Member

Advisory Committee for Bioinformatics Program in Bioengineering

University of Illinois at Chicago
2000—2010

Chair

Networking Curriculum Subcommittee

College of Engineering
University of Illinois at Chicago
2005

Member

Departmental Reorganization and Formation Committee

College of Engineering
Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1999—2000

S.4. Departmental Committees

Chair

Departmental Faculty Search Committee

Department of Electrical & Computer Engineering
University of Illinois at Chicago
2006—2008; 2010-2011

Chair

Departmental Grievance Committee

Department of Electrical & Computer Engineering
University of Illinois at Chicago
2013—Present

Chair

Departmental Research & Colloquium Committee

Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1996—1998; 2003—2004

Chair

Departmental Seminar Committee

Department of Electrical & Computer Engineering
University of Illinois at Chicago

2008—2010

Chair

Departmental Web Committee

Department of Electrical & Computer Engineering
University of Illinois at Chicago
2001—2003

Member

Departmental Advisory Committee

Department of Electrical & Computer Engineering
University of Illinois at Chicago
1995—1996; 1998—1999; 2000—2002; 2004—2005; 2007—2010

Member

Departmental Computer Committee

Department of Electrical & Computer Engineering
University of Illinois at Chicago
1990—1992; 2001—2004

Member

Departmental Computer & Web Committee

Department of Electrical & Computer Engineering
University of Illinois at Chicago
2013—Present

Member

Departmental Electronics Instructional Laboratory Committee

Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1997—1998

Member

Departmental Faculty Search Committee

Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1994—1995; 1998—2001; 2006—2008; 2010-2011

Member

Departmental Graduate Committee

Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1995—2000; 2011—Present

Member

Departmental Grievance Committee

Department of Electrical & Computer Engineering
University of Illinois at Chicago
2012—Present

Member

Departmental Promotion & Tenure Committee

Department of Electrical & Computer Engineering
University of Illinois at Chicago
1996—Present

Member

Departmental Research & Colloquium Committee

Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1992—1998; 2001—2004

Member

Departmental Scholarship Committee

Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1990—1996

Member

Departmental Seminar Committee

Department of Electrical & Computer Engineering
University of Illinois at Chicago
2008—2013

Member

Departmental Undergraduate Committee

Department of Electrical & Computer Engineering
University of Illinois at Chicago
1998—2003; 2005—2011

Member

Departmental Web Committee

Department of Electrical & Computer Engineering
University of Illinois at Chicago
2000—2011

S.5. Curriculum Committees

Chair

Departmental Communications and Networks Curriculum Subcommittee

of the Undergraduate and Graduate Committees
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2001—2002; 2004

Chair

Departmental Signal Processing Curriculum Subcommittee

of the Undergraduate and Graduate Committees
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2011

Member

Departmental Communications Curriculum Subcommittee

of the Undergraduate and Graduate Committees
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2011

Member

Departmental Communications and Networking Curriculum Subcommittee

of the Undergraduate and Graduate Committee
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2001—2002; 2004

Member

Departmental Computer Engineering Curriculum Subcommittee

of the Undergraduate and Graduate Committee
Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1998—2002

Member

Departmental Electrical Engineering Curriculum Subcommittee

of the Undergraduate and Graduate Committee
Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1996—2000

Member

Departmental Imaging Curriculum Subcommittee

of the Undergraduate and Graduate Committees
Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1993

Member

Departmental Information and Computer Systems Curriculum Subcommittee

of the Undergraduate and Graduate Committees
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2011

Member

Departmental Masters of Engineering Program Subcommittee

of the Graduate Committee
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2005

Member

Departmental Multimedia Curriculum Subcommittee
of the Undergraduate and Graduate Committees
Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
2005

Member
Departmental Networking Curriculum Subcommittee
of the Undergraduate and Graduate Committees
Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1999—2000; 2005

Member
Departmental Signals and Systems Curriculum Subcommittee
of the Graduate Committee
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2004

Member
Departmental Signal Processing Curriculum Subcommittee
of the Undergraduate and Graduate Committees
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2011

Member
Departmental Signal Processing and Communications Curriculum Subcommittee
of the Undergraduate and Graduate Committees
Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1991

Member
Departmental Student Cheating Policy Subcommittee
of the Undergraduate Committee
Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1999

Member
Departmental Teaching Assistant Assignment Subcommittee
of the Undergraduate Committee
Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1996—1997

Member
Departmental Teaching Assistant Award Subcommittee
of the Scholarship Committee

Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1994

S.6. Qualifier Committees

Chair

Departmental Communications Qualifier Committee

Department of Electrical & Computer Engineering
University of Illinois at Chicago
2003—2004; 2012

Chair

Departmental Computer Communication Network Qualifier Committee

Department of Electrical & Computer Engineering
University of Illinois at Chicago
2002—2003; 2005

Chair

Departmental Signal Processing Qualifier Committee

Department of Electrical & Computer Engineering
University of Illinois at Chicago
1991—1995; 2001; 2002; 2008—2014

Member

Departmental Communications Qualifier Committee

Department of Electrical & Computer Engineering
University of Illinois at Chicago
1997—2004; 2009—2014

Member

Departmental Computer Communications Networks Qualifier Committee

Department of Electrical & Computer Engineering
University of Illinois at Chicago
2002—2005

Member

Departmental Computer Vision Qualifier Committee

Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1993—2001

Member

Departmental Signal Processing Qualifier Committee

Department of Electrical & Computer Engineering
University of Illinois at Chicago
1991—2001; 2004—Present

S.7. Research Laboratories and Centers

Director

University-Industry Engineering Research Center (UIERC)

College of Engineering
University of Illinois at Chicago
2008—Present

Co-Director

Multimedia Communications Laboratory (MCL)

Department of Electrical & Computer Engineering
University of Illinois at Chicago
1997—Present

Member

Departmental Signal and Image Research Laboratory (SIRL)

Department of Electrical & Computer Engineering
University of Illinois at Chicago
1991—2002

T. TEACHING ACTIVITIES

T.1. The Johns Hopkins University

ECE 137

Digital Signals and Systems
Fall 1987

ECE 137

Digital Signals and Systems
Fall 1988

ECE 137

Digital Signals and Systems
Fall 1989

T.2. University of Illinois at Chicago

EECS 212

Signal Processing
Fall 1990

EECS 212

Signal Processing
Winter 1991

EECS 416

Advanced Topics in Digital Signal Processing

Spring 1991

EECS 417

Digital Signal Processing

Fall 1991

EECS 554

Estimation Theory

Fall 1991

EECS 311

Communication Engineering

Spring 1992

EECS 554

Estimation Theory

Fall 1992

EECS / BioE 479

Real-Time Data Processing

Spring 1993

EECS / BioE 479

Real-Time Data Processing

Fall 1993

EECS 516

Optimal and Adaptive Digital Filters

Fall 1993

EECS 517

Image Processing

Spring 1994

EECS / BioE 479

Real-Time Data Processing

Fall 1994

EECS 517

Image Processing

Spring 1995

EECS 531

Detection and Estimation Theory

Spring 1995

EECS / BioE 479

Real-Time Data Processing

Fall 1995

EECS 517

Image Processing
Spring 1996

EECS 531
Detection and Estimation Theory
Spring 1996

EECS 530
Statistical Communication Theory
Fall 1996

EECS 517
Image Processing
Spring 1997

EECS / BioE 407
Pattern Recognition
Fall 1997

EECS 530
Statistical Communication Theory
Fall 1997

EECS / BioE 407
Pattern Recognition
Spring 1998

EECS 517
Image Processing
Spring 1998

EECS 517
Image Processing
Motorola Campus
Spring 1998

EECS 171
Introduction to Programming
Summer 1998

EECS 516
Optimal and Adaptive Digital Filters
Fall 1998

EECS 530
Statistical Communication Theory
Motorola Campus
Fall 1998

EECS 418
Digital Signal Processing II

Spring 1999

EECS 517
Image Processing
Spring 1999

EECS 531
Detection and Estimation Theory
Motorola Campus
Spring 1999

EECS 171
Introduction to Programming
Summer 1999

EECS 417
Digital Signal Processing I
Fall 1999

EECS 491
Multimedia Communication Networks
Spring 2000

EECS 311
Communication Engineering
Summer 2000

EECS 491
Multimedia Communication Networks
Internet Course (Preparation)
Fall 2000

EECS 516
Optimal and Adaptive Digital Filters
Fall 2000

EECS 531
Detection and Estimation Theory
Fall 2000

EECS 491
Multimedia Communication Networks
Internet Course
Spring 2001

EECS 517
Image Processing
Spring 2001

EECS 171
Introduction to Programming

Summer 2001

ECE 516

Optimal and Adaptive Digital Filters
Fall 2001

ECE 531

Detection and Estimation Theory
Fall 2001

ECE 434

Multimedia Communication Networks
Internet Course
Spring 2002

ECE 517

Image Processing
Spring 2002

CS 102

Introduction to Programming
Summer 2002

ECE 433

Computer Communication Networks
Fall 2002

ECE 434

Multimedia Communication Networks
Fall 2002

ECE 333

Computer Communication Networks
Laboratory (Preparation)
Spring 2003

ECE 311

Communication Engineering
Fall 2003

ECE 434

Multimedia Communication Networks
Fall 2003

ECE 517

Image Processing
Spring 2004

ECE 434

Multimedia Communication Networks
Fall 2004

ECE 516
Optimal and Adaptive Digital Filters
Fall 2004

ECE 517
Image Processing
Spring 2005

ECE 311
Communication Engineering
Summer 2005

ECE 434
Multimedia Communication Systems
Fall 2005

ECE 516
Optimal and Adaptive Digital Filters
Fall 2005

ECE 517
Image Processing
Spring 2006

ECE 311
Communication Engineering
Summer 2006

ECE 434
Multimedia Communication Systems
Fall 2006

ECE 516
Optimal and Adaptive Digital Filters
Fall 2006

ECE 531
Detection and Estimation Theory
Spring 2007

ECE 311
Communication Engineering
Summer 2007

ECE 434
Multimedia Communication Systems
Fall 2007

ECE 516
Optimal and Adaptive Digital Filters

Fall 2007

ECE 531

Detection and Estimation Theory

Spring 2008

ECE 434

Multimedia Communication Systems

Fall 2008

ECE 516

Optimal and Adaptive Digital Filters

Fall 2008

ECE 530

Random Signal Analysis

Spring 2009

ECE 517

Image Processing

Fall 2009

ECE/BIOE 407

Pattern Recognition

Spring 2010

ECE 434

Multimedia Communication Systems

Fall 2010

ECE 530

Random Signal Analysis

Spring 2011

ECE 434

Multimedia Communication Systems

Fall 2011

ECE 530

Random Signal Analysis

Spring 2012

ECE 594

Machine Learning

Spring 2012

ECE 434

Multimedia Communication Systems

Fall 2012

ECE 517

Image Processing
Fall 2012

ECE 530
Random Signal Analysis
Spring 2013

ECE 434
Multimedia Communication Systems
Fall 2013

ECE 517
Image Processing
Fall 2013

ECE 434
Multimedia Communication Systems
Fall 2014

ECE 517
Image Processing
Fall 2014

T.3. University of Trento

Content-Based Video Analysis: Tracking, Retrieval, and Classification
Information and Communication Technology (ICT) – International Doctoral School
Department of Information Engineering and Computer Science
University of Trento
May 2010

Last Updated: January 12, 2015