# CURRICULUM VITAE THRASYVOULOS N. PAPPAS Professor

March 20, 2025

Electrical and Computer Engineering	(847) 467-1243 – voice
Northwestern University	$(847)$ $491$ - $4455 - { m fax}$
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# EDUCATION

	<b>Ph.D. in Electrical Engineering and Computer Science</b> Massachusetts Institute of Technology, Cambridge, MA Thesis: "Estimation of Coronary Artery Dimensions From Angiogra Advisor: Jae S. Lim	ms"	June 1987
	<b>M.S. in Electrical Engineering and Computer Science</b> Massachusetts Institute of Technology, Cambridge, MA Thesis: "Solution of Nonlinear Equations by Davidon's Least Square Advisor: Dimitris Bertsekas.	es Method"	June 1982
	<b>B.S. in Electrical Engineering</b> Massachusetts Institute of Technology, Cambridge, MA Thesis: "On the Numerical Solution of the Discrete-Time Riccati Ed Advisor: Alan J. Laub.	quation."	June 1979
EMPLOYMENT HISTORY			
	Northwestern University, Evanston, IL Professor, Department of Electrical and Computer Engineering	Sep. 2011 $-$ present	
	Northwestern University, Evanston, IL Sep. 1999 – Associate Professor, Department of Electrical and Computer Engineering		Aug. 2011
	Lucent technologies, Bell Laboratories, Murray Hill, NJ	Sep. 1996 –	Aug. 1999

Member of Technical Staff, Information Principles Research Center

AT&T Bell Laboratories, Murray Hill, NJ Aug. 1987 – Sep. 1996 Member of Technical Staff, Information Principles Research Center

# AWARDS/HONORS

- Life Fellow of IEEE, 2022
- IEEE Signal Processing Society Leo L. Baranek Meritorious Service Award, 2019
- Fellow of IS&T, 2016
- Fellow of SPIE, 2007
- Fellow of IEEE, 2006 for contributions to halftoning, video analysis, and compression

- Editor-in-Chief, IEEE Transactions on Image Processing (2010 2012)
- Plenary Speaker, IEEE Int. Conference on Image Processing, Hong Kong, Sep. 2010
- Plenary Speaker, IEEE Int. Conference on Image Processing, Singapore, Oct. 2004
- 2013 IS&T Senior Membership Award for service as Electronic Imaging Symposium General Cochair (2005) and Cochair of Human Vision and Electronic Imaging Conference (1997–2013)
- Invited to participate in 8<sup>th</sup> Annual National Academies Keck Futures Initiative (NAKFI), "Seeing the Future with Imaging Science" (Nov. 2010)
- Frederick C. Hennie III teaching award, MIT, June 1985

# STUDENT HONORS/AWARDS

- Jing Wang, awarded a Microsoft Research Graduate Women's Scholarship (2013)
- Jana Zujovic, finalist in 2010 Google Anita Borg Memorial Scholarship
- Xiaonan Zhao, finalist in 2006 Google Anita Borg Memorial Scholarship
- Shengxin Zha, awarded a Royal E. Cabell Terminal Year Fellowship (2015-16)
- Guoxin Jin, awarded a Royal E. Cabell Terminal Year Fellowship (2014-15)
- Pubudu M. Silva, awarded a Royal E. Cabell Terminal Year Fellowship (2013-14)
- Jana Zujovic, awarded a Royal E. Cabell Terminal Year Fellowship (2010-11)

### VISITING POSITIONS

- Lawrence Livermore National Laboratory, Jan. May 2015
- University of Michigan, Apr. June 2008
- Georgia Tech, Jan. Mar. 2008

### INDUSTRIAL AFFILIATIONS

• Board of Advisors, Ooyala, Inc. (www.ooyala.com), 2007 – 2009.

### **RESEARCH INTERESTS**

Image and Multidimensional Signal Processing; Perceptual Criteria for Image Quality and Compression; Structural Texture Similarity Metrics; "Structurally lossless" Image and Video Compression; Texture representation based on generative adversarial networks (GANS); Texture Analysis for Material Identification and Characterization; Medical Image Analysis; Cutset sampling; Bilevel image compression; Image and Video Segmentation; Video Transmission Over Packet-Lossy Networks; Content-Based Image and Video Retrieval; Acoustic-Tactile Representation of Visual Signals; Model-Based Halftoning and Color Reproduction

# TEACHING

### Courses at Northwestern University

- 1. EECS 202: "Introduction to Electrical Engineering" (2000–08)
- 2. EECS 222: "Fundamentas of Signals and Systems" (2009–13, 2015–present)

- 3. EECS 359: "Digital Signal Processing" (1999–present)
- 4. EECS 420: "Image Processing" (2001, 04, 19)
- 5. EECS 421: "Multimedia Signal Processing" (2002, 03, 17)
- 6. EECS 431: "Human Perception and Electronic Media" (2011, 12, 14, 16, 18, 20-present)
- 7. EECS 510: "Human Perception and Electronic Media" (2009–10)
- 8. EECS 510: "Digital Video Processing" (2005–07)
- 9. ECE 241: "Circuits I" (2000)
- 10. ECE 510: "Advanced Signal and Image Processing" (2000)

#### Short Courses

- 1. "Human Perception and Image Analysis in The Era of Machine Learning," 15-hour Short Course, Indian Institute of Science, Bengaluru, India, January 20-24, 2025.
- 2. "Visual Perception Models and Metrics," 8-hour Tutorial (with Sheila S. Hemami)
  - Presented presented at IEEE Signal Processing Summer School, Garda Lake, Italy, Sep. 2015.
- 3. "Perceptual Metrics for Image and Video Quality in a Broader Context: From Perceptual Transparency to Structural Equivalence," 3-hour Tutorial (with Sheila S. Hemami)
  - Presented at Electronic Imaging Symposium, San Francisco, CA, Jan. 2023.
  - Presented at Electronic Imaging Symposium, virtual, Jan. 2022.
  - Presented at Electronic Imaging Symposium, virtual, Jan. 2021.
  - Presented at Electronic Imaging Symposium, Burlingame, CA, Jan. 2020.
  - Presented at Electronic Imaging Symposium, Burlingame, CA, Jan. 2019.
  - Presented at Int. Conf. Image Processing (ICIP), Athens, Greece, Oct. 2018.
  - Presented at Electronic Imaging Symposium, Burlingame, CA, Jan. 2018.
  - Presented at Electronic Imaging Symposium, Burlingame, CA, Jan. 2017.
  - Presented at Electronic Imaging Symposium, San Francisco, CA, Feb. 2016.
  - Presented at Int. Conf. Image Processing (ICIP), Quebec City, Canada, Sep. 2015.
  - Presented at Int. Conf. Acoustics, Speech, and Signal Proc. (ICASSP), Melbourne, Australia, Apr. 2015.
  - Presented at Electronic Imaging Symposium, San Francisco, CA, Feb. 2015.
  - Presented at Electronic Imaging Symposium, San Francisco, CA, Feb. 2014.

## 4. "Perceptual Metrics for Image Quality Evaluation," 3-hour Tutorial (with Sheila S. Hemami)

- Presented at Electronic Imaging Symposium, San Jose, CA, Jan. 2010.
- Presented at Int. Conf. Image Proc. (ICIP), Cairo, Egypt, Oct. 2009.
- Presented at Electronic Imaging Symposium, San Jose, CA, Jan. 2009.
- Presented at Int. Conf. Image Proc. (ICIP), San Diego, CA, Oct. 2008.
- Presented at Electronic Imaging Symposium, San Jose, CA, Jan. 2008.
- Presented at Int. Conf. Image Proc. (ICIP), San Antonio, TX, Sep. 2007.
- Presented at Electronic Imaging Symposium, San Jose, CA, Jan. 2007.
- 5. "Model-Based Halftoning," 3-hour Tutorial (with David L. Neuhoff)
  - Presented at IEEE Int. Conf. Image Proc. (ICIP), Kobe, Japan, Oct. 1999.

## UNDERGRADUATE STUDENT SUPERVISION

- 1. Andrew Habib, Northwestern University, Fall 2024 to Spring 2025. Research on Detection of Generating Elements (Textons) of Visual Texture.
- 2. Derek Guo, Northwestern University, Fall 2023 to Winter 2025. Research on Texture Representation Based on Generative Adversarial Networks.
- 3. Alex Huggins, Northwestern University, Summer 2022 to Spring 20232. Research on Tactile Pattern Perception.
- 4. Jared Fernandez, Northwestern University, 2018-2019. Research on Structural Texture Similarity and Machine Learning.
- 5. Henry Chopp, Northwestern University, Summer/Fall 2016. Research on Texture Analysis.
- Da-Jun Jin, Northwestern University, Spring 2016. Independent study on 3-D Printing.
- 7. Neeldev Kunjur, Northwestern University, Summer 2012. Research on Texture Analysis.
- 8. June Choi, Northwestern University, Spring 2012. Research on Texture Color Composition.
- 9. Johannes Traa, Northwestern University, Winter/Spring 2011. Research on Video Segmentation.
- 10. Philbert Lin, Northwestern University, Summer/Fall 2010, Winter 2011. Research on Tactile-Acoustic Perception.
- 11. Andrew Seward, Northwestern University, 2007-2009. Research on Tactile Perception.
- 12. Jeremy-John Darling, Northwestern University, Fall 2007. Research on Structural Similarity of Binary Images.
- Jon Maloto, Northwestern University, Winter 2006. ECE 399: "Face Detection and Recognition."
- 14. Sai Hei Yeung, Northwestern University, Fall 2005, Winter 2006. ECE 399 and Motorola Undergraduate Research Project: "Evaluation and Design of Image Segmentation Evaluation Metrics."
- Jessica Tam, Northwestern University, Fall 2005
   ECE 399 "Searching Through XML Files for Image Retrieval Applications."
- 16. Ayshaw Asif, Northwestern University, Summer/Fall 2005. "Color-Based Image Classification and Retrieval."
- Ed Huang, Northwestern University, Winter/Spring 2005. Motorola Undergraduate Research Project: "Image and Video Digital Halftoning Techniques."
- Jessica Tam, Northwestern University, Winter/Spring 2005 Motorola Undergraduate Research Project: "Image segmentation-based techniques for feature point detection and matching in computer vision applications."
- Eren Soyak, Northwestern University, Winter/Spring 2003. Motorola Undergraduate Research Project: "Stochastic Channel Simulations for Subjective Evaluation of Wireless Video Communication Systems."

- 20. Aaron Glas, Northwestern University, Winter/Spring 2001. Microsoft Undergraduate Research Project: "Constructing a Class D Audio Amplifier from an FPGA."
- Pakpoom Hoyingcharoen, Northwestern University, Winter/Spring 2000. Motorola Undergraduate Research Project: "Conditional Replenishment for Video Conferencing Over Lossy Channels."

### POSTDOCTORAL FELLOW SUPERVISION

- Jana Zujovic, September 2011 January 2013. Project: "Perceptual Texture Analysis."
- Junqing Chen, January 2004 July 2004. Project: "Perceptual Image Segmentation."

### GRADUATE STUDENT SUPERVISION

#### Ph.D. Students

- Zhiwei Xu, Ph.D. Degree expected June 2027. Project: "Texture Understanding and Attribute Manipulation Leveraging Language Models."
- 2. Daizong Tian, Ph.D. Degree expected June 2026. Project: "Film Grain Noise Analysis and Synthesis."
- Kaixuan Zhang, Ph.D. Degree, June 2024. Project: "Data-driven Techniques for Structural Texture Analysis."
- 4. Jue Lin, Ph.D. student, degree March 2023, Northwestern University. Thesis Topic: "Texture Representation via Analysis and Synthesis with Generative Adversarial Networks."
- Jing Wang, Ph.D. Degree, August 2018, Northwestern University. Thesis Topic: "Perception of Gloss and Color Composition of Natural Textures."
- 6. Dzung Nguyen, Ph.D. Degree, December 2017, Northwestern University. Thesis Topic: "Visual Texture Analysis for Material Understanding."
- Shengxin Zha, Ph.D. Degree, June 2016, Northwestern University. Thesis Topic: "Cutset Sampling Topologies for Image Analysis and Compression."
- 8. Guoxin Jin, Ph.D. Degree, June 2016, Northwestern University. Thesis Topic: "Matched-Texture Coding for Structurally-Lossless Image Compression."
- 9. Andradige Pubudu Madhawa Silva, Ph.D. Degree, August 2014, Northwestern University. Thesis Topic: "Acoustic and Tactile Representation of Visual Signals."
- 10. Lulu He, Ph.D. Degree, August 2012, Northwestern University. Thesis: "A Clustering Approach for Color Texture Segmentation."
- 11. Jana Zujovic, Ph.D. Degree, August 2011, Northwestern University. Thesis: "Perceptual Texture Similarity Metrics."
- 12. Dejan Depalov, Ph.D. Degree, February 2007, Northwestern University. Thesis: "Semantic Labeling for Image Classification and Retrieval."

- Yiftach Eisenberg, Ph.D. Degree, June 2004, Northwestern University. Thesis: "Optimal Resource Allocation in Stochastic Video Communication Systems." (Co-supervised with A.K. Katsaggelos)
- Fan Zhai, Ph.D. Degree, June 2004, Northwestern University. Thesis: "Optimal Cross-layer Resource Allocation for Real-Time Video Transmission Over Packet Lossy Networks."
- 15. Junqing Chen, Ph.D. Degree, December 2003, Northwestern University. Thesis: "Perceptually-Based Color and Texture Features for Image Segmentation and Retrieval."
- Raynard O. Hinds, Ph.D. Degree, June 1999, MIT. Thesis: "Robust Mode Selection for Block Motion Compensated Video Coding." (CRFP Fellow – Bell Labs Cooperative Research Fellowship Program for minorities and women – Co-Supervised with J.S. Lim)

### Visiting Ph.D. Student

 Matteo Tiziano Maggioni, Ph.D. Candidate at the Department of Signal Processing, Tampere University of Technology, Finland (September – December 2013). Thesis topic: Texture Image Restoration (Supervisor: Alessandro Foi)

### Other Ph.D. Thesis Supervision

- Matt Reyes, Ph.D. Thesis Defense September 2010, University of Michigan. Thesis: "Cutset Based Processing and Compression of Markov Random Fields." (Supervised by D. L. Neuhoff)
- Soo Hyun Bae, Ph.D. Degree, November 2008, Georgia Institute of Technology. Thesis: "Information Retrieval Via Universal Source Coding." (Supervised by B.-H. Juang)
- Peshala Pahalawatta, Ph.D. Degree, June 2007, Northwestern University. Thesis: "Video Transmission to Multiple Users Over High Speed Downlink Packet Access (HS-DPA) Networks" (Supervised by A.K. Katsaggelos)

### M.S. Students

- 1. Yuan Si, M.S. Degree, December 2025. Project: "Analysis X-ray images for Detection of Severe Bronchopulmonary Dysplacia (BPD) in Preterm Infants."
- 2. Tanay Mannikar, M.S. Degree, June 2025. Project: "Auditory Perception Modeling."
- 3. Yuxi Liu, M.S. Degree, June 2023. Project: "Dominant Color Selection in Paintings."
- 4. Xinyi Guo, M.S. Degree, June 2023. Project: "Perceptual Evaluation of Film Grain Noise."
- 5. Zhaojie Li, M.S. Degree, June 2023. Project: "Perceptual Evaluation of Film Grain Noise."
- 6. Po-Han Wu, M.S. Degree, December 2022. Project: "Texture Interpolation via Analysis and Synthesis."
- 7. Rundi Zhou, M.S. Degree, June 2023. Project: "Analysis of Brain MRI Images."
- 8. Xinzhe Du, M.S. Degree, December 2021. Project: "Analysis of Texture Metamers."
- 9. Daizong Tian, M.S. Degree, August 2021. Project: "Techniques for Film Grain Noise Analysis and Synthesis."
- 10. Han Zhang, M.S. Degree, June 2021. Project: "Musical Timbre Space and Acoustic Sound Analysis."

- 11. Zihan Zhou, M.S. Degree, June 2021. Project: "Extraction and Visualization of Dominant Colors of Paintings."
- 12. Jinyang Liu, M.S. Degree, June 2021. Project: "Construction of a Texure Dataset for Similarity Metric Evaluation."
- 13. Jiabin Liu, M.S. Degree, June 2021. Project: "Texture Analysis-Synthesis and Gloss Perception."
- 14. Zhaochen Shi, M.S. Degree, March 2021. Project: "Machine Learning Techniques for Training Structural Texture Similarity Metrics."
- 15. Shuai Yue, M.S. Degree expected March 2021. Project: "Image Fusion for High Dynamic Range Imaging."
- 16. Xinyi Yang, M.S. Degree, June 2020. Project: "Texture Interpolation."
- Xiao Yu, M.S. Degree, March 2020.
   Project: "Performance Evaluation of Local Binary Pattern Techniques for Image Retrieval."
- Meng Yuan, M.S. Degree, March 2020.
   Project: "Dead-Leaf Approach for Texture Contrast Estimation."
- Ao Li, M.S. Degree, March 2020.
   Project: "Exploiting Burst photography for Image Denoising."
- Xijing Liu, M.S. Degree, March 2020.
   Project: "Motion-Compensated Denoising of Video."
- Fan Liu, M.S. Degree, March 2019. Project: "Texture Image Denoising."
- 22. Jukwang Hwang, M.S. Degree, June 2019. Project: "Texture Image Denoising."
- 23. Chenqi Guo, M.S. Degree, March 2019.Project: "Visual Texture Analysis for Skin Cancer Detection."
- 24. Kaixuan Zhang, M.S. Degree, March 2019. Project: "Medical Image Analysis for Detection of Severe Bronchopulmonary Dysplacia (BPD) in Preterm Infants."
- Rui Cheng, M.S. Degree, March 2019. Project: "Detection and Tracking of Rat Whiskers for the Study of Tactile Exploration."
- 26. Bernard Floeder, M.S. Degree, June 2018. Project: "Use of Texture Similarity Metrics for Understanding Visual Awareness and Disruption of Image Structure."
- 27. Abdulruhman Alrubeaan, M.S. Degree, December 2016. Project: "Perceptual Darkness of Fabrics."
- Nianzu Li, M.S. Degree, December 2016.
   Project: "Image Texture Recognition Under Different Viewing Conditions."
- 29. Izaiah Wallace, M.S. Degree, June 2016. Project: "Multimodal User Interfaces."
- Wensen Ma, M.S. Degree, June 2015.
   Project: "User Interface for Learning Visual Concepts."

- Guang Tang, M.S. Degree, March 2015.
   Project: "Subjective Evaluation of Image Segmentation Techniques."
- Yuetong Zhao, M.S. Degree, December 2014.
   Project: "Acoustic-Tactile Interface Implementations."
- Basabdutta Chakraborty, M.S. Degree, June 2013.
   Project: "Algorithms to Generate Geometric Texture Patterns."
- 34. Shengxin Zha, M.S. Degree, December 2012. Thesis: "Hierarchical Bilevel Image Coding."
- Kushal Nargundkar, M.S. Degree, December 2012.
   Project: "The Importance of Magnitude and Phase in Texture Images."
- 36. Qian Yu, M.S. Degree, June 2012 (Course Option).
- Andradige Pubudu Madhawa Silva, M.S. Degree, December 2010. Thesis: "Perceiving Graphical and Pictorial Information via Touch and Hearing."
- Edward Scott, M.S. Degree, June 2010. Thesis: "Adaptive User Interfaces for Photographic Control and Perceptual Data Collection."
- Andrew Seward, M.S. Degree, June 2010. Thesis: "Synthesis and Characterization of Tactile Patterns."
- 40. Lulu He, M.S. Degree, June 2010. Thesis: "An Adaptive Clustering and Chrominance-based Merging Approach for Image Segmentation and Abstraction."
- 41. Andrei Makhanov, M.S. Degree, June 2009 (course option).
- 42. Jana Zujovic, M.S. Degree, December 2008. Thesis: "Structural Similarity Metrics for texture Analysis and Retrieval."
- 43. Xiaonan Zhao, M.S. Degree, December 2007. Thesis: "Developing Perceptual Structural Similarity Metrics for Coding and Retrieval Applications."
- 44. Derin Babacan, M.S. Degree, June 2006. Thesis: "Spatiotemporal Algorithms for Joint Background Subtraction and Video Segmentation."
- 45. Alan Brooks, M.S. Degree, June 2006. Thesis: "Structural Similarity Quality Metrics in a Coding Context: Exploring the Space of Realistic Distortions."
- 46. Elmie Peoples (GEM fellowship), M.S. Degree, December 2004, Northwestern University. Project: "Feature Point Detection and Matching for Wide Baseline Camera Configuration."
- 47. Dejan Depalov, M.S. Degree, December 2002, Northwestern University. Thesis: "Robust Fundamental Matrix Estimation for Calibration of Cameras in a Wide-Baseline Configuration."
- 48. Feidu Luo, M.S. Degree, December 2002, Northwestern University. Project: "Algorithms for Adaptive Background Subtraction."
- 49. Yiftach Eisenberg, M.S. Degree, December 2001, Northwestern University. Thesis: "Joint Source Coding and Transmission Power Management for Energy Efficient Wireless Video Communications." (Co-supervised with A.K. Katsaggelos)
- 50. Chen-Kouong Dong, B.S./M.S. Degree, May 1992, MIT Coop Program/AT&T Bell Laboratories. Thesis: "Measurement of Printer Parameters for Model-Based Halftoning."

### Other M.S. Thesis Supervision

- Soo Hyun Bae, M.S. Degree, June 2006, Georgia Institute of Technology. Thesis: "Spatial resolution and quantization noise tradeoffs for scalable image compression." (Supervised by B.-H. Juang)
- Mark Trandel, M.S. Degree, June 2005, Northwestern University. Project: "Bit Stream Extraction Techniques in Scalable Video Coding." (Supervised by A.K. Katsaggelos)
- Sotirios Tsaftaris, M.S. Degree, June 2003, Northwestern University. Thesis: "DNA-Based Digital Signal Processing." (Supervised by A.K. Katsaggelos)
- Peshala Pahalawatta, M.S. Degree, December 2002, Northwestern University. Thesis: "Collaborative Video-Based Target Tracking in Wireless Sensor Networks." (Supervised by A.K. Katsaggelos)

#### Summer Internships at Bell Laboratories

- Raynard O. Hinds (EECS Dept., MIT; Bell Labs CRFP Fellow), Summers 1997 and 1998. Project: "Joint Video Source/Channel Coding for Packet-Switched Networks."
- David A. Kosiba, (CSE Dept., Pennsylvania State University), Summer 1996. Project: "Segmentation of Bilevel Machine-Printed Documents."
- 3. Raynard O. Hinds (EECS Dept., MIT; Bell Labs CRFP Fellow)), Summer 1995. Project: "Supra-Threshold Perceptual Image Coding,"
- 4. Raynard O. Hinds (EECS Dept., MIT; Bell Labs CRFP Fellow)), Summer 1994. Project: "Adaptive Clustering Algorithm for Segmentation of Video Sequences."
- 5. Mark A. Schulze, (ECE Dept. and BME Program, Univ. of Texas at Austin), Summer 1993. Project: "Blue noise and model-based halftoning."
- William Zeng (EECS Dept., MIT), Summer 1993. Project: "Inverse Halftoning."

## COLLABORATION WITH VISITING SCHOLARS

- Invited Huib de Ridder, Professor of Indudtrial Design Engineering, Delft University of Technology, Netherlands, as **Visiting Eshbach Scholar** at EECS Dept. at NU. (Fall 2011)
- Invited David Neuhoff, Joseph E. and Anne P. Rowe Professor of Electrical Engineering, University of Michigan, as **Visiting Eshbach Scholar** at EECS Dept. at NU. (Fall 2005)

# SERVICE TO ACADEMIC COMMUNITY

## University Service

- Member, Northwestern Faculty Senate (2021–2027)
- AGEP (Alliance for Graduate Education and the Professoriate) Professor (2005–21)
- SECMA (Science and Engineering Committee on Multicultural Affairs) (2007–11)
- McCormick Academic Standing Committee (2006–08)

### **Departmental Committees**

- Chair, EECS Diversity Committee (2013–present)
- Co-Chair, EECS Distinguished Seminar Committee (2006–2024)
- Co-Chair, EECS Graduate Committee (2011–15)
- EECS Associate Chair for Graduate Studies (2008–11)
- Member, EECS Undergraduate Committee (2007–08)
- Member, EECS Graduate Committee (2005–07, 2015–present)
- Member, EECS Distinguished Seminar Committee (2005–06)
- Member, ECE Graduate Committee (2000-05)
- Member, ECE Undergraduate Committee (1999–2000)
- Member, ECE Distinguished Seminar Committee (2002–05)

# **PROFESSIONAL ACTIVITIES**

### **Editorial Board Membership**

- Editor-in-Chief, IS&T Journal of Perceptual Imaging (2018–present)
- Editor-in-Chief, IEEE Transactions on Image Processing (2010–12)
- Associate Editor, IS&T/SPIE Journal of Electronic Imaging (2007–09)
- Associate Editor, Foundations and Trends in Signal Processing Journal (2006–09 and 2013–14)
- Associate Editor, IEEE Signal Processing Magazine (2006–08)
- Associate Editor, IEEE Transactions on Image Processing (1996–2003)
- Electronic Abstracts Editor, IEEE Transactions on Image Processing (1996–2003)
- Guest Editor, IEEE Journal of Selected Topics in Signal Processing, Special Issue on Image and Video Quality Assessment (Apr. 2009)
- Guest Editor, IEEE Signal Processing Magazine, Special Issue on Digital Halftoning (July 2003).
- Guest Editor, Journal of Electronic Imaging, Special Section on Human Vision and Electronic Imaging (Jan. 2001).

# Board/Committee Membership

- Chair, Fellow Evaluation Committee, IEEE Signal Processing Society (2022-23)
- Vice President Publications, IEEE Signal Processing Society (2015–17)
- Member, IEEE Publication Services and Products Board (2015–17)
- Member, IEEE Spectrum Advisory Board (2015–18)
- Elected Member, IEEE Signal Processing Society Board of Governors (2005–07)
- Member, IEEE Signal Processing Society Publications Board (1997–99, 2010–12)
- Member, IEEE Signal Processing Society Fellow Reference Committee (2014–16)
- Member, IEEE Signal Processing Society Nominations and Appointments Committee (2013, 2019–20)
- Member, IEEE Signal Processing Society Awards Board (2012)
- Member, IEEE Signal Processing Society Conference Board (2000–03)
- Member, Ad Hoc Committee for the Formation of the New Technical Committee on Bio Imaging and Signal Processing (2003)

# **Technical Committees**

- Member, IEEE Signal Processing Society Technical Committee on Bio Imaging and Signal Processing (2005–06)
- Chair, IEEE Signal Processing Society Technical Committee on Image and Multidimensional Signal Processing (2002–03; Vice-chair 2000–01; Member 1996–2005)
- Member, IEEE Signal Processing Society Technical Committee on Multimedia Signal Processing (2000–04)

# Symposium Co-chair

• Co-chair, IS&T/SPIE Symposium on Electronic Imaging: Science and Technology (Jan. 2005)

# Workshop Co-chair

- Co-chair "IEEE Image, Video, and Multidimensional Signal Processing Workshop" (June 2022)
- Co-chair "IEEE Image, Video, and Multidimensional Signal Processing Workshop" (June 2018)
- Co-chair "IEEE Image, Video, and Multidimensional Signal Processing Workshop on Perception and Visual Analysis" (June 2011)
- Co-chair "NSF Workshop on Distributed Communication and Signal Processing for Sensor Networks" (Dec. 2002)

# Symposium/Conference Technical Co-chair

- Co-chair, IS&T/SPIE Human Vision and Electronic Imaging Conference (annual, 1997–2018)
- Technical Program Co-chair, 2009 IEEE Int. Conference on Image Processing (ICIP) (Nov. 2009)
- Technical Program Co-chair, Int. Symposium on Information Processing in Sensor Networks (IPSN) (April 2004)

- Technical Program Co-chair for IMDSP Track, 2004 IEEE Int. Conference on Acoustics, Speech, and Signal Processing (ICASSP) (May 2004)
- Technical Program Co-chair for IMDSP Track, 2003 IEEE Int. Conference on Acoustics, Speech, and Signal Processing (ICASSP) (April 2003)
- Technical Program Co-chair, 2001 IEEE Int. Conference on Image Processing (ICIP) (Oct. 2001)

# Technical Program Committee Membership

- Area Chair, IEEE Int. Conference on Image Processing (2007–08)
- IEEE Int. Conference on Image Processing (1996–2006)
- IEEE Int. Conference on Acoustics, Speech, and Signal Processing (1996–present)
- IEEE Int. Conference on Multimedia and Expo (2002–present)
- Visual Communications and Image Processing Conference (VCIP) (2006–07)
- European Signal Processing Conference (EUSIPCO) (2006–07)
- Int. Conference on Semantic and Digital Media Technologies (SAMT) (2006-07)
- Int. Workshop on Semantic Media Adaptation and Personalization (SMAP) (2006)
- Int. Symposium on Signal Processing and Information Technology (ISSPIT) (2006)
- Int. Symposium on Information Processing in Sensor Networks (IPSN) (2003-05)
- IEEE Multimedia Signal Processing (MMSP) Workshop (2002, 2004, 2005)
- Int. Conference on Pattern Recognition (ICPR) (2002)
- IEEE/IS&T Ninth Image and Multidimensional Signal Processing (IMDSP) Workshop (1996)

# Other

• U.S. Liaison, 2004 IEEE Int. Conference on Image Processing (ICIP-2004)

# **Professional Society Membership**

- Elected Life Fellow of IEEE
- Elected Fellow of SPIE
- Elected Fellow of IS&T

# Reviewer

- National Science Foundation Review Panels (2002, 2005, 2011, 2017, 2020)
- Reviewer, IEEE Trans. Signal Processing, IEEE Trans. Image Processing, IEEE Trans. Pattern Analysis and Machine Intelligence, IEEE Signal Processing Letters, IEEE JSAC, IEEE Proceedings, Journal of the Optical Society of America (A), Journal of Electronic Imaging, EURASIP Journal on Applied Signal Processing, and others.

### **RESEARCH FUNDING**

- Project: "A Deep Learning Approach for Texture Enhancement" Agency: Dolby Duration: December 1, 2023 – November 30, 2024 Role: PI (Co-PI: G. Sharma, U. Rochester)
- Project: "Texture Analysis and Evaluation of Film Grain Noise" Agency: Netflix Duration: October 15, 2019 – August 31, 2022 Role: PI
- Project: "Cutset Topologies for Intelligence, Surveillance, and Reconnaissance" Agency: Office of Naval Research Duration: 5 years, April 15, 2014 – April 14, 2019 Role: PI (Co-PIs: G. Trajcevski, NU; D. Neuhoff, and R. Dick, U. Michigan)
- 4. Project: "Deriving Perceptually-based Texture and Color Features for Image Segmentation, Categorization, and Retrieval" Agency: National Science Foundation Duration: June 1, 2002 – August 31, 2006 Role: PI
- 5. Project: "A Framework for Efficient Wireless Video Communication: Dynamic Source/Channel Adaptation and Distortion Evaluation" Agency: National Science Foundation Duration: August 15, 2003 – July 31, 2007 Role: PI (Co-PI's: R. Berry, A.K. Katsaggelos)
- 6. Project: "Visual, Tactile, and Acoustic Signal Analysis and Perception for Tactile-Acoustic Display"
  Agency: National Science Foundation
  Duration: July 1, 2010 June 30, 2011
  Role: PI
- 7. Project: "A Dynamic Tactile Interface for Visually Impaired and Blind People" Agency: National Science Foundation Duration: November 11, 2007 – November 30, 2009 Role: Consultant (PI: Ilona Kretzschmar, CUNY City College; Co-PI's: James E. West, Johns Hopkins University; Leigh R. Abts, University of Maryland; Karen Gourney, CUNY Baruch College; Vivien Tartter, CUNY City College)
- 8. Project: "Perceptual Data Analysis and Semantic Information Extraction for Geospatial Intelligence"
  Agency: National Nuclear Security Administration (NNSA)
  Duration: March 1, 2010 May 6, 2015
  Role: PI (Co-PI: A.K. Katsaggelos)
- Project: "Compressive Sensing and Super-Resolution of Passive Millimeter Wave Images" Agency: National Nuclear Security Administration (NNSA) Duration: March 1, 2010 – May 6, 2014 Role: Co-PI (PI: A.K. Katsaggelos)

- Project: "A Distributed Cognitive Information Processing System" Agency: National Science Foundation/Defense Intelligence Agency Duration: March 1, 2005 – February 28, 2008 Role: PI (Co-PI's: A.K. Katsaggelos, S. Musa, Y. Wu)
- Project: "Cognitive Processing for Biometric Information for the Determinations of Intent" Agency: Defense Intelligence Agency (via Univ. Chicago, Argonne National Laboratory) Duration: January 1, 2009 – September 30, 2010 Role: PI (Co-PI's: H. Mohseni, A.K. Katsaggelos, A. Sahakian, S. Shahriar, Y. Wu)
- Project: "Image and Video Processing and Communications in the SensIT Program" Agency: DARPA Duration: March 1, 2001 – June 28, 2003 Role: Co-PI (PI: A.K. Katsaggelos, Co-PI: R. Berry)
- 13. Project: "Structural Similarity Metrics in Image Analysis and Compression" Agency: SONY Duration: June 1, 2010 – May 31, 2011 Role: PI
- 14. Project: "Perceptually-Based Techniques for Image Segmentation and Semantic Classification" Agency: Google
   Duration: September 1, 2007 – August 31, 2008
   Role: PI
- Project: "Perceptually-Based Techniques for Intelligent Video Content-Management" Agency: Motorola Center for Telecommunications Duration: September 1, 2004 – August 31, 2007 Role: PI
- Project: "Intelligent Video Processing" Agency: Motorola Center for Telecommunications Duration: September 1, 2001 – August 31, 2004 Role: PI (Co-PI: A.K. Katsaggelos)
- Project: "Video Transmission Over HSDPA" Agency: Motorola Center for Telecommunications Duration: September 1, 2004 – August 31, 2007 Role: PI (Co-PIs: R. Berry, A.K. Katsaggelos)
- Project: "Perceptual Metrics and Subjective Evaluations for Low Rate Video Compression and Transmission"
   Agency: Motorola Center for Telecommunications
   Duration: September 1, 2003 – August 31, 2004
   Role: PI (Co-PIs: A.K. Katsaggelos, R. Berry)
- Project: "Future Video Compression Techniques and Standards" Agency: Motorola Center for Telecommunications Duration: September 1, 2003 – August 31, 2006 Role: Co-PI (PI: A.K. Katsaggelos)
- 20. **Project:** "Robust Audio-Visual Recognition Under Non-Ideal Environments" **Agency:** Motorola Center for Telecommunications

**Duration:** September 1, 2004 – August 31, 2007 **Role:** Co-PI (PI: A.K. Katsaggelos, Co-PI Y. Wu)

- Project: "Audio Visual Interaction in Multimodal Communications" Agency: Motorola Center for Telecommunications Duration: September 1, 2002 – August 31, 2004 Role: Co-PI (PI: A.K. Katsaggelos, Co-PI Y. Wu)
- 22. Project: "Pre- and Post-Processing Techniques for Video Compression" Agency: Motorola Center for Telecommunications Duration: September 1, 2000 – August 31, 2003 Role: Co-PI (PI: A.K. Katsaggelos)
- 23. Project: "Workshop on Distributed Communication and Signal Processing for Sensor Networks"
  Agency: National Science Foundation
  Duration: December 1, 2002 July 31, 2003
  Role: PI (Co-PI: A.K. Katsaggelos)

## INVITED TALKS

- "Machine Learning and Visual Texture Analysis," Indian Institute of Science, Bengaluru, India, January 21, 2025.
- "Generative Adversarial Networks for Visual Texture Modeling: Myths and Propects," Artificial Intelligence for Eyecare Workshop, Indian Institute of Science, Bengaluru, India, January 17, 2025.
- "Generative Adversarial Networks for Visual Texture Modeling: Myths and Propects," Invited Presentation, Human Vision and Electronic Imaging Conference Banquet, Electronic Imaging 2024, January 24, 2024.
- 4. "Visual Texture Analysis: From Quality and Compression to Material Properties," Invited Presentation, Huib de Ridder Symposium, Delft University of Technology, September 9, 2022.
- "Perceptual Texture Analysis for Multimedia Processing," Keynote Presentation, IEEE 22nd International Workshop on Multimedia Signal Processing, Tampere, Finland, September 21–24, 2020.
- "From Model-Based Halftoning to Cutset Sampling and Structurally Lossless Compression: Three Decades of Research with David Neuhoff," University of Michigan, Ann Arbor, MI, April 5, 2019.
- "Visual Texture Analysis: From Similarity to Material Properties," Distinguished Speakers Series, DePaul University, Chicago, IL, February 1, 2019.
- 8. "Visual Texture Analysis: From Quality and Compression to Material Properties," Facebook, Menlo Park, CA, January 18, 2019
- 9. "Visual Texture Analysis for Quality and Compression: From Perceptual Transparency to Structural Equivalence," Netflix, Los Gatos, CA, January 15, 2019
- 10. "Visual Texture Analysis: From Similarity to Material Properties," Georgia Institute of Technology, Atlanta, GA, April 20, 2018.

- 11. "Perceiving Graphical and Pictorial Information via Hearing and Touch," University of Brescia, Italy, September 16, 2015.
- "Perceiving Graphical and Pictorial Information via Hearing and Touch," IEEE Signal Processing Society Santa Clara Valley Chapter, Sunnyvale, CA, May 21, 2015.
- "Visual Signal Analysis: Focus on Texture Similarity," University of California at Berkeley, Berkeley, CA, May 19, 2015.
- "Visual Texture Analysis: From Similarity to Material Properties," 19<sup>th</sup> Annual Signal and Image Sciences Workshop, Lawrence Livermore National Laboratory, Livermore, CA, May 13, 2015.
- 15. "Visual Signal Analysis: Focus on Texture Similarity," Stanford Center for Image Systems Engineering (SCIEN), Stanford University, Stanford, CA, May 6, 2015.
- 16. "Perceiving Graphical and Pictorial Information via Hearing and Touch," IEEE Signal Processing Society Oakland-East Bay Chapter, Livermore, CA, April 29, 2015.
- 17. "What does texture tell us about what we see?" Lightning Talk, Lawrence Livermore National Laboratory, Livermore, CA, March 19, 2015.
- 18. "Visual Signal Analysis: Focus on Texture Similarity," Computational Engineering Division Seminar, Lawrence Livermore National Laboratory, Livermore, CA, February 5, 2015.
- Keynote Presentation: "Visual Signal Analysis and Compression: Focus on Texture Similarity," 5<sup>th</sup> European Workshop on Visual Information Processing, Paris, France, December 10, 2014.
- 20. Keynote Presentation: "Visual Signal Analysis and Compression: Focus on Texture Similarity," 2014 Western New York Image Processing Workshop, Rochester, NY, November 7, 2014.
- 21. "Perceptual Texture Similarity and Structurally Lossless Image Compression" University of Rochester, Rochester, NY, November 6, 2014.
- 22. Keynote Presentation: "Visual Signal Analysis and Compression: Focus on Texture Similarity," Sensometrics 2014 (biennial conference of the sensometrics Society), Chicago, IL, July 31, 2014.
- 23. "Visual Signal Analysis and Compression: Focus on Texture Similarity," Tampere University of Technology, Tampere, Finland, April 25, 2014.
- 24. "Huma Vision Versus Computer Vision," Cafe Scientifique (CafeSci), Tampere, Finland, April 15, 2014.
- "Visual Signal Analysis and Compression: Focus on Texture Similarity," LG Electronics Mobile Research Lab, San Jose, CA, February 7, 2014.
- 26. "Acoustic-Tactile Rendering of Visual Information for the Visually Impaired," Howard University, Washington, DC, November 12, 2013.
- 27. "Acoustic-Tactile Rendering of Visual Information for the Visually Impaired," University of Maryland Baltimore County, Baltimore, MD, November 11, 2013.
- 28. "Visual Signal Analysis and Compression: Focus on Texture Similarity," Mitsubishi Electric Research Laboraties (MERL), Cambridge, MA, May 3, 2013.
- "Visual Signal Analysis and Compression: Focus on Texture Similarity," Boston University, May 2, 2013.

- "Visual Signal Analysis and Compression: Focus on Texture Similarity," Digital Signal Processing Group, Massachusetts Institute of Technology, Cambridge, MA, May 1, 2013.
- 31. "Perceiving Graphical and Pictorial Information via Hearing and Touch," Schepens Eye Research Institute, Harvard University, Boston, MA, May 1, 2013.
- 32. "Visual Signal Analysis and Compression: Focus on Texture Similarity," Raytheon BBN Technologies, Cambridge, MA, April 30, 2013.
- 33. "Perceptual Image Analysis," Guest Lecture in Digital Image Processing Class (EECS 6.344), Massachusetts Institute of Technology, Cambridge, MA, April 30, 2013.
- 34. "Visual Signal Analysis and Compression: Focus on Texture Similarity," Perceptual Science Group, Massachusetts Institute of Technology, Cambridge, MA, April 29, 2013.
- 35. "Visual Signal Analysis and Compression: Focus on Texture Similarity," Michigan State University, March 28, 2013.
- 36. "Perceiving Graphical and Pictorial Information via Hearing and Touch," Johns Hopkins University, March 26, 2013.
- "Texture Similarity Metrics for Visual Signal Analysis and Compression," Arizona State University, March 11, 2011.
- 38. Keynote Presentation: "Mathematical and Perceptual Models for Image Analysis," 5th International Workshop on Semantic Media Adaptation and Personalization, Limassol, Cyprus, December 9–10, 2010.
- 39. "Visual Signal Analysis and Compression: Rethinking Texture," Hong Kong Polytechnic University, Hong Kong, September 30, 2010.
- 40. **Plenary Talk:** "Visual Signal Analysis and Compression: Rethinking Texture," IEEE Int. Conference on Image Processing (ICIP), Hong Kong, September 28, 2010.
- 41. "Image Analysis and Compression: Renewed Focus On Texture," University of Illinois at Chicago, Chicago, IL, February 5, 2010.
- 42. Keynote Presentation: "Image Analysis and Compression: Renewed Focus On Texture," Visual Information Processing and Communication Conf., San Jose, CA, January 19–21, 2010.
- 43. "Structural Similarity Metrics in Image Analysis and Compression," Intel, Santa Clara, CA, May 1, 2009.
- 44. "Structural Similarity Metrics in Image Analysis and Compression," DoCoMo, San Jose, CA, January 23, 2009.
- 45. "Perceptual Image and Video Segmentation and Semantic Classification," Guest Lecture in Digital Image Processing Class (EECS 6.344), Massachusetts Institute of Technology, Cambridge, MA, April 15, 2008.
- 46. "Mathematical and Perceptual Models for Image Segmentation and Semantic Classification," Massachusetts Institute of Technology, Cambridge, MA, April 15, 2008.
- 47. "Structural Similarity Metrics in Image Analysis and Compression," University of Michigan, Ann Arbor, MI, June 9, 2008.
- 48. "Lossy Compression of Bilevel Images Based on Markov Random Fields," Georgia Institute of Technology, Atlanta, GA, February 29, 2008.

- 49. "Structural Similarity Metrics in Image Analysis and Retrieval," Google, Inc., Mountain View, CA, February 1, 2008.
- 50. "Mathematical and Perceptual Models for Image Segmentation and Semantic Classification," University of Wisconsin, Madison, WI, October 24, 2007.
- "Image Analysis and Human Perception," Mornings at McCormick, Northwestern Univ., Evanston, IL, September 26, 2007.
- 52. "Perceptual Image and Video Segmentation and Semantic Classification," Ooyala, Inc., Mountain View, CA, June 22, 2007.
- 53. "Mathematical and Perceptual Models for Image Segmentation and Semantic Classification," University of Illinois at Chicago, Chicago, IL, March 1, 2007.
- 54. "Perceptual Image and Video Segmentation and Semantic Classification," Google, Inc., Mountain View, CA, February 2, 2007.
- 55. "Mathematical and Perceptual Models for Image Analysis: The Need for Understanding Human Perception," Center for Quantum Devices, Northwestern Univ., Evanston, IL, August 31, 2006.
- 56. "Mathematical and Perceptual Models for Image Analysis: The Need for Understanding Human Vision," Meet the EECS Faculty Seminar, Northwestern Univ., Evanston, IL, April 4, 2006.
- 57. "Structural Similarity Quality Metrics in a Coding Context: Exploring the Space of Realistic Distortions," University of British Columbia, Vancouver, Canada, April 7, 2006.
- "Perceptual Image/Video Segmentation and Semantic Classification," Intel, Santa Clara, CA, March 27, 2006.
- 59. "Perceptual Image Segmentation and Semantic Classification," Georgia Institute of Technology, Atlanta, GA, March 10, 2006.
- 60. "Structural Similarity Quality Metrics in a Coding Context: Exploring the Space of Realistic Distortions," Georgia Institute of Technology, Atlanta, GA, March 9, 2006.
- "Mathematical and Perceptual Models for Image Segmentation," Johns Hopkins University, Baltimore, MD, October 26, 2005.
- 62. "Mathematical and Perceptual Models for Image Segmentation," Aristotle University of Thessaloniki, Greece, September 19, 2005.
- "Mathematical and Perceptual Models for Image Segmentation," Multimedia and Mathematics Workshop, Banff International Research Station, Banff, Canada, July 27, 2005.
- 64. "Adaptive Perceptual Color-Texture Image Segmentation," New York University, New York, NY, March 25, 2005.
- 65. Plenary Talk: "Model-Based Halftoning," IEEE Int. Conference on Image Processing (ICIP), Singapore, October 24–27, 2004.
- "Adaptive Perceptual Color-Texture Image Segmentation," University of Toronto, Toronto, Canada, May 21, 2004.
- 67. "Adaptive Perceptual Color-Texture Image Segmentation," Purdue University, West Lafayette, IN, February 2, 2004.
- "Adaptive Perceptual Color-Texture Image Segmentation," University of Michigan, Ann Arbor, MI, November 17, 2003.

- "Adaptive Image Segmentation Based on Perceptual Color and Texture Features," Stanford University, April 24, 2003.
- 70. "Efficient Video Communication over Lossy Channels: Dynamic Source/Channel Adaptation and Distortion Evaluation," Hewlett-Packard Laboratories, April 24, 2003.
- 71. "Efficient Video Communication over Lossy Channels: Dynamic Source/Channel Adaptation and Distortion Evaluation," University of California at Berkeley, January 22, 2003.
- 72. "Perceptual Models for Image Quality and Compression," Aristotle University of Thessaloniki, July 10, 2002.
- 73. "Perceptual Models for Image Quality and Compression," IBM T. J. Watson Research Center, Yorktown Heights, NY, July 14, 2000.
- 74. "Perceptual Models for Image Quality and Compression," Purdue University, West Lafayette, IN, May 11, 2000.
- "Perceptual Models for Image Quality and Compression," Illinois Institute of Technology, Chicago, IL, Feb. 18, 2000.
- "Model-Based Halftoning," Massachusetts Institute of Technology, Cambridge, MA, Nov. 13, 1997.
- 77. "Model-Based Halftoning," Rutgers University, Piscataway, NJ, Sep. 22, 1997.
- 78. "Model-Based Halftoning," Brown University, Providence, RI, Mar. 4, 1997.
- 79. "Model-Based Halftoning," Princeton University, Princeton, NJ, Oct. 24, 1996.
- 80. "Model-Based Halftoning," Aristotle University of Thessaloniki, Greece, Sep. 1996.
- "Perceptual Coding and Printing of Gray-Scale Images," University of Michigan, Ann Arbor, MI, May 1991.

### PUBLICATIONS

### Journal Articles – Published/Accepted

- K. Zhang, Z. Shi, J. Zujovic, R. van Egmond, H. de Ridder, D. L. Neuhoff, and T. N. Pappas, "Training and testing texture similarity metrics for image compression," *IEEE Trans. Image Processing*, vol. 33, pp. 1614–1626, 2024.
- J. Lin, Z. Xu, G. Sharma, and T. N. Pappas, "Texture representation via analysis and synthesis with generative adversarial networks," *e-Prime - Advances in Electrical Engineering, Electronics* and Energy, vol. 6, pp. 1–10, Dec. 2023.
- K. Zhang, J. Wang, D. Tian, and T. N. Pappas, "Film grain rendering and parameter estimation," ACM Trans. Graph., vol. 42, July 2023.
- J. Lin, G. Sharma, and T. N. Pappas, "Toward universal texture synthesis by combining texton broadcasting with noise injection in StyleGAN-2," *e-Prime - Advances in Electrical Engineering*, *Electronics and Energy*, vol. 3, pp. 1–11, Mar. 2023.
- S. Zha, D. Tian, and T. N. Pappas, "Pattern-based reconstruction of K-level images from cutsets," *IEEE Trans. Image Processing*, vol. 31, pp. 5529–5542, 2022.

- J. Wang, C. Kuesten, J. Mayne, G. Majmudar, and T. N. Pappas, "Human skin gloss perception based on image statistics," *IEEE Trans. Image Processing*, vol. 30, pp. 3610–3622, 2021.
- S. Zha, T. N. Pappas, and D. L. Neuhoff, "Hierarchical lossy bilevel image compression based on cutset sampling," *IEEE Trans. Image Processing*, vol. 30, pp. 1527–1541, 2021.
- J. Wang, J. Zujovic, J. Choi, B. Chakraborty, R. van Egmond, H. de Ridder, and T. N. Pappas, "Influence of texture structure on the perception of color composition," *Journal of Perceptual Imaging*, vol. 3, pp. 10401–1–10401–20, Jan. 2020.
- P. M. Silva, T. N. Pappas, J. Atkins, and J. E. West, "Perceiving graphical and pictorial information via touch and hearing," *IEEE Trans. Multimedia*, vol. 18, no. 12, pp. 2432–2445, Dec. 2016.
- J. Zujovic, T. N. Pappas, D. L. Neuhoff, R. van Egmond, and H. de Ridder, "Effective and efficient subjective testing of texture similarity metrics," *Journal of the Optical Society of America* A, vol. 32, pp. 329–342, Feb. 2015.
- M. G. Reyes, D. L. Neuhoff, and T. N. Pappas, "Lossy cutset coding of bilevel images based on Markov random fields," *IEEE Trans. Image Processing*, vol. 23, pp. 1652–1665, Apr. 2014.
- 12. T. N. Pappas, D. L. Neuhoff, H. de Ridder, and J. Zujovic, "Image analysis: Focus on texture similarity," *Proc. IEEE*, vol. 101, no. 9, pp. 2044–2057, Sep. 2013. (Invited paper)
- 13. J. Zujovic, T. N. Pappas, and D. L. Neuhoff, "Structural texture similarity metrics for image analysis and retrieval," *IEEE Trans. Image Processing*, vol. 22, no. 7, pp. 2545–2558, Jul. 2013.
- T. N. Pappas, "Mathematical and perceptual models for image and video segmentation," *IEEE Multimedia Communications Technical Committee E-Letter*, vol. 4, pp. 9–13, July 2009.
- S. Bae, T. N. Pappas, and B.-H. Juang, "Subjective evaluation of spatial resolution and quantization noise tradeoffs," *IEEE Trans. Image Processing*, vol. 18, pp. 495–508, Mar. 2009.
- E. Maani, P. V. Pahalawatta, R. Berry, T. N. Pappas, and A. K. Katsaggelos, "Resource allocation for downlink multiuser video transmission over wireless lossy networks," *IEEE Trans. Image Processing*, vol. 17, pp. 1663–1671, Sept. 2008.
- A. C. Brooks, X. Zhao, and T. N. Pappas, "Structural similarity quality metrics in a coding context: Exploring the space of realistic distortions," *IEEE Trans. Image Processing*, vol. 17, pp. 1261–1273, Aug. 2008.
- P. Pahalawatta, R. Berry, T. Pappas, and A. Katsaggelos, "Content-aware resource allocation and packet scheduling for video transmission over wireless networks," *IEEE J. Select. Areas Commun.*, vol. 25, pp. 749–759, May 2007.
- 19. T. N. Pappas, J. Chen, and D. Depalov, "Perceptually based techniques for image segmentation and semantic classification," *IEEE Commun. Mag.*, vol. 45, pp. 44–51, Jan. 2007.
- Y. Eisenberg, F. Zhai, T. N. Pappas, R. Berry, and A. K. Katsaggelos, "VAPOR: Variance-aware per-pixel optimal resource allocation," *IEEE Trans. Image Processing*, vol. 15, pp. 289–299, Feb. 2006.
- F. Zhai, Y. Eisenberg, T. N. Pappas, R. Berry, and A. K. Katsaggelos, "Rate-distortion optimized hybrid error control for real-time packetized video transmission," *IEEE Trans. Image Processing*, vol. 15, pp. 40–53, Jan. 2006.
- 22. J. Chen, T. N. Pappas, A. Mojsilovic, and B. E. Rogowitz, "Adaptive perceptual color-texture image segmentation," *IEEE Trans. Image Processing*, vol. 14, pp. 1524–1536, Oct. 2005.

- T. N. Pappas, J. Chen, and D. Depalov, "Learning perception," OE Magazine, vol. 5, pp. 18–20, Oct. 2005.
- 24. F. Zhai, C. E. Luna, Y. Eisenberg, T. N. Pappas, R. Berry, and A. K. Katsaggelos, "Joint source coding and packet classification for real-time video streaming over differentiated services networks," *IEEE Trans. Multimedia*, vol. 7, pp. 716–726, Aug. 2005.
- F. Zhai, Y. Eisenberg, T. N. Pappas, R. Berry, and A. K. Katsaggelos, "Joint source-channel coding and power allocation for energy efficient wireless video communications," *Signal Processing: Image Communication*, vol. 20, pp. 371–387, Apr. 2005.
- A. K. Katsaggelos, Y. Eisenberg, F. Zhai, R. Berry, and T. N. Pappas, "Advances in efficient resource allocation for packet-switched video transmission," *Proc. IEEE*, special issue on "Advances in Video Coding and Delivery," vol. 93, pp. 135–147, Jan. 2005. (Invited)
- 27. S. A. Tsaftaris, A. K. Katsaggelos, T. N. Pappas, and E. T. Papoutsakis, "How can DNAcomputing be applied in digital signal processing?," *IEEE Signal Processing Mag.*, vol. 21, pp. 57– 61, Nov. 2004.
- 28. S. A. Tsaftaris, A. K. Katsaggelos, T. N. Pappas, and E. T. Papoutsakis, "DNA computing from a signal processing viewpoint," *IEEE Signal Processing Mag.*, vol. 21, pp. 100–106, Sep. 2004.
- 29. C. E. Luna, Y. Eisenberg, R. Berry, T. N. Pappas, and A. K. Katsaggelos, "Joint source coding and data rate adaptation for energy efficient wireless video streaming," *IEEE J. Select. Areas Commun.*, special issue on "Recent Advances in Wireless Multimedia," vol. 21, pp. 1710–1720, Dec. 2003.
- H. Wang, G. M. Schuster, A. K. Katsaggelos, and T. N. Pappas, "An efficient rate-distortion optimal shape coding approach utilizing a skeleton-based decomposition," *IEEE Trans. Image Processing*, vol. 12, pp. 1181–1193, Oct. 2003.
- T. N. Pappas, J. P. Allebach, and D. L. Neuhoff, "Model-based digital halftoning," *IEEE Signal Processing Mag.*, vol. 20, pp. 14–27, July 2003.
- 32. Y. Eisenberg, C. Luna, T. N. Pappas, R. Berry, and A. K. Katsaggelos, "Joint source coding and transmission power management for energy efficient wireless video communications," *IEEE Trans. Circuits Syst. Video Technol.*, special issue on "Wireless Video," vol. 12, pp. 411–424, June 2002.
- 33. B. E. Rogowitz, T. N. Pappas, and J. P. Allebach, "Human vision and electronic imaging," Journal of Electronic Imaging, vol. 10, pp. 10–19, Jan. 2001.
- T. N. Pappas and D. L. Neuhoff, "Least-squares model-based halftoning," *IEEE Trans. Image Processing*, vol. 8, pp. 1102–1116, Aug. 1999.
- 35. D. L. Neuhoff, T. N. Pappas, and N. Seshadri, "One-dimensional least-squares model-based halftoning," *Journal of the Optical Society of America A*, vol. 14, pp. 1707–1723, Aug. 1997.
- T. N. Pappas, "Model-based halftoning of color images," *IEEE Trans. Image Processing*, vol. 6, pp. 1014–1024, July 1997.
- T. N. Pappas, "Digital halftoning: A model-based perspective," Int. Journal of Imaging Systems and Technology, vol. 7, pp. 110–120, 1996.
- T. N. Pappas and D. L. Neuhoff, "Printer models and error diffusion," *IEEE Trans. Image Processing*, vol. 4, pp. 66–80, Jan. 1995.
   **Reprinted in:** Selected Papers on Digital Halftoning (J. P. Allebach, ed.), pp. 601–615, SPIE Milestone Series, 1999.

- D. L. Neuhoff and T. N. Pappas, "Perceptual coding of images for halftone display," *IEEE Trans. Image Processing*, vol. 3, pp. 341–354, July 1994.
- T. N. Pappas, C.-K. Dong, and D. L. Neuhoff, "Measurement of printer parameters for modelbased halftoning," *Journal of Electronic Imaging*, vol. 2, pp. 193–204, July 1993.
   **Reprinted in:** Selected Papers on Digital Halftoning (J. P. Allebach, ed.), pp. 571–583, SPIE Milestone Series, 1999.
- 41. T. N. Pappas, "An adaptive clustering algorithm for image segmentation," *IEEE Trans. Signal Processing*, vol. SP-40, pp. 901–914, Apr. 1992.
- 42. T. N. Pappas and J. S. Lim, "A new method for estimation of coronary artery dimensions in angiograms," *IEEE Tr. on ASSP*, vol. ASSP-36, pp. 1501–1513, Sept. 1988.
- 43. T. Pappas, A. J. Laub, and N. R. Sandell, Jr., "On the numerical solution of the discrete-time algebraic Riccati equation," *IEEE Tr. Automatic Control*, vol. AC-25, pp. 631–641, Aug. 1980.

#### **Book Chapters – Published**

- K. Seshadrinathan, T. N. Pappas, R. J. Safranek, J. Chen, Z. Wang, H. R. Sheikh, and A. C. Bovik, "Image quality assessment," in *Essential Guide to Image Processing* (A. C. Bovik, ed.), Elsevier, 2009.
- T. N. Pappas, R. J. Safranek, and J. Chen, "Perceptual criteria for image quality evaluation," in *Handbook of Image and Video Processing* (A. C. Bovik, ed.), pp. 939–959, Academic Press, second ed., 2005.
- 3. B. E. Rogowitz, T. N. Pappas, and J. P. Allebach, "Human vision and electronic imaging," in Handbook of Optics, Vol. III (M. Bass, ed.), ch. 17, pp. 17.1–17.14, OSA/McGraw-Hill, 2001. Editor-in-Chief: Michael Bass, Associate Editors: Jay M. Enoch, Eric W. Van Stryland, William L. Wolfe.
- 4. T. N. Pappas and R. J. Safranek, "Perceptual criteria for image quality evaluation," in *Handbook* of Image and Video Processing (A. C. Bovik, ed.), pp. 669–684, Academic Press, 2000.

#### Guest Editorials (Special Issues/Sections) – Published

- L. J. Karam, T. Ebrahimi, S. S. Hemami, T. N. Pappas, R. J. Safranek, Z. Wang, and A. B. Watson, "Introduction to the issue on visual media quality assessment," *IEEE J. Sel. Topics Signal Process.*, vol. 3, pp. 189–192, Apr. 2009.
- J. Allebach and T. Pappas, "Digital halftoning," *IEEE Signal Processing Mag.*, vol. 20, pp. 12– 13, July 2003.
- B. E. Rogowitz, T. N. Pappas, and J. P. Allebach, "Special section on human vision and electronic imaging," *Journal of Electronic Imaging*, vol. 10, pp. 8–9, Jan. 2001.

#### **Edited Proceedings – Published**

- B. E. Rogowitz, T. N. Pappas, and H. de Ridder, eds., Human Vision and Electronic Imaging 2018, IS&T Int. Symp. Electronic Imaging, (Burlingame, CA), Jan. 29 – Feb. 1 2018.
- B. E. Rogowitz, T. N. Pappas, and H. de Ridder, eds., Human Vision and Electronic Imaging 2017, IS&T Int. Symp. Electronic Imaging, (Burlingame, CA), Jan. 30 – Feb. 2 2017.
- B. E. Rogowitz, T. N. Pappas, and H. de Ridder, eds., Human Vision and Electronic Imaging 2016, IS&T Int. Symp. Electronic Imaging, (San Francisco, CA), Feb. 14–18 2016.

- B. E. Rogowitz, T. N. Pappas, and H. de Ridder, eds., Human Vision and Electronic Imaging XIX, vol. 9394 of Proc. SPIE, (San Francisco, CA), Feb. 9–12 2015.
- 5. B. E. Rogowitz, T. N. Pappas, and H. de Ridder, eds., *Human Vision and Electronic Imaging XIX*, vol. 9014 of *Proc. SPIE*, (San Francisco, CA), Feb. 3–6 2014.
- B. E. Rogowitz, T. N. Pappas, and H. de Ridder, eds., Human Vision and Electronic Imaging XVIII, vol. 8651 of Proc. SPIE, (San Francisco, CA), Feb. 4–7 2013.
- B. E. Rogowitz, T. N. Pappas, and H. de Ridder, eds., Human Vision and Electronic Imaging XVII, vol. 8291 of Proc. SPIE, (San Francisco, CA), Jan. 23–26 2012.
- B. E. Rogowitz and T. N. Pappas, eds., Human Vision and Electronic Imaging XVI, vol. 7865 of Proc. SPIE, (San Francisco, CA), Jan. 24–27 2011.
- B. E. Rogowitz and T. N. Pappas, eds., Human Vision and Electronic Imaging XV, Proc. SPIE Vol. 7527, (San Jose, CA), Jan. 18–21 2010.
- B. E. Rogowitz and T. N. Pappas, eds., Human Vision and Electronic Imaging XIV, Proc. SPIE Vol. 7240, (San Jose, CA), Jan. 19–22 2009.
- 11. B. E. Rogowitz and T. N. Pappas, eds., *Human Vision and Electronic Imaging XIII*, Proc. SPIE Vol. 6806, (San Jose, CA), Jan. 28–31 2008.
- B. E. Rogowitz, T. N. Pappas, and S. J. Daly, eds., Human Vision and Electronic Imaging XII, Proc. SPIE Vol. 6492, (San Jose, CA), Jan. 29–Feb. 1, 2007.
- B. E. Rogowitz, T. N. Pappas, and S. J. Daly, eds., Human Vision and Electronic Imaging XI, Proc. SPIE Vol. 6057, (San Jose, CA), Jan. 16–18 2006.
- 14. B. E. Rogowitz, T. N. Pappas, and S. J. Daly, eds., *Human Vision and Electronic Imaging X*, Proc. SPIE Vol. 5666, (San Jose, CA), Jan. 17–20 2005.
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