

Hany Farid

CONTACT	Dartmouth College 6211 Sudikoff Laboratory Hanover, NH 03755	603.646.2761 farid@dartmouth.edu www.cs.dartmouth.edu/farid
APPOINTMENTS	Dartmouth College, Department of Computer Science <i>Albert Bradley 1915 Third Century Professor</i> <i>Department Chair</i> <i>Professor</i> <i>William H. Neukom 1964 Distinguished Professor of Computational Science</i> <i>David T. McLaughlin Distinguished Professor of Computer Science</i> <i>Professor</i> <i>Associate Professor</i> <i>Assistant Professor</i> Dartmouth College, Tuck School of Business <i>Adjunct Professor of Business Administration</i> Counter Extremism Project <i>Senior Adviser</i> Fourandsix Technologies, Inc. <i>Chief Technology Officer and Co-founder</i> Stanford University <i>Visiting Professor</i> University of California, Berkeley <i>Visiting Professor</i> Dartmouth College, Neukom Institute for Computational Science <i>Director</i>	1999 – present <i>2016 – present</i> <i>2015 – present</i> <i>2011 – 2016</i> <i>2008 – 2011</i> <i>2007 – 2008</i> <i>2006 – 2007</i> <i>2004 – 2006</i> <i>1999 – 2004</i> 2016 – present 2016 – present 2011 – present 2012 – 2014 2010 – 2012 2008 – 2011
EDUCATION	Massachusetts Institute of Technology <i>Postdoctoral Fellow, Brain and Cognitive Sciences (adviser: Ted Adelson)</i> University of Pennsylvania <i>Ph.D., Computer Science (adviser: Eero Simoncelli)</i> State University of New York at Albany <i>M.S., Computer Science</i> University of Rochester <i>B.S., Computer Science with Applied Mathematics</i>	1997 – 1999 1993 – 1997 1990 – 1992 1984 – 1988
AWARDS	National Academy of Inventors (NAI), Fellow, 2016 University at Albany Excellence in Science and Technology Award, 2010 John Simon Guggenheim Fellowship, 2006 Alfred P. Sloan Fellowship, 2002	
FUNDING	DARPA. <i>Photons, Pixels, Photoshop and the Internet</i> , (929K), Co-PI, 2016 National Institute of Justice. <i>Degrade It</i> , (124K), 2016 Microsoft Corp. <i>Combating On-line Extremism</i> , 2016 NVIDIA Corp. <i>How Realistic is Photorealistic?</i> , (Equipment Grant), 2015 National Science Foundation. <i>GridIron</i> (474K), Co-PI, 2012 National Science Foundation. <i>Instrument Development for Biological Research</i> (212K), Co-PI, 2008 National Science Foundation. <i>Digital Imaging Laboratory at Dartmouth</i> (427K), 2007 Department of Homeland Security. <i>Digital Video Forensics</i> (255K), 2007 Howard Hughes Medical Institute. <i>Undergraduate Science Education</i> (1.5M), Co-PI, 2006 United States Air Force. <i>Digital Image Forensics</i> (380K), 2006 National Science Foundation. <i>The Evolution of Mate Choice in Damselflies</i> (535K), Co-PI, 2005 Bureau of Justice Assistance. <i>Digital Image Forensics</i> (125K), 2005 Microsoft Corp. (375K), 2005, 2006, 2007, 2009, 2016 Adobe Systems, Inc. (110K), 2004, 2006, 2008 National Institute of Justice. <i>Digital Tampering and Secrets</i> (690K), 2003 National Institute of Justice. <i>Detecting Digital Tampering</i> (250K), 2000 National Science Foundation. <i>CAREER: Mixing and Separating Digital Images</i> (315K), 2000	

- PUBLICATIONS (IMPACT) h -index=55; total citations=12,655; i500-index=5; i250-index=13; i100-index=35; i10-index=95.¹
- PUBLICATIONS (BOOK) H. Farid. Photo Forensics, MIT Press, 2016.
- PUBLICATIONS (JOURNAL) H. Farid. Reining in Online Abuses. *Technology and Innovation*, 2017 (in press).
- B. Mader, M.S. Banks, and H. Farid. Identifying Computer-Generated Portraits: The Importance of Training and Incentives. *Perception*, 46(9):1062-1076, 2017.
- K. Greenham, P. Lou, J.R. Puzey, G. Kumar, C. Arnevik, H. Farid, J. H. Willis, and C.R McClung. Geographic Variation of Plant Circadian Clock Function in Natural and Agricultural Settings. *Journal of Biological Rhythms*, 32(1):26-34, 2016.
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- S. Pittala, E. Whiting, and H. Farid. A 3-D Stability Analysis of Lee Harvey Oswald in the Backyard Photo. *Journal of Digital Forensics, Security and Law*, 10(3):87-98, 2015.
- K. Greenham, P. Lou, S. E. Remsen, H. Farid, and C.R McClung. TRiP: Tracking Rhythms in Plants, an automated leaf movement analysis program for circadian period estimation. *Plant Methods*, 11(33):1-11, 2015.
- E. Kee, J. O'Brien, and H. Farid. Exposing Photo Manipulation from Shading and Shadows. *ACM Transactions on Graphics*, 33(5):165:1-165:21, 2014.
- M. Bravo and H. Farid. Informative Cues Can Slow Search: The cost of matching a specific template. *Perception*, 76(1):32-39, 2014.
- E. Kee, J. O'Brien, and H. Farid. Exposing Photo Manipulation with Inconsistent Shadows. *ACM Transactions on Graphics*, 32(4):28:1-12, 2013 (presented at SIGGRAPH).
- D.T. Bolger, T.A. Morrison, B. Vance, D. Lee, and H. Farid. A Computer-Assisted System for Photographic Mark-Recapture Analysis. *Methods in Ecology and Evolution*, 3(5):813-822, 2012.
- J. O'Brien and H. Farid. Exposing Photo Manipulation with Inconsistent Reflections. *ACM Transactions on Graphics*, 31(1):4:1-4:11, 2012 (presented at SIGGRAPH).
- H. Farid and M.J. Bravo. Perceptual Discrimination of Computer Generated and Photographic Faces. *Digital Investigation*, 8:226-235, 2012.
- M.J. Bravo and H. Farid. Task Demands Determine the Specificity of the Search Template. *Attention, Perception, & Psychophysics*, 74(1):124-131, 2012.
- V. Conotter, J. O'Brien, and H. Farid. Exposing Digital Forgeries in Ballistic Motion. *IEEE Transactions on Information Forensics and Security*, 7(1):283-296, 2012.

¹ h -index = largest number h such that h publications have at least h citations; iN -index = number of publications with at least N citations. Citation counts according to GoogleScholar as of December 2017.

- E. Kee and H. Farid. A Perceptual Metric for Photo Retouching. *Proceedings of the National Academy of Sciences*, 108(50):19907-19912, 2011.
- E. Kee, M. K. Johnson, and H. Farid. Digital Image Authentication from JPEG Headers. *IEEE Transactions on Information Forensics and Security*, 6(3):1066-1075, 2011.
- H. Farid. The Lee Harvey Oswald Backyard Photos: Real or Fake? *Perception*, 38(11):1731-1734, 2009.
- H. Farid. A Survey of Image Forgery Detection. *IEEE Signal Processing Magazine*, 26(2):16-25, 2009.
- L. Shen, H. Farid and M.A. McPeck. Modeling 3-Dimensional Morphological Structures using Spherical Harmonics. *Evolution*, 63(4):1003-1016, 2009.
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- M.J. Bravo and H. Farid. The Specificity of the Search Template. *Journal of Vision*, 9(1):34, 1-9, 2009.
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- M.K. Johnson and H. Farid. Exposing Digital Forgeries in Complex Lighting Environments. *IEEE Transactions on Information Forensics and Security*, 2(3):450-461, 2007.
- W. Wang and H. Farid. Exposing Digital Forgeries in Interlaced and De-Interlaced Video. *IEEE Transactions on Information Forensics and Security*, 2(3):438-449, 2007.
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- S. Lyu and H. Farid. Steganalysis Using Higher-Order Image Statistics. *IEEE Transactions on Information Forensics and Security*, (1)1:111-119, 2006. **[IEEE SPS Best Paper Award, 2010]**
- S. Periaswamy and H. Farid. Medical Image Registration with Partial Data. *Medical Image Analysis*, 10:452-464, 2006.
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- S. Lyu and H. Farid. How Realistic is Photorealistic? *IEEE Transactions on Signal Processing*, 53(2):845-850, 2005.
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- H. Farid and E.H. Adelson. Synchrony Does Not Promote Grouping in Temporally Structured Displays. *Nature Neuroscience*, 4(9):875-876, 2001.
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- M.J. Bravo and H. Farid. Texture Perception on Folded Surfaces. *Perception*, 30(7):819-832, 2001.
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X. Jiang, H. Farid, E. Pistor and R. S. Farid. A New Approach to the Design of Uniquely Folded Thermally Stable Proteins. *Protein Science*, 9:403-416, 2000.

E.H. Adelson and H. Farid. Filtering Reveals Form in Temporally Structured Displays. *Science*, 286:2231, 1999.

H. Farid and E.H. Adelson. Separating Reflections from Images by use of Independent Components Analysis. *Journal of the Optical Society of America*, 16(9):2136-2145, 1999.

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E.P. Simoncelli and H. Farid. Steerable Wedge Filters for Local Orientation Analysis. *IEEE Transactions on Image Processing*, 5(9):1377-1382, 1996.

P.S. Shenkin, H. Farid and J.S. Fetrow. Prediction and Evaluation of Side-chain Conformations for Protein Backbone Structures. *Proteins: Structure, Function and Genetics*, 26:323-352, 1996.

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H. Farid. How to Detect Faked Photos. *American Scientist*, March-April, 2017.

H. Farid. Seeing Is Not Believing. *IEEE Spectrum*, 46(8):44-48, 2009.

H. Farid. Digital Image Forensics. *Scientific American*, 298(6):66-71, 2008.

H. Farid. Digital Doctoring: How to tell the real from the fake. *Significance*, 3(4):162-166, 2006.

H. Farid. Digital Doctoring: How to tell the real from the fake. *Digitális Fotó Magazin*, 9:100-103, 2006.

H. Farid. Is Seeing Believing. *New Scientist*, 179(2411):38-41, 2003.

H. Farid and S. Farid. Unfolding Sennedjem's Tomb. *KMT: A Modern Journal of Ancient Egypt*, 12(1):46-59, 2001.

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(BOOK CHAPTERS)

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H. Farid. Digital Doctoring: can we trust photographs? In *Deception: From Ancient Empires to Internet Dating*, Stanford University Press, 2009.

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PAPER)

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T. Carvalho, H. Farid, and E. Kee. Exposing Photo Manipulation From User-Guided 3-D Lighting Analysis. *SPIE Symposium on Electronic Imaging*, San Francisco, CA, 2015.

V. Conotter, E. Bodnari, G. Boato, and H. Farid. Physiologically-based Detection of Computer Generated Faces in Video. *International Conference on Image Processing*, Paris, France, 2014.

M. Kirchner, P. Winkler and H. Farid. Impeding Forgers at Photo Inception. *SPIE Symposium on Electronic Imaging*, San Francisco, CA, 2013.

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V. Conotter, G. Boato and H. Farid. Detecting Photo Manipulation on Signs and Billboards.

International Conference on Image Processing, Hong Kong, 2010.

H. Malik and H. Farid. Audio Forensics from Acoustic Reverberation. *International Conference on Acoustics, Speech, and Signal Processing*, Dallas, TX, 2010.

E. Kee and H. Farid. Digital Image Authentication from Thumbnails. *SPIE Symposium on Electronic Imaging*, San Jose, CA, 2010.

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W. Wang and H. Farid. Exposing Digital Forgeries in Video by Detecting Double Quantization. *ACM Multimedia and Security Workshop*, Princeton, NJ, 2009.

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W. Wang and H. Farid. Detecting Re-Projected Video. *10th International Workshop on Information Hiding*, Santa Barbara, CA, 2008.

M.K. Johnson and H. Farid. Detecting Photographic Composites of People. *6th International Workshop on Digital Watermarking*, Guangzhou, China, 2007.

W. Wang and H. Farid. Exposing Digital Forgeries in Video by Detecting Duplication. *ACM Multimedia and Security Workshop*, Dallas, TX, 2007.

M.K. Johnson and H. Farid. Exposing Digital Forgeries Through Specular Highlights on the Eye. *9th International Workshop on Information Hiding*, Saint Malo, France, 2007.

H. Farid. Exposing Digital Forgeries in Scientific Images. *ACM Multimedia and Security Workshop*, Geneva, Switzerland, 2006.

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M.K. Johnson and H. Farid. Exposing Digital Forgeries Through Chromatic Aberration. *ACM Multimedia and Security Workshop*, Geneva, Switzerland, 2006.

M.K. Johnson and H. Farid. Exposing Digital Forgeries by Detecting Inconsistencies in Lighting. *ACM Multimedia and Security Workshop*, New York, NY, 2005.

S. Lyu, D. Rockmore, and H. Farid. Wavelet Analysis for Authentication. *Art + Math = X*, Boulder, CO, 2005.

J.E. Dobson, J.B. Woodward, S.A. Schwarz, J.C. Marchesini, H. Farid, and S.W. Smith. The Dartmouth Green Grid. *Workshop on High Performance Computing in Academia (in conjunction with International Conference on Computational Science)*, Atlanta, GA, 2005.

M.K. Johnson, S. Lyu and H. Farid. Steganalysis in Recorded Speech. *SPIE Symposium on Electronic Imaging*, San Jose, CA, 2005.

A.C. Popescu and H. Farid. Statistical Tools for Digital Forensics. *6th International Workshop on Information Hiding*, Toronto, CA, 2004.

S. Lyu and H. Farid. Steganalysis Using Color Wavelet Statistics and One-Class Support Vector Machines. *SPIE Symposium on Electronic Imaging*, San Jose, CA, 2004.

H. Sun, H. Farid, K. Rick, A. Hartov, D.W. Roberts, and K.D. Paulsen. Estimating Cortical Surface Motion Using Stereopsis for Brain Deformation Models. *Medical Image Computing &*

Computer Assisted Intervention (MICCAI), Montreal, Canada, 2003.

J. Ford, H. Farid, F. Makedon, L.A. Flashman, T.W. McAllister, V. Megalooikonomou, and A.J. Saykin. Patient Classification of fMRI Activation Maps. *Medical Image Computing & Computer Assisted Intervention (MICCAI)*, Montreal, Canada, 2003.

S. Periaswamy and H. Farid. Elastic Registration with Partial Data. *Second International Workshop on Biomedical Image Registration*, Philadelphia, PA, 2003.

H. Farid and S. Lyu. Higher-order Wavelet Statistics and their Application to Digital Forensics. *IEEE Workshop on Statistical Analysis in Computer Vision (in conjunction with CVPR)*, Madison, Wisconsin, 2003.

S. Lyu and H. Farid. Detecting Hidden Messages Using Higher-Order Statistics and Support Vector Machines. *5th International Workshop on Information Hiding*, Noordwijkerhout, The Netherlands, 2002.

H. Farid. Detecting Hidden Messages Using Higher-Order Statistical Models. *International Conference on Image Processing*, Rochester, NY, 2002.

H. Sun, H. Farid, A. Hartov, K.E. Lunn, D.W. Roberts, K.D. Paulsen. Real-time Correction Scheme for Calibration and Implementation of Microscope-based Image-guided Neurosurgery. *SPIE's International Symposium on Medical Imaging*, San Diego, CA, 2002.

H. Farid and A.C. Popescu. Blind Removal of Image Non-Linearities. *International Conference on Computer Vision (ICCV)*, Vancouver, Canada, 2001.

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Australia, 2017.

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M.J. Bravo and H. Farid. A Measure of Relative Set Size for Search in Clutter. *Vision Sciences*, Sarasota, FL, 2007.

D.C. Finnegan, H. Farid, D.E. Lawson and W. Krabill. Quantifying Surface Fluctuations using Optical Flow Techniques and Multi-Temporal LiDAR. *Transactions of the American Geophysical Union*, San Francisco, CA, 2006.

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H. Farid and D.C. Finnegan. Quantifying Planetary and Terrestrial Geologic Surfaces Using Wavelet Statistics. *Transactions of the American Geophysical Union*, San Francisco, CA, 2005.

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- H. Farid and E.H. Adelson. Energy versus Synchrony in Perceptual Grouping. *Vision Sciences*, Sarasota, FL, 2002.
- M.J. Bravo and H. Farid. Segmentation in Clutter. *Vision Sciences*, Sarasota, FL, 2002.
- S. Inati, H. Farid, K. Sherwin, and S. Grafton. A Global Probabilistic Approach to Fiber Tractography with Diffusion Tensor MRI. *Human Brain Mapping*, Brighton, UK, 2001.
- M.J. Bravo and H. Farid. Top-Down and Bottom-Up Processes for Object Segmentation. *Vision Sciences*, Sarasota, FL, 2001.
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- H. Farid and E.H. Adelson. Standard Mechanisms Can Explain Grouping in Temporally Synchronous Displays. *Investigative Ophthalmology and Visual Science*, Fort Lauderdale, FL, 2000.
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- H. Farid, P.S. Shenkin, J. Greene and J.S. Fetrow. Prediction of Side Chain Conformations in Protein Cores and Loops From Rotamer Libraries. *ASBMB/Biophysical Society Joint Meeting*, Houston, TX, 1992.

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A.C. Popescu and H. Farid. Exposing Digital Forgeries by Detecting Duplicated Image Regions. TR2004-515, Department of Computer Science, Dartmouth College, September 2004.

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 Can You Believe Your Eyes in the Digital World? in *BBC News*, 8.2.10
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 This Photo Is Lying to You in *Outside*, 9.1.09
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 Photoshop Detective on *Studio 360*, 12.26.08
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 The Authenticity of Bin Laden Tapes on *Chicago Public Radio's Worldview*, 12.8.08
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 In A Photoshop Age, Can You Believe Your Eyes? on *NPR, Talk of the Nation*, 7.23.08
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 Tricks in Tehran: on *Southern California Public Radio*, 7.10.08
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 Profile: Hany Farid on *NOVA, Science Now*, 6.25.08
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 How Can You Tell if a Picture is Real? on *The Today Show*, 12.21.07
 Was Bin Laden's Last Video Faked? on *3WT Talk Radio*, 10.31.07

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 Digital Forensics on *BBC, Night Waves*, 10.17.07
 Digital Photo Manipulation on *KMOX 1120*, 10.15.07
 Proving That Seeing Shouldn't Always Be Believing in *New York Times*, 10.2.07
 Digital Detectives Discern Photoshop Fakery in *The Christian Science Monitor*, 8.29.07
 Restoring Trust in Photojournalism in *Black Star Rising*, 8.7.07
 Distorted Picture in *American Journalism Review*, 7.30.07
 Magazines' Extreme Touch-ups on *The Today Show*, 7.23.07
 Photo Tampering an Age-Old Practice in *The Chronicle of Higher Education*, 6.27.07
 Q&A: Hany Farid on Digital Manipulation in *Photo District News*, 6.1.07
 Great Shots That Never Happened in *Washington Post*, 4.15.07
 Computing Photographic Forgeries in *Science News*, 3.17.07
 Adobe Tackles Photo Forgeries in *Wired News*, 3.8.07
 Picture Imperfect in *Nature News*, 2.20.07
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 True Lies in *Current Science*, 10.20.06
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 Are Fake Videos Next? in *News.com*, 9.11.06
 Digital Photo Manipulation, on *BBC Digital Planet*, 9.4.06
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 Spotting a Digital Hoax on *The Discovery Channel*, 3.16.05
 Digital Detectives Reveal Art Forgeries in *Computing in Science & Engineering*, 3.1.05
 In The Photoshop Era, It's Harder To Trust Your Eyes in *USA Today*, 2.2.05
 Seeing is No Longer Believing in *The Christian Science Monitor*, 2.2.05
 Professors Who Are Changing the World in *New Hampshire Magazine*, 2.1.05
 What Lies Beneath in *Art & Antiques*, 1.27.05
 Photoshop Sleuths in *MIT Technology Review*, 1.17.05
 Computers Increasingly Used in Crimes on *WMUR TV News*, 12.16.04
 Art Forgeries (with John Myatt) on *BBC World Service*, 12.15.04
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 Digital Art Authentication, in *ABC News, Australian Broadcasting Corporation, BBC Radio 4, BBC 5 Live, BBC World Service, Boston Globe, Baltimore Sun, CBC News, Charlotte Observer, Chicago Sun Times, Chicago Tribune, China Post, CNN, Jamaica Observer, Kansas City Star, Concord Monitor, Economist, Miami Herald, MSNBC, National Geographic, Nature, New Scientist, Newsday, Newsweek, New Zealand Herald, Philadelphia Inquirer, Radio Arthur, Rapid City Journal, Richmond Times, San Jose Mercury News, ScienCentral News, Science Magazine, Science News, Science Now, AAAS Science Update, Scientific American, Seattle Post Intelligencer, The Australian, The Globe and Mail, Times UK, Valley News, Voice of America, Washington Post, WCAX News, Wired News, and Yahoo News*, 11.23.04-11.25.04
 Detecting Tampering in a Digital Photo on *Discoveries+Breakthroughs*, 10.26.04
 Algorithm Detects Non-Watermarked Digital Forgeries in *Laser Focus World*, 10.1.04
 What You See Is What You Question in *Computer Power User*, 10.1.04
 Is It Real or Is It Photoshopped in *Discover Magazine*, 9.27.04
 New Algorithm Foils Digital Forgers in *Yahoo! News*, 8.9.04
 Doctored Digital Images on *NPR, Future Tense*, 7.27.04

A New Flavor of Digital Truth Serum, in *New York Times*, 7.22.04
 Investigating Digital Images in *ACM TechNews*, *California Computer News*, *Haaretz*, *Justnet*, *OE Magazine*, *Online Security*, *PhysOrg*, *Science Blog*, *ScienceDaily*, *Slashdot*, *Topix.net*, and *U.S. Politics Today*, 7.1.04
 Naked Eye Can't Tell If It's a Lie in *Poughkeepsie Journal*, 5.1.04
 New Mathematical Algorithms Might Help Diagnose Cancer *The Breast Cancer Newsletter*, *HPC Wire*, *Medical News Today*, and *ScienceDaily*, 2.4.04
 Is Seeing Believing in *The Telegraph*, 9.17.03
 Is Seeing Believing on *BBC News*, 9.8.03
 History Undercover with Arthur Kent: Cyberterrorism on *The History Channel*, 7.26.03
 Mapping with Math in *BBC News*, 12.3.02
 Mapping with Math in *The Geological Society*, *Innovations Report*, *OE Mag.*, *ScienceDaily*, and *UPI*, 12.2.02
 Molyneux Problem, in *Strange But True*, 7.17.02
 Digital Tours of Murals, in *The Chronicle of Higher Education*, 7.9.02
 Hidden Messages appearing on *WCAX TV News*, 10.19.01
 Statistics Sniff Out Secrets appearing in *Technology Research News*, 9.26.01
 Digital Secrecy appearing on *WNNE TV News*, 8.15.01
 Digital Secrecy in *GlobalTechnoScan*, *Popular Technologies*, and *ScienceDaily*, 8.10.01

INVITED TALKS

Photo Forensics, *University of Pennsylvania*, 12.17
 Reining in Online Abuses, *Building Alliances - Preventing Terror*, Brussels Belgium, 10.17
 Reining in Online Abuses, *SUNY Albany, Massry Lecture*, 9.17
 Photo Forensics, *University of California, Berkeley*, 9.17
 Reining in Online Abuses, *University of California, Berkeley*, 9.17
 Photographs, Hoaxes, and Conspiracies, *Gordon Conference: Visualization in Science & Education*, 7.17
 Photo Forensics from JPEG Coding Artifacts, *Media Forensics Workshop at CVPR (keynote)*, 7.17
 Digital Video Forensics, *The Federal Judiciary Center*, 6.17
 Reining in Online Abuses, *Williams College*, 5.17
 Photo Forensics, *Williams College*, 5.17
 Digital Image Forensics, *Office of Research Integrity*, 4.17
 Digital Forensics: From Social Media to Social Impact, *National Academy of Inventors*, 4.17
 Reining in Online Abuses, *Council of Engineering Systems Universities*, 3.17
 Photo Forensics, *International Center of Photography*, 12.16
 Photo Forensics, *Columbia University*, 12.16
 Combating On-line Extremism, *United Nations*, 11.16
 Photo Forensics from Lighting and Shadows, *Duke University*, 3.16
 How Realistic is Photorealistic?, *Duke University*, 3.16
 Photo Forensics, *Middlebury College*, 10.15
 Photo Forensics and Verification, *TechRaking at MIT*, 9.15
 Photo Forensics, *University of Wisconsin, Madison*, 4.15
 Photo Forensics from Shadows & Shading, *SPIE Media Security, and Forensics (keynote)*, 1.14
 Photo Forensics, *University of Oregon*, 1.14
 Photo Forensics, *University of California, Riverside*, 1.14
 Photo Forensics, *University of Delaware*, 9.13
 Photo Forensics, *International Conference on Computational Photography (keynote)*, 4.13
 Image Manipulation in News, *Computation + Journalism Symposium*, 2.13
 Digital Forensics, *The World Bank*, 6.12
 Photo Retouching, *Information Hiding (keynote)*, 5.12
 Photo Forensics, *Stanford University*, 1.12
 Ethics and Forensics in the Age of Photoshop Photojournalism, *Massachusetts Institute of Technology*, 4.11
 Photo Forensics, *National Geographic*, 1.11
 Photo Forensics: Lighting and Shadows, *Harvard University*, 9.10
 Photo Forensics, *Applied Perception in Graphics & Visualization (keynote)*, 7.10
 Limitations of Visually-Based Image Forensics, *Massachusetts Institute of Technology*, 4.10
 Photo Forensics, *Massachusetts Institute of Technology*, 4.10
 Digital Image Forensics, *Yale University*, 4.10
 Digital Image Forensics, *IDGA Biometrics for National Security and Defense*, 3.10
 Visually-Based Image Forensics, *IDGA Biometrics for National Security and Defense*, 3.10
 Photo Forensics, *Smith-Kettlewell Eye Research Institute*, 2.10

Digital Image Forensics, *Adobe Inc*, 1.10
Digital Image Forensics, *University of Rochester*, 11.09
On the Limitations of Visually-Based Image Forensics, *University of Rochester*, 11.09
Photo Forensics, *Brown University*, 10.09
Digital Forensics, *Biometrics: Theory, Applications and Systems (keynote)*, 9.09
Digital Tampering and Forensics, *University of California, San Diego*, 4.09
Image Forensics, *University of California, Berkeley*, 3.09
Estimating and Modeling Complex Lighting Environments, *University of Pennsylvania*, 10.08
Digital Tampering and Forensics, *National Institute of Standards*, 10.08
Digital Tampering and Forensics, *University of Massachusetts, Amherst*, 10.08
Digital Image Forensics, *American Society of Clinical Radiologists*, 9.08
Digital Tampering and Forensics, *SUNY Albany*, 9.08
Digital Tampering and Forensics, *Electronic Imaging Symposium (plenary talk)*, 1.08
Digital Image Forensics, *The National Academies*, 1.08
Digital Image Forensics, *IBM Almaden*, 11.07
Digital Image Forensics, *University of California, Berkeley*, 11.07
A Digital Technique for Art Authentication, *Harvard University Art Museum*, 10.07
Digital Image Forensics, *Google*, 4.07
Digital Image Forensics, *Foveon Inc.*, 4.07
Exposing Digital Forgeries from Inconsistencies in Lighting, *Carnegie Mellon University*, 3.07
Digital Forensics, *American Association for the Advancement of Science*, 2.07
Digital Image Forensics, *The Associated Press*, 2.07
Exposing Digital Forgeries from Inconsistencies in Lighting, *University of Pennsylvania*, 2.07
Digital Tampering in the Media, Politics and Law, *University of Pennsylvania*, 2.07
Digital Image Forensics, *Central Intelligence Agency*, 12.06
From Photons to Pixels to Photoshop, *Project Safe Childhood Conference*, 12.06
Digital Image Forensics, *Stanford University*, 10.06
From Photons to Pixels to Photoshop, *Crimes Against Children Conference*, 8.06
Digital Image Forensics, *Microsoft Corp.*, 6.06
A Digital Technique for Art Authentication, *Rochester Memorial Art Gallery*, 5.06
Digital Image Forensics, *Eastman Kodak*, 5.06
Digital Image Forensics, *Google*, 5.06
Digital Image Forensics, *University of California, Davis*, 5.06
Digital Image Forensics, *National Academy of Sciences*, 5.06
A Digital Technique for Art Authentication, *San Diego Museum of Art*, 3.06
A Picture is Worth a Thousand Lies, *Dartmouth College*, 2.06
Digital Image Forensics, *Ricoh Innovations*, 11.05
Energy vs. Synchrony in Perceptual Grouping, *University of California, San Diego*, 11.05
From Photons to Pixels to Photoshop, *Delaware Department of Justice*, 9.05
From Photons to Pixels to Photoshop, *High Tech. Crime Investigation Assoc.*, 8.05
Digital Image Forensics, *National Association of Attorneys General*, 6.05
How Realistic is Photorealistic?, *University of California, Santa Cruz*, 6.05
Digital Image Forensics, *University of California, Berkeley*, 5.05
Digital Image Forensics, *University of California, Santa Cruz*, 5.05
Digital Image Forensics, *National Association of Attorneys General*, 5.05
Digital Image Forensics, *Adobe Systems*, 4.05
Digital Image Forensics, *Office of Research Integrity*, 1.05
Digital Image Forensics, *University of New Hampshire*, 12.04
Digital Image Forensics, *New Hampshire Cyber Crime Network*, 12.04
Digital Image Forensics, *Leslie Center for the Humanities, Dartmouth College*, 11.04
Reconstructing Ancient Egyptian Tombs, *Society for Imaging Science and Tech.*, 10.04
Digital Image Forensics, *Adobe Systems*, 10.04
Digital Image Forensics, *National Association of Attorneys General*, 9.04
Digital Image Forensics, *University of Pennsylvania*, 7.04
How Realistic is Photorealistic?, *University of Illinois*, 4.04
Universal Steganalysis, *Central Intelligence Agency*, 2.04
How Realistic is Photorealistic?, *The Salk Institute*, 1.04
Grouping by Temporal Synchrony?, *The Salk Institute*, 1.04
How Realistic is Photorealistic?, *Stevens Institute of Technology*, 12.03
How Realistic is Photorealistic?, *Massachusetts Institute of Technology*, 11.03
How Realistic is Photorealistic?, *Harvard University*, 11.03
How Realistic is Photorealistic?, *University of Chicago*, 11.03
How Realistic is Photorealistic?, *University of Maryland*, 11.03

Grouping by Temporal Synchrony?, *University of Chicago*, 10.03
 Mixing and Unmixing Digital Images, *Harvard University*, 10.02
 Temporal Synchrony in Perceptual Grouping?, *University of Rochester*, 9.02
 Mixing and Unmixing Digital Images, *New York University*, 4.02
 Mixing and Unmixing Digital Images, *University of Pennsylvania*, 3.02
 Digital Tampering, *Washington University, St. Louis*, 1.02
 Digital Secrets, *Boston University*, 12.01
 Grouping by Temporal Synchrony, *Harvard University*, 11.01
 Blind Removal of Image Non-Linearities, *Columbia University*, 11.01
 Blind Removal of Image Non-Linearities, *Massachusetts Institute of Technology*, 10.01
 Grouping by Temporal Synchrony, *New York University*, 10.01
 Grouping by Temporal Synchrony, *Massachusetts Institute of Technology*, 3.01
 Grouping by Temporal Synchrony, *University of Pennsylvania*, 3.01
 Grouping by Temporal Synchrony, *Boston University*, 2.01
 Blind Removal of Image Non-Linearities, *University of Pennsylvania*, 3.00
 Digital Image Separation, *George Mason University*, 3.00
 Grouping in Temporally Synchronous Displays, *Dartmouth College*, 12.99
 Separating Digital Images, *Brooklyn Polytechnic University*, 3.99
 Separating Digital Images, *Dartmouth College*, 3.99
 ICA for Separating Images, *Massachusetts Institute of Technology*, 2.99
 Separating Images, *University of Pennsylvania*, 10.98
 Monocular Stereo, *Polaroid Inc*, 7.98
 Digital Image Enhancement, *Williams College*, 4.98
 Monocular Stereo, *Massachusetts Institute of Technology*, 3.98
 Range Estimation by Optical Differentiation, *University of California, Berkeley*, 3.97
 A Differential Optical Range Camera, *Sensar Inc.*, 11.96
 Direct Differential Range Estimation, *Columbia University*, 5.96
 Steerable Filters for Low-level Image Processing, *SUNY Albany*, 11.95
 3-D Scene Reconstruction for Telepresence, *UNC, Chapel Hill*, 6.94

MENTOR

Summer Robot Camp, *Dartmouth College*, 2004-2007
 Gates Millennium Scholarship, *Dartmouth College*, 2000
 Mellon Minority Scholarship, *Dartmouth College*, 2000
 Math Circle/Math Camp, 1998-2001, 2004
 NASA Quality Education for Minorities, *U. of Penn*, 1995-1996
 Philadelphia Math and Science Outreach, *U. of Penn*, 1994-1996

PROFESSIONAL
ACTIVITIES

IEEE Fellow, 2018
 Phi Beta Kappa (honorary), 2017

ASSOCIATE
EDITOR

IEEE Transactions on Information Forensics and Security, 2005-2008

PROGRAM
COMMITTEE

Workshop on Image Forensics, *CVPR*, 2017
 IEEE Workshop on Image Forensics (WIFS), 2017
 International Conference on Computational Photography, 2012-2015
 Information Hiding, 2010
 Media Security and Forensics (Electronic Imaging), 2009-2011
 Technical Advisory Board for Berkman's Internet Safety Task Force, 2008
 Vision of the Unseen (CVPR Workshop), 2008
 Statistical Learning in Computer Vision (ECCV Workshop), 2004
 American Association for Artificial Intelligence (Vision/Perception), 2004
 Statistical Analysis in Computer Vision (CVPR Workshop), 2003

REVIEWER

NSF review panel (RI Small), 2013
 NSF review panel (ITR Medium), 2003
 NSF review panel (CAREER: RHA/CV), 2000, 2002, 2003
 NSF review panel (RHA/CV), 2000
 American Association for Artificial Intelligence (AAAI), Computer Analysis of Images and Patterns (CAIP), Computer Vision and Pattern, Recognition (CVPR), Electronics Letters, European Conference on Computer Vision (ECCV), IEEE Transactions on Image Processing, IEEE

Transactions on Multimedia, IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Transactions on Signal Processing, IEEE Transactions on Information Security and Forensics, Information Hiding, International Conference on Computer Vision (ICCV), International Journal of Computer Vision, International Journal of Imaging Systems and Technology, Journal of Cognitive Neuroscience, Journal of the Optical Society of America, Journal of Visual Communication and Image Representation, Medical Physics, Perception, Proceedings of the Royal Society: Biological Sciences, SIGGRAPH, Vision and Applications, Vision Research

STUDENTS

Shruti Agarwal, Ph.D. adviser
Tiago Carvalho (2014), visiting Ph.D. student (UNICAMP, Brazil)
Emma Chiu '19, research adviser
Valentina Conotter (2011), Ph.D. co-adviser (University of Trento)
Julia Dressel '17, senior thesis adviser
Wei Fan, postdoctoral fellow
Olivia Holmes '15, senior thesis adviser
Daniel Hopkins '10, research adviser
Kimo Johnson (2007), Ph.D. adviser
Eric Kee (2013), Ph.D. adviser
Jethro Rothe-Kushel '03, research adviser
Benedikt Lorch (2018), visiting M.S. student (University of Erlangen)
Siwei Lyu (2005), Ph.D. adviser
Brandon Mader '16, research adviser
David Martin '00, senior thesis adviser
Kiley McEvoy '06, research adviser
Joseph Pechter '04, senior thesis adviser
William Pechter '04, senior thesis adviser
Senthil Periaswamy (2003), Ph.D. adviser
Coralie Phanord '16, research adviser
Andrew Pierce '02, research adviser
Alin Popescu (2005), Ph.D. adviser
Nelson Rosa '06, research adviser
Katherine Sherwin '01, research adviser
Priyanka Singh, postdoctoral fellow
Hai Sun (2004), Ph.D. co-adviser
Sydni Topper '18, research adviser
Joshua Wang '15, thesis adviser
Weihong Wang (2009), Ph.D. adviser
Angela Zhu '17, research adviser

TEACHING

Foundations of Applied Computer Science, Spring 2018
Data Structures and Analytics, Tuck School of Business, Spring 2017
Fundamentals of Web Programming, Tuck School of Business, Spring 2017
Introduction to Programming and Computation, CS 1, Fall 2016
Fundamentals of Web Programming, Tuck School of Business, Spring 2016
Numerical and Computational Tools for Applied Science, CS 70/170, Spring 2016
Introduction to Programming and Computation, CS 1, Fall 2015
Numerical and Computational Tools for Applied Science, CS 70/170, Spring 2015
Introduction to Programming and Computation, CS 1, Fall 2014
Introduction to Programming and Computation, CS 1, Spring 2014
Introduction to Programming and Computation, CS 1, Spring 2013
Digital Image Forensics, CS 89/189, Spring 2013
Digital Forensics, University of Trento, Italy, Spring 2011
Numerical and Computational Tools for Applied Science, CS 36/136, Summer 2008
Concepts in Computing, CS 4, Summer 2008
Numerical and Computational Tools for Applied Science, CS 36/136, Summer 2007
Concepts in Computing, CS 4, Summer 2007
Concepts in Computing, CS 4, Winter 2006
Numerical Methods in Computer Vision, CS 88/188, Fall 2004
Concepts in Computing, CS 4, Summer 2003
Concepts in Computing, CS 4, Summer 2002
Data Structures and Programming, CS 15, Winter 2002

Data Structures and Programming, CS 15, Fall 2001
Numerical Linear Algebra, CS106, Spring 2001
Data Structures and Programming, CS 15, Winter 2001
Data Structures and Programming, CS 15, Fall 2000
Fundamentals of Image Processing, CS 88/188, Spring 2000
Programming Languages, CS 68, Winter 2000
Data Structures and Programming, CS 15, Fall 1999

COLLEGE
COMMITTEES

Department Chair, 2015-2018
Committee Advisory to the President (tenure & promotions), 2016-2019
Department Associate Chair, 2004-2009
Ph.D. Advisor, 2004-2006
Steering Committee, Neuroscience Major, 2004-2008
Director Search, Neukom Institute for Computational Science, 2005
HHMI Undergraduate Biological Sciences Education Proposal, 2005
Green Grid Computing, 2004-2005
Computer Science Building Expansion, 2003-2005
Faculty Search, Thayer School of Engineering, 2004
Department Web Master, 1999-2004
Faculty Recruiting, 2003, 2010-2011
Ph.D. Admissions 2001-2003, 2010, 2012
Associate Director Search, ISTS, 2002
M.D./Ph.D. Admissions, 2001