

Micah Kimo Johnson

CONTACT	GelSight, Inc. 60 Landseer Street West Roxbury, MA 02132	617-676-7562 kimo@gelsight.com www.gelsight.com
EMPLOYMENT	GelSight, Inc. <i>President, Co-Founder</i>	2011
	Massachusetts Institute of Technology <i>Research Scientist, Computer Science and Artificial Intelligence Laboratory</i> Advisor: William T. Freeman	2010
EDUCATION	Massachusetts Institute of Technology <i>Postdoctoral Fellow, Brain & Cognitive Sciences</i> Advisor: Edward H. Adelson	2008–2010
	Dartmouth College <i>Ph.D. Computer Science</i> Lighting and Optical Tools for Image Forensics, advisor: Hany Farid	2002–2007
	Dartmouth College <i>A.M. Electro-Acoustic Music</i> The Spectral Modeling Toolbox, advisor: Larry Polansky	2000–2002
	University of New Hampshire <i>B.S. Mathematics, University Honors, Summa Cum Laude</i> <i>B.A. Music Theory, Summa Cum Laude</i>	1996–2000
GRANTS	National Science Foundation, High-resolution Tactile Sensing, co-authored (450K), 2010 National Science Foundation, Image Statistics in Digital Forensics, co-sponsor Adobe Systems, postdoctoral grant (110K), 2008	
PUBLICATIONS	D. Chen, D. Batra, W.T. Freeman, and M.K. Johnson. Group Norm for Learning Latent Structural SVMs, <i>NIPS Workshop on Optimization for Machine Learning</i> , 2011. K. Dale, K. Sunkavalli, M.K. Johnson, D. Vlastic, W. Matusik, and H. Pfister, Video Face Replacement, <i>ACM SIGGRAPH Asia</i> , 2011. S. Follmer, M.K. Johnson, E.H. Adelson, and H. Ishii, deForm: An Interactive Malleable Surface for Capturing 2.5D Arbitrary Objects, Tools, and Touch, <i>ACM Symposium on User Interface Software and Technology</i> , 2011. M.K. Johnson, F. Cole, A. Raj, and E.H. Adelson. Microgeometry Capture using an Elastomeric Sensor, <i>ACM SIGGRAPH</i> , 2011 (19% acceptance rate). M.K. Johnson and E.H. Adelson. Shape Estimation in Natural Illumination, <i>IEEE Conference on Computer Vision and Pattern Recognition</i> , to appear 2011 (26.4% acceptance rate). E. Kee, M.K. Johnson, and H. Farid. Digital Image Authentication from JPEG Headers, <i>IEEE Transactions on Information Forensics and Security</i> , to appear 2011. W.-K. Jeong, M.K. Johnson, I. Yu, J. Kautz, H. Pfister, and S. Paris. Display-aware Image Editing, <i>International Conference on Computational Photography</i> , 2011.	

- M.K. Johnson, K. Dale, S. Avidan, H. Pfister, W.T. Freeman, and W. Matusik. CG2Real: Improving the Realism of Computer Generated Images using a Large Collection of Photographs, *IEEE Transactions on Visualization and Computer Graphics*, 17(9), 1273–1285, 2011.
- M. Tao, M.K. Johnson, and S. Paris. Error-tolerant Image Compositing, *European Conference on Computer Vision*, 2010. Accepted for oral presentation (3.2% oral acceptance rate).
- K. Sunkavalli, M.K. Johnson, W. Matusik and H. Pfister. Multi-scale Image Harmonization, *ACM SIGGRAPH*, 2010.
- R. Grosse, M.K. Johnson, E.H. Adelson and W.T. Freeman. Ground-truth Dataset and Baseline Evaluations for Intrinsic Image Algorithms, *International Conference on Computer Vision*, 2009.
- K. Dale, M.K. Johnson, K. Sunkavalli, W. Matusik and H. Pfister. Image Restoration using Online Photo Collections, *International Conference on Computer Vision*, 2009.
- M.K. Johnson and E.H. Adelson. Retrographic Sensing for the Measurement of Surface Texture and Shape, *IEEE Conference on Computer Vision and Pattern Recognition*, 2009. Accepted for oral presentation (4.2% oral acceptance rate).
- L. Polansky, D. Rockmore, M.K. Johnson, D. Repetto and W. Pan. A Mathematical Model for Optimal Tuning Systems, *Perspectives of New Music*, vol. 47, no. 1, p. 69–110, 2009.
- D. Stork and M.K. Johnson. Lighting Analysis of Diffusely Illuminated Tableaus in Realist Paintings. *SPIE Symposium on Electronic Imaging*, vol. 7254, San Jose, CA, 2009.
- W. Pan, M.K. Johnson, L. Polansky, D. Rockmore and D. Repetto. OWT: A Real-time Optimal Tuning Application, *International Computer Music Conference*, Belfast, Northern Ireland, 2008.
- M.K. Johnson, D. Stork, S. Biswas and Y. Furuichi. Inferring Illumination Direction Estimated from Disparate Sources in Paintings: An Investigation into Jan Vermeer’s *Girl With a Pearl Earring*. *SPIE Symposium on Electronic Imaging*, vol. 6810, San Jose, CA, 2008.
- M.K. Johnson and H. Farid. Detecting Photographic Composites of People. *6th International Workshop on Digital Watermarking*, Guangzhou, China, 2007.
- M.K. Johnson and H. Farid. Exposing Digital Forgeries in Complex Lighting Environments. *IEEE Transactions on Information Forensics and Security*, 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.
- 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. Metric Measurements on a Plane from a Single Image. TR2006-579, Department of Computer Science, Dartmouth College, August 2006.
- D. Stork and M.K. Johnson. Computer Vision, Image Analysis, and Master Art: Part 2. *IEEE Multimedia*, Oct. 2006.
- D. Stork and M.K. Johnson. Estimating the Location of Illuminants in Realist Master Paintings. *Int. Conf. on Pattern Recognition*, Hong Kong, 2006.
- A. Roginska, E. Childs and M.K. Johnson. Monitoring Real-time Data Streams: A Sonification Approach. *Int. Conf. on Auditory Display*, Queen Mary, UK, 2006.

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

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

DEMOS

M.K. Johnson and E.H. Adelson. An interactive “retrographic sensor” for touch, texture, and shape, at *ICCV 2009*. Demo video on YouTube, search for “Exploring GelSight.”

A. Raj, M.K. Johnson, and E.H. Adelson. An interactive “retrographic sensor” for touch, texture, and shape, at *SIGGRAPH Emerging Technologies 2009*. Demo video on YouTube, search for “GelSight.”

M.K. Johnson and E.H. Adelson. Retrographic sensing for the measurement of surface texture and shape, at *CVPR 2009*. Received *Best Demo* award.

PATENT

K. Short, D. Hussey, and K. Johnson. Method and apparatus for compressed chaotic music synthesis, U.S. Patent 06137045.

TALKS

Portable, high-resolution 3D surface scanning, Dartmouth College, 1/2012

Microgeometry Capture using GelSight, Rochester Institute of Technology, 11/2011

Fast 3D Profilometry using GelSight, First Surface Metrology Seminar, WPI, 10/2011

Microgeometry Capture using GelSight, Princeton University, 4/2011

Microgeometry Capture using GelSight, Brown University, 4/2011

Surface Estimation in Natural Illumination, Brown University, 4/2011

Microgeometry Capture using GelSight, MIT Computer Vision Group, 3/2011

Microgeometry Capture using GelSight, Microsoft Research New England, 6/2010

GelSight: A High-resolution Sensor for Touch, Texture and Shape, Brontes (3M), 3/2010

Retrographic Sensing for the Measurement of Surface Texture and Shape, *CVPR*, 6/2009

Improving Fake Images, Computer Science Colloquium, Dartmouth College, 5/2009

Retrographic Sensing, MIT Computer Graphics Group, 3/2009

Layer Harmonization for Image Compositing, Adobe Creative Technologies Lab, 10/2008

Lighting Tools for Image Forensics, Adobe Creative Technologies Lab, 5/2008

Lighting Tools for Image Forensics, MIT Computer Graphics Group, 4/2008

Image Statistics for Digital Forensics, Adobe Photoshop team, San Jose, 1/2008

Inferring Illuminant Direction Estimated from Disparate Sources in Paintings, *SPIE* 1/2008

Digital Image Forensics, *IWDW'07* keynote #3, Guangzhou, China, 12/2007

Lighting and Optical Tools for Image Forensics, Ph.D. defense, Hanover, NH, 8/2007

Exposing Digital Forgeries through Specular Highlights on the Eye, *IH'07*, St. Malo, France, 6/2007

Exposing Digital Forgeries through Lighting Inconsistencies, MIT, 1/2007

Exposing Digital Forgeries through Chromatic Aberration, *ACM MM&S '06*, Geneva, 9/2006

Digital Image Forensics, 4th Ann. Information Assurance Symp., Norwich Univ., 3/2006

Image Forensic Tools for Photoshop, Adobe Intern Showcase, San Jose, 8/2005

Steganalysis of Recorded Speech, *SPIE Symp. on Electronic Imaging*, San Jose, 1/2005

AWARDS AND
SCHOLARSHIPS

Member, Phi Beta Kappa, 1998

John and Rose Mendelsohn Kurtz Scholarship, UNH, 1999–2000

Elizabeth Jones Scholarship, UNH, 1999–2000
Music Department Scholarship, UNH, 1997–2000
Granite State Scholarship, UNH, 1996–2000
Robert C. Byrd Honors Scholarship, 1996–2000

INDUSTRY

Creative Technologies Contractor, Adobe Systems Inc., Cambridge MA, 9/2010
Postdoc, Adobe Systems Inc., Newton MA, 3/2008–12/2009
Photoshop engineering intern, Adobe Systems Inc., San Jose, CA, 6/2005–9/2005
Consultant, Accentus LLC, Hanover, NH, 3/2004–6/2005
Audio codec researcher, Groove Mobile Inc., Andover, MA, 6/2003–9/2003

TEACHING

Visiting Lecturer, *Numerical and Computational Tools for Applied Science*, complete course, Dartmouth College, Winter 2012
Guest Lecturer, *Sensation and Perception*, four lectures, MIT, Spring 2011
Guest Lecturer, *Computational Photography*, MIT, Spring 2010
Guest Lecturer, *Sensation and Perception*, five lectures, MIT, Spring 2010
Guest Lecturer, *Sensation and Perception*, four lectures, MIT, Spring 2009
Guest Lecturer, *Camera Culture*, MIT, Spring 2009
Guest Lecturer, *Advanced Computational Photography*, MIT, Spring 2009
Guest Lecturer, *Sensation and Perception*, four lectures, MIT, Spring 2008
Teaching Assistant, *Introduction to Computer Science*, Dartmouth College, Spring 2003
Teaching Assistant, *Concepts in Computing*, Dartmouth College, Winter 2003
Teaching Assistant, *Introduction to Computer Science*, Dartmouth College, Fall 2002