

Ioannis Gkioulekas

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Research Interests

My research interests are in computer graphics, computer vision and computational imaging. I am interested in developing systems that combine novel sensing devices with tailored computational algorithms, to extract purposeful information from their environment. Within this general framework, I have worked on problems relating to microvision sensors, appearance capture, and computational light transport. A lot of my research focuses on perception, acquisition, and imaging of scattering materials.

Education

Harvard University,
PhD in Engineering Sciences (September 2009 - August 2016)
Advisor: Prof. Todd Zickler

Harvard University,
Master in Engineering Sciences (September 2009 - March 2014)
Advisor: Prof. Todd Zickler

National Technical University of Athens,
Diploma in Electrical and Computer Engineering (July 2009)
Thesis supervisor: Prof. Petros Maragos

Professional Positions

Assistant Professor (February 2017 - present)
Robotics Institute, Carnegie Mellon University

Postdoctoral Fellow (August 2016 - January 2017)
Harvard School of Engineering and Applied Sciences
Advisor: Prof. Todd Zickler

Graduate Research Assistant (2009 - July 2016)
Harvard School of Engineering and Applied Sciences
Advisor: Prof. Todd Zickler

Undergraduate member (2008-2009)
Computer Vision, Speech Communication and Signal Processing Group, NTUA
Advisor: Prof. Petros Maragos

Undergraduate member (2008)
Intelligent Robotics and Automation Laboratory, NTUA
Supervisor: Prof. Costas Tzafestas

Journal Publications

Micron-scale Light Transport Decomposition Using Interferometry
ACM Transactions on Graphics, 2015
I. Gkioulekas, A. Levin, F. Durand, and T. Zickler

Looking Against the Light: How Perception of Translucency Depends on Lighting Direction
Journal of Vision, 2014
B. Xiao, B. Walter, **I. Gkioulekas**, T. Zickler, E. Adelson, and K. Bala

Inverse Volume Rendering with Material Dictionaries
ACM Transactions on Graphics, 2013
I. Gkioulekas, S. Zhao, K. Bala, T. Zickler, and A. Levin

Understanding the Role of Phase Function in Translucent Appearance
ACM Transactions on Graphics, 2013
I. Gkioulekas, B. Xiao, S. Zhao, E. Adelson, T. Zickler, and K. Bala

Toward Wide-Angle Microvision Sensors
IEEE Transactions on Pattern Analysis and Machine Intelligence, 2013
S. Koppal, **I. Gkioulekas**, T. Young, H. Park, K. Crozier, G. Barrows, and T. Zickler

**Refereed
Conference
Publications**

An Evaluation of Computational Imaging Techniques for Heterogeneous Inverse Scattering
European Conference on Computer Vision, 2016 (spotlight presentation)
I. Gkioulekas, A. Levin, and T. Zickler

On the Appearance of Translucent Edges
IEEE Conference on Computer Vision and Pattern Recognition, 2015
I. Gkioulekas, B. Walter, E. Adelson, K. Bala, and T. Zickler

Dimensionality Reduction Using the Sparse Linear Model
Advances in Neural Information Processing Systems, 2011
I. Gkioulekas and T. Zickler

Wide-angle Micro sensors for Vision on a Tight Budget
IEEE Conference on Computer Vision and Pattern Recognition, 2011 (oral presentation)
S. J. Koppal, **I. Gkioulekas**, T. Zickler and G. Barrows

Spatial Bayesian Surprise for Image Saliency and Quality Assessment
International Conference on Image Processing, 2010
I. Gkioulekas, G. Evangelopoulos and P. Maragos

Abstracts

Effects of Shape and Color on the Perception of Translucency
Vision Science Society Annual Meeting, 2012
B. Xiao, **I. Gkioulekas**, A. Dunn, S. Zhao, T. Zickler, E. Adelson, and K. Bala

Theses

A Framework for Inverse Scattering
Doctoral Dissertation, School of Engineering and Applied Sciences, Harvard University, August 2016
I. Gkioulekas

Computational Modeling of Visual Attention
Diploma Thesis, School of Electrical and Computer Engineering, National Technical University of Athens, July 2009 (in Greek)
I. Gkioulekas

**Invited
Talks**

“Computational Imaging for Inverse Scattering”, SPIE BIOS, Photonics West, 2017.
—, IS&T Electronic Imaging, 2016.
—, New England Computer Vision Workshop, 2016.
—, Graphis Seminar, Cornell University, 2016.
—, International Conference on Computational Photography, 2016.

—", Information and Systems Seminar, Harvard University, 2016.

"An Evaluation of Computational Imaging Techniques for Heterogeneous Inverse Scattering", ECCV, 2016.

—", Graphics Seminar, MIT, 2016.

"Making Sense of Multi-path Light", Department of Computer Science, University of Toronto, 2016.

—", Robotics Institute, Carnegie Mellon University, 2016.

"Micron-scale Light Transport Decomposition Using Interferometry", SIGGRAPH, 2016.

—", Camera Culture Seminar, Media Lab, MIT, 2016.

—", Graphics Seminar, MIT, 2016.

"Understanding Translucency: Perception, Acquisition, and Computer Vision", Graphics Seminar, University of Toronto, 2015.

"Inverse Volume Rendering with Material Dictionaries", SIGGRAPH Asia, 2014.

—", Graphics Seminar, MIT, 2014.

"Understanding the Role of Phase Function in Translucent Appearance", SIGGRAPH, 2014.

—", Graphics Seminar, University of California Berkeley, 2014.

—", Graphics Seminar, MIT, 2013.

Teaching Experience

Teaching Fellow, CS283 - Computer Vision, Harvard University, Fall 2010, 2012, 2013, 2014, 2015

Lab Assistant, National Technical University of Athens

Programming Techniques, Spring 2006

Introduction to Programming, Fall 2005, Fall 2006

Awards

Outstanding Reviewer Award (ECCV 2016)

Outstanding Reviewer Award (CVPR 2016)

Outstanding Reviewer Award (ICCV 2015)

Harvard Certificate of Distinction in Teaching (Fall 2012, 2013, 2014)

John A. and Elizabeth S. Armstrong Fellowship (2010)

Harvard School of Engineering and Applied Sciences Graduate Fellowship (2009-2011)

Greek State Scholarships' Foundation Award for Excellence in Undergraduate Studies (2008-2009)

KARY Award, awarded to top students of the ECE Department at NTUA (2008-2009)

Agricultural Bank of Greece Award for Excellence in Undergraduate Studies (2005-2009)

President of the Hellenic Republic Award for Excellence in High School studies (2004)

Professional Activities

Reviewer, CVPR 2013-2017; ICCV 2015; ECCV 2016; ACCV 2016; CCD 2016; IEEE PAMI 2013; IJCV 2012, 2016; Pacific Graphics 2013; ACM SIGGRAPH 2014-2017; ACM TOG 2015.

Member, Institute of Electrical and Electronics Engineers (IEEE) (2007 - present)

Member, Association for Computing Machinery (ACM) (2009 - present)
Member, Technical Chamber of Greece (2010 - present)
Treasurer, IEEE NTUA Student Branch (2008-2009)

**Other
Information**

Citizenship: Greek

Languages: Greek (native), English (fluent), German (intermediate), French (intermediate)