

# MOHIT GUPTA

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## Research Interests

Physics-based Computer Vision, Computational Imaging, Computer Graphics

## Education

**Ph.D. in Robotics, Carnegie Mellon University** 2005 - 2010

Thesis Title: Scene Recovery and Rendering Techniques Under Global Light Transport

Thesis Committee: Profs. Srinivasa Narasimhan, Takeo Kanade, Martial Hebert, Shree Nayar

**MS in Computer Science, Stony Brook University** 2003 – 2005

**BTech in Computer Science and Engineering, Indian Inst. of Technology, Delhi** 1999 – 2003

## Work Experience

**Post-doctoral Research Scientist, Columbia University** Fall 2010 - Present

Advisor: Prof. Shree Nayar

**Intern, Mitsubishi Electric Research Labs** Summer 2010, Summer 2009

Mentor: Dr. Amit Agrawal

**Research Assistant, Carnegie Mellon University** 2005 - 2010

Advisor: Prof. Srinivasa Narasimhan

**Research Assistant, Stony Brook University** 2004 - 2005

Advisor: Prof. Dimitris Samaras

## Talks

**Scene Recovery in the presence of Global Light Transport**

Stony Brook University (July 2009)

Columbia University (July 2009)

**Probing Scenes with Programmable Illumination**

Intel Research Labs, Seattle (April 2010)

University of California, Berkeley (June 2010)

Columbia University (June 2010)

**A Combined Theory of Defocused Illumination and Global Light Transport**

Mohit Gupta, Yuandong Tian, Srinivasa Narasimhan, Li Zhang  
*Submitted to International Journal of Computer Vision (IJCV 2011)*

**Structured Light 3D Scanning Under Global Illumination**

Mohit Gupta, Amit Agrawal, Ashok Veeraraghavan, Srinivasa Narasimhan  
*IEEE Computer Vision and Pattern Recognition (CVPR 2011)*

**Flexible Voxels for Motion-Aware Videography**

Mohit Gupta, Amit Agrawal, Ashok Veeraraghavan, Srinivasa Narasimhan  
*European Conference on Computer Vision (ECCV 2010)*

**Optimal Coded Sampling for Temporal Super-Resolution**

Amit Agrawal, Mohit Gupta, Ashok Veeraraghavan, Srinivasa Narasimhan  
*IEEE Computer Vision and Pattern Recognition (CVPR 2010)*

**(De) Focusing on Global Light Transport for Active Scene Recovery**

Mohit Gupta, Yuandong Tian, Srinivasa Narasimhan, Li Zhang  
*IEEE Computer Vision and Pattern Recognition (CVPR 2009)*

**High Resolution Tracking of Non-Rigid 3D Motion Using Harmonic Maps**

Yang Wang, Mohit Gupta, Song Zhang, Sen Wang, Xianfeng Gu, Dimitris Samaras, Peisen Huang  
*International Journal of Computer Vision (IJCV 2008)*

**On Controlling Light Transport in Poor Visibility Environments**

Mohit Gupta, Srinivasa Narasimhan, Yoav Schechner  
*IEEE Computer Vision and Pattern Recognition (CVPR 2008)*

**Legendre Fluids: Reduced Space Modeling and Rendering of Participating Media**

Mohit Gupta, Srinivasa Narasimhan  
*Eurographics/ ACM SIGGRAPH Symposium on Computer Animation (SCA 2007)*

**Acquiring Scattering Properties of Participating Media by Dilution**

Srinivasa Narasimhan, Mohit Gupta, Craig Donner, Ravi Ramamoorthi, Shree Nayar, Henrik Wann Jensen  
*ACM Transactions on Graphics (SIGGRAPH 2006)*

**High Resolution Tracking of Non-Rigid 3D Motion Using Harmonic Maps**

Yang Wang, Mohit Gupta, Song Zhang, Sen Wang, Xianfeng Gu, Dimitris Samaras, Peisen Huang  
*IEEE International Conference on Computer Vision (ICCV 2005)*

## Multilevel Modeling and Rendering of Architectural Scenes

AM Kushal, G. Chanda, K. Srivastava, M. Gupta, S. Sanyal, TVN Sri Ram, P. Kalra, S. Banerjee  
*Eurographics 2003*

## Professional Service

Reviewer for SIGGRAPH, SIGGRAPH Asia, PAMI, IJCV, ICCV, CVPR, ECCV, ICCP

Worked with Prof. Srinivasa Narasimhan to organize the **Symposium on Volumetric Scattering** in Vision and Graphics (in conjunction with CVPR 2007)

## Honors

**Best Software B.Tech. Project**, IIT Delhi for “Modeling and Rendering of Architectural Scenes” (built a walkthrough for Humayun’s Tomb, Delhi)

Secured **All India Rank of 96** in the IIT-JEE Exam taken by about 120,000 students

## Graduate Course Work

### Carnegie Mellon University

Computer Vision, Machine Learning, {Learning<sup>†</sup>, Physics<sup>‡</sup>, Geometry}-based Methods in Computer Vision, Vision Sensors, Optimization

<sup>†</sup> Developed a freely downloadable MATLAB **image segmentation tool-box**

<http://www.cs.cmu.edu/~mohitg/Research/segmentation.htm>

<sup>‡</sup> Won the photography competition conducted as part of the course

### Stony Brook University

Computational Geometry, Advanced Computational Geometry, Geometric Modeling, Network Flows, Linear Programming, Cache-Oblivious Algorithms

## Teaching Experience

### Teaching Assistant, Carnegie Mellon University

Professor: Prof. Srinivasa Narasimhan  
Computer Vision, Spring 2010

### Teaching Assistant, Carnegie Mellon University

Professor: Prof. Alexei Efros  
Computational Photography, Fall 2006

### Teaching Assistant, Stony Brook University

Professor: Prof. George Hart  
Introduction to Computer Science, Fall 2003, Spring 2004