

Dhruv Mahajan

Graphics Lab
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Research Interests

My research interests are in computer vision, computer graphics and machine learning. My Ph.D. thesis focuses on the theoretical analysis and mathematical modeling of visual appearance of objects. I am also working on image representation models for efficient image and video processing and editing operations, such as image interpolation, compression and stylization of textured objects.

Education

- 2006-Current Ph.D., Computer Science
Columbia University - New York, NY
- 2004-2006 Masters, Computer Science
Columbia University - New York, NY
GPA: 3.9725/4.0
- 2000-2004 B.Tech., Computer Science and Engineering
Indian Institute of Technology - Delhi, India
GPA: 8.0/10.0

Academic and Work Experience

- 2004-Present Columbia University - Department Of Computer Science
Graduate Research Assistant
Working on theoretical analysis and mathematical representation for visual appearance of objects
- Summer 2008 Adobe Systems Inc.
Summer Intern
Working on Image Interpolation and Sparse Image Representation
- Summer 2007 Adobe Systems Inc.
Summer Intern
Worked on Image Interpolation and Compressive Light Transport Sensing
- Summer 2003 Hebrew University Of Jerusalem - Department Of Computer Science
Summer Intern
Worked on the project Image Stitching In Gradient Domain
- Summer 2002 MIT Media Lab.
Summer Intern
Worked on Speech Compression and Speaker Recognition projects

Publications

Under Review

- Dhruv Mahajan, Wojciech Matusik, Ravi Ramamoorthi, Fu-Chung Huang, Peter Belhumeur. “Moving Gradients: A Path-Based Method for Plausible Image Interpolation”.

Refereed Journal Publications

- Pieter Peers, Dhruv Mahajan, Bruce Lamond, Abhijeet Ghosh, Wojciech Matusik, Ravi Ramamoorthi, Paul Debevec. “Compressive Light Transport Sensing”, ACM Transactions on Graphics 2009.
- Dhruv Mahajan, Yu-Ting Tseng, Ravi Ramamoorthi. “An Analysis of the In-Out BRDF Factorization for View-Dependent Relighting ”, Eurographics Symposium on Rendering, EGSR 2008.
- Dhruv Mahajan, Ira Kemelmacher, Ravi Ramamoorthi, Peter Belhumeur. “A Theory of Locally Low Dimensional Light Transport”, ACM Transactions on Graphics, SIGGRAPH 2007.
- Dhruv Mahajan, Ravi Ramamoorthi, Brian Curless. “A Theory Of Frequency Domain Invariants: Spherical Harmonic Identities for BRDF/Lighting Transfer and Image Consistency”, Pattern Analysis and Machine Learning (PAMI) 2007.
- Ravi Ramamoorthi, Dhruv Mahajan, Peter Belhumeur. “A First Order Analysis of Lighting, Shading, and Shadows”, ACM Transactions on Graphics, Jan 2007.
- Gaurav Agarwal, Peter Belhumeur, Steven Feiner, David Jacobs, W. John Kress, Ravi Ramamoorthi, Norman A. Bourg, Nandan Dixit, Haibin Ling, Dhruv Mahajan, Rusty Russell, Sameer Shirdhonkar, Kalyan Sunkavalli, Sean White. “First steps toward an electronic field guide for plants”, Taxon 2006.

Refereed Conference Publications

- Dhruv Mahajan, Ravi Ramamoorthi, Brian Curless. “A Theory of Spherical Harmonic Identities for BRDF/Lighting Transfer and Image Consistency”, Proc. European Conference on Computer Vision (ECCV 2006), May 2006
- Dhruv Mahajan, Nipun Kwatra, Sumit Jain, Prem Kalra and Subhashis Banerjee. “A Framework for Activity Recognition and Detection of Unusual Activities”, (ICVGIP 2004). December, 2004.

Patents

1 filed

Academic Achievements

- Secured All India Rank 10 in IIT Joint Entrance Examination among 1,50,000 aspirants
- Awarded National Talent Search Scholarship by NCERT (National Council For Educational Research And Training)
- Selected among top 30 students for the 32nd International Chemistry Olympiad (Held in Denmark in 2000) Training Camp (Held in Mumbai, HBCSE)
- 4th rank in Techkriti'2002 (All India Technical Festival, IIT Kanpur) in the working model contest, Endeavour
- National Merit Scholarship (All India Level) for outstanding performance in High School

References

Dr. Ravi Ramamoorthi (Advisor)

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Dr. Peter Belhumeur (Co-Advisor)

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Dr. Wojciech Matusik

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Dr. Shree K. Nayar

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