

# Dhruv Mahajan

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## Research Interests

Computer Graphics, Computer Vision, Machine Learning, Mathematical Models of Visual Appearance, Image/Video Representation Models and Editing, Content Based Image Retrieval, Multimedia Classification.

## Education

- 2006-2009 Ph.D., Computer Science  
**Columbia University - New York, NY**  
**Thesis:** A Theoretical Analysis of Light Transport
- 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

- 2009-Present Yahoo Research, Bangalore  
**Research Scientist**  
Working on Content Based Image Retrieval, Multimedia Object Classification and Canonical Image Representation.
- 2004-2009 Columbia University - Department Of Computer Science  
**Graduate Research Assistant**  
Worked on Theoretical Analysis and Mathematical Representation for the Visual Appearance of Objects.
- Summer 2008 Adobe Systems Inc.  
**Summer Intern**  
Worked 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 Projects Related to Speech Compression and Speaker Recognition.

## Publications

### Under Review

- Dhruv Mahajan, Malcolm Slaney. "A Web-Graph Based Framework for Image and Web Classification".

### Refereed Journal Publications

- Dhruv Mahajan, Fu-Chung Huang, Wojciech Matusik, Ravi Ramamoorthi, Peter Belhumeur. "Moving Gradients: A Path-Based Method for Plausible Image Interpolation", ACM Transactions on Graphics, SIGGRAPH 2009.
- 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", IEEE Transactions on Pattern Analysis and Machine Learning (PAMI) 2008.
- 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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Computer Science Division  
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**Dr. Peter Belhumeur (Co-Advisor)**

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**Dr. Wojciech Matusik**

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**Dr. Brian Curless**

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**Dr. Shree K. Nayar**

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