

BISWARUP CHOUDHURY  
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## RESEARCH INTERESTS

My research interests lie at the confluence of Computer Graphics and Vision, where they reinforce each other to achieve *realism* in both analyzing and synthesizing the beautiful world around us. I am particularly interested to understand the complex way in which the *appearance* of real or virtual world objects changes under *variable illumination, viewpoint and pose*. To this end, I strive to formulate *real-time algorithms* to better extract, represent and synthesize visual information.

## PUBLICATIONS

### • JOURNAL

1. Biswarup Choudhury and Sharat Chandran, *A Survey of Image-based Relighting Techniques*. Accepted for publication in the **JVRB**, 2008.
2. Biswarup Choudhury, Aviral Pandey and Sharat Chandran, *Efficient Image Updates using Light Fields*. In **Pattern Recognition Letters**, Volume 28, Issue 3, pp. 375-383, 2007.

### • CONFERENCE

1. Biswarup Choudhury, Deepali Singla and Sharat Chandran, *Fast Color-Space decomposition based Environment Matting*. In the Proceedings of **ACM SIGGRAPH i3D 2008**, Redwood City, USA, 2008. Awarded the **Best-Poster (Honorable Mention)**.
2. Biswarup Choudhury and Sharat Chandran, *Data-intensive Image based Relighting*. In the Proceedings of **ACM SIGGRAPH GRAPHITE 2007**, pp. 155-162, Perth, Australia, 2007.
3. Biswarup Choudhury, Deepali Singla and Sharat Chandran, *Real-time Camera Walks Using Light Fields*. In the Proceedings of **ICVGIP 2006 (LNCS)**, pp. 321-332, Madurai, India, 2006.
4. Biswarup Choudhury and Sharat Chandran, *A Survey of Image-based Relighting Techniques*. In the Proceedings of **GRAPP 2006**, pp. 176-183, Setubal, Portugal, 2006.
5. 06.
6. Aviral Pandey, Biswarup Choudhury and Sharat Chandran, *Efficient Light Field Based Camera Walk*. In the Proceedings of **ICVGIP 2004**, pp. 302-307, Kolkata, India, 2004.
7. Biswarup Choudhury, *Images: a new CG primitive.*, In Microsoft Research TechVista, Chennai, 2008.
8. Biswarup Choudhury, *Image based Animation*, 2008, In Review.
9. Biswarup Choudhury, *Realtime Rain Simulation using color-space decomposition based Environment Matting*, 2008, In Review.

## KEY PROJECTS

- MATLAB: Shape from Stereo and Shading.
- C++: Photon Mapping using priority queues, Shot Detection of Videos, Unified Object Store.
- POV-Ray: Ray tracing and Radiosity.
- JAVA: Bezier Curves and surfaces with geometric operations (curvature, isoparametric curves etc).

## TEACHING EXPERIENCE

Responsible for taking lectures, conducting tutorials, scripting exam question papers, evaluating answer scripts, supervising course projects and assisting needy students in the following courses:

- Spring 2006: *Advanced Computer Graphics* (Batch size: approx. 30).
- Autumn 2005: *Computer Programming and Utilization* (Batch size: approx. 600).
- Spring 2005: *Computer Aided Geometric Design* (Batch size: approx. 20).
- Autumn 2004: *Computer Programming and Utilization* (Batch size: approx. 600).

## WORK EXPERIENCE

- *Internship, Siemens Information Systems Limited, Kolkata.*  
July 2001 – August 2001  
**Role:** Creating their database (Oracle) and GUI (VC++) for attendance and library management system.
- *Internship, Central Mechanical and Engineering Research Institute, Durgapur.*  
May 2002 – July 2002  
**Role:** Mathematical modeling of the life of boilers based on measurements. Developed a camera calibration and stereo vision system.

## SKILL SET

- Programming: C/C++, Java, POV-Ray, L<sup>A</sup>T<sub>E</sub>X, Unix Shell, PL/SQL.
- API: OpenGL, OpenCV.
- Software Tools: Matlab, Octave, Visual Studio.
- Scripting: HTML, XHTML, Javascript, CSS, PHP.
- Operating System: Linux, Windows.

## ACHIEVEMENTS

- Awarded the Infosys Fellowship for the tenure of PhD. for overall excellence.
- Achieved 96.23 percentile in the All India Graduate Aptitude Test in Engineering (Computer Science and Engineering) 2003.

## **EXTRA CURRICULAR**

- Professional Activities
  - Reviewer: ACM SIGGRAPH i3D 2008, NCC 2008,
  - System Administrator, ViGIL (Graphics Laboratory), IIT Bombay.
  - Department Representative, Research Scholars Forum, IIT Bombay.
  - Conference Volunteer, WCVGIP 2004.
  - Conference Volunteer, ICVGIP 2004 (Awarded **Best Volunteer**).
  - Organization volunteer, ACM-ICPC, 2004.
  - Chaperone, IITB BTech Work-Visit, Bangalore.
  - Volunteer, Art of Living.
- Miscellaneous:
  - Sports: Swimming, Tennis, Skating, Running, Chess.
  - Interests: Sketching, Enthusiast Trekker, Music, Literature and social service.

## **REFERENCES**

- **Prof. Sharat Chandran**  
Professor, Department of Computer Science and Engineering  
Indian Institute of Technology, Bombay  
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- **Prof. Subhasis Chaudhuri**  
Head, Department of Electrical Engineering  
Indian Institute of Technology, Bombay  
Web: <http://www.ee.iitb.ac.in/wiki/faculty/sc>  
Email: [sc@ee.iitb.ac.in](mailto:sc@ee.iitb.ac.in)
- **Prof. Milind Sohoni**  
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