

# UDDIPAN MUKHERJEE

PhD student, Dept. of Computer Science  
University of California, Irvine, USA  
Expected graduation: July 2013

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## Experience

### **Graduate Student Researcher in Computer Graphics (September 2008 – present)**

Pursuing a PhD degree in Computer Science at the University of California, Irvine.

### **Graphics Engineering Intern at MSC Software Corporation (June 2012-September 2012)**

Developed fast rendering engine (using CUDA C and OpenGL) for visualizing large polygonal models at interactive frame rates utilizing modern GPU capabilities.

### **Engineering Intern at Canon Development Americas (June 2009-September 2009)**

Designed new algorithms for fast image and video transfer prioritizing the region(s) of interest. Filed two patents for the same.

### **Teaching Assistant at the Dept. of Computer Science, UC Irvine**

Introduction to Computer Science 1 and 2 (Winter 2010, Summer 2010), Digital Image Processing (Spring 2010), Introduction to Computer Graphics (Fall 2009).

### **Graduate Student Researcher at Indian Institute of Technology, Kharagpur, India (August 2006-July 2008)**

Designed a new strip-based encoding algorithm for video along the lines of H.264 encoding standard (M.Tech thesis project).

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## Interests and Technical Skills

**Interests:** Computer graphics, geometry, vision, imaging and multimedia

**Technical Skills:** Proficient in: C++, Matlab, CUDA C, OpenGL, Familiar with: Java

**Software & Technologies:** Windows, MacOSX, Visual Studio, Eclipse, Xcode, Latex

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## Software Developed

**VolUMrender:** Interactive volume renderer designed in CUDA C. The user is capable of altering the viewpoint and transfer function interactively.

**Tween/Untween Pad:** Interactive tool for drawing multiple self-overlapping curves and visualize the morphing among them. Designed in C++ using OpenGL and GLUI libraries.

**MazeMorph:** Interactive game of morphing two self-overlapping mazes. Designed in C++ using OpenGL.

**CurveMorph:** Interactive morphing of two arbitrary curves. Designed in C++ using OpenGL and GLUI libraries.

**CurveSmooth:** Smoothing an arbitrary curves using different techniques like spline smoothing and Taubin filtering.

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## Projects

**Tree Morphing (February 2012-present):** Shape modeling by morphing trees obtained from dual graphs of triangulations of arbitrary non-simple shapes.

**Morphing and Layering of self-overlapping curves (November 2011-present):** Study of transformations between self-overlapping curves, the interiors of which are non-simple polygons.

**Immersion and Embedding of self-overlapping curves (November 2009-May 2011):**

Computing the mapping between the interior of a self-overlapping curve and a disk, by taking into account the number of intersections and overlaps of the disk.

**Interactive volume rendering of 3D datasets (January 2011–August 2011):** Fast interactive rendering techniques for huge 3D data sets using CUDA. The level of interaction ranges from changing the viewpoint to altering the transfer function.

**Tensor Decomposition and Applications (October 2010-October 2011):** Decomposition of 3D tensors into a set of vectors for data compression.

**Segmentation and Tracking of neuro-stem cells (October 2010-March 2011):** Automatic segmentation and tracking of stem cells to identify biological events.

**Rate-Distortion Optimization in H.264 Video Coding Standard (August 2007-July 2008):**

Embedded coding of video frames in the lines of conventional H.264 coding taking advantage of Regions of Interest. (M. Tech Thesis project)

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## Filed Patents

**Region of Interest based Image Transfer:** Uddipan Mukherjee, Don Matsubayashi for Canon Development Americas (CDA): Application no. 20110276652

**Region of Interest based Video Transfer:** Uddipan Mukherjee, Don Matsubayashi for Canon Development Americas (CDA): Application no. 20110258344

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## Publications

**Tweening Boundary Curves of Non-Simple Immersions of a Disk:** Uddipan Mukherjee, M.Gopi, *Indian conference on vision, graphics and image processing, 2012*

**Immersion and Embedding of Self-Crossing Loops:** Uddipan Mukherjee, M.Gopi, Jarek Rossignac: *International Symposium on Sketch-Based Interfaces and Modeling, 2011*

**Robust Segmentation and Tracking of Generic Shapes of Neuro-Stem Cells:** Ishwar Kulkarni, Uddipan Mukherjee, Chris Sontag, Brian Cummings, M. Gopi: *IEEE Conference on Healthcare Informatics, Imaging, and Systems Biology (HISB), 2011*

**Data Handling Displays:** M. Lazarov, H. Pirsiavash, Behzad Sajadi, Uddipan Mukherjee, Aditi Majumder: *IEEE/ACM International Workshop on Projector-Camera Systems (Procams 2009)*

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## Education

- PhD student in Computer Science at University of California, Irvine, USA. CGPA : 3.95/4.00 (September 2008 - present)
  - Master of Technology in Media & Sound Engineering from Indian Institute of Technology, Kharagpur, INDIA . CGPA : 9.16/10 (August 2006 – July 2008)
  - Bachelor of Engineering in Electronics and Telecommunication Engineering from Jadavpur University, Kolkata, India. CGPA : 8.8/10 (August 2002- July 2006)
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## Awards and achievements

**Winner of Institute silver medal** at Indian Institute of Technology, Kharagpur for topping Master of Technology in Media and Sound Engineering (2008)

**Recipient of dean's fellowship** for pursuing graduate study at UC Irvine (2008)

**Ranked 19th** in the pre-school leaving examination in the entire state of WB, India (2000)

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