# Dibyendu Mondal

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## Education

**Georgia Institute of Technology** **Atlanta, GA**
*College of Computing* Expected May 2019
- Master of Science in Computer Science with specialization in Computer Graphics, **GPA: 4.0/4.0**

**Indian Institute of Technology Bombay** **Mumbai, India**
*Computer Science and Engineering Department* August 2017
- Bachelor of Technology in Computer Science and Engineering

## Publications

- Raksha Sharma, **Dibyendu Mondal**, Pushpak Bhattacharyya: *A Comparison among Significance Tests and Other Feature Selection Methods for Sentiment Analysis: A First Study*, CICLING 2017, Budapest, Hungary
- Raksha Sharma, **Dibyendu Mondal**, Pushpak Bhattacharyya: *Statistical Significance Tests and Its Impacts in Sentiment Analysis*, Accepted Tutorial in $13^{th}$ International Conference on Natural Language Processing, 2016

## Research

**Undergraduate Thesis: Reconstruction from multiple Depth Sensors**
*Guide: Prof. Parag Chaudhuri & Siddhartha Chaudhuri, CSE Dept, IIT Bombay* Autumn 2017
- Designed a system that scans a human body using low-cost commodity Depth Sensors
- Robustly reconstructed a synthetic mesh of a person using these partial, noisy scans

**Study of Significance Tests as Feature Selection Method for Sentiment Analysis**
*Guide: Prof. Pushpak Bhattacharyya, CSE Dept, IIT Bombay* 2016
- Studied and Compared various feature selection methods like TFIDF, Delta-TFIDF, Relief, $\chi^2$ test and $t$-test
- Analysed the impact of significance tests in In-domain, Cross-domain and Cross-lingual SA in various dataset
- Concluded that t-test is more promising than any other significance test or feature selection method

## Experience

**Optimal NW Scheduling Strategies for Dense DSDS Deployment Scenarios**
*Guide: Pradeep Dwarakanath, Sr. Chief Engg., Samsung R & D Institute Bangalore* Summer 2016
- Studied the behavior of secondary SIM in case of switching from one SIM to another in Dual SIM phones
- Used various probabilistic models to learn and predict the behavior of the secondary SIM
- Employed smart scheduling strategies at network to minimize the loss of "On Air" resources
- Tested the code with multiple configurations and showed improvement in resource utilization at NW

**Software Systems Lab, Teaching Assistant**
*Prof. Sharat Chandran, CSE Dept, IIT Bombay* Spring 2016
- Designed and evaluated labs and projects for a batch of over 120 students
- Conducted tutorial sessions for helping the students in topics like django
- Awarded **TA of the Month** for excellence in work as Teaching Assistant, across all courses in the department

**Computer Programming and Utilization Lab, Teaching Assistant**
*Prof. Sunita Sarawagi, CSE Dept, IIT Bombay* Autumn 2017
- Designed questions for labs, quizzes, exams and projects for a batch of over 150 students
- Conducted tutorial sessions for helping students in various topics

## Key Academic Projects

**Mesh Tetrahedralization**
*Guide: Prof. Jarek Rossignac, CoC, Georgia Tech* Fall 2017
- Computed the Delauney Tetrahedralization of two given clouds of balls located at two horizontal planes
- Computed a high-resolution water-tight triangle mesh that approximates the boundary of the union of balls

**Scene Recognition with Bag of Words**
*Guide: Prof. James Hays, CoC, Georgia Tech* Fall 2017
- Classified scenes into one of 15 categories by training and testing on a 15 scene database
- Used features like tiny images and SIFT and classifiers like nearest neighbor and linear SVM
- Also experimented with RBF kernel for non-linear SVM, GIST descriptors and Fischer encoding
- Achieved best accuracy of 65.5% using SIFT and linear SVM

**Rage Race**
*Guide: Prof. Jeff Wilson, IMTC, Georgia Tech* Fall 2017
- Created a 3D single-player racing game in Unity
- Created a player character with animated 3D mesh character controller having real-time control
- Implemented a real-time steering, path planning and state-machine based AI which controls 3 NPCs
- Added physics event-based feedbacks like particle effects and 3D audio

**Procedural Modeling of Cities**
*Guide: Prof. Siddhartha Chaudhari, CSE Dept, IIT Bombay* Spring 2017
- Created a parser for a grammar of a city and parsed it to create a syntax tree
- Iterated over the faces of a manually generated road network and called a render function at each leaf node
- Probabilistically generated different types of buildings like schools, offices, residential homes etc
- Coded it in C++ using graphics libraries like OpenGL and GLUT

**Object Tracking using Mean-Shift**
*Guide: Prof. Ajit Rajwade, CSE Dept, IIT Bombay* Spring 2017
- Designed a system for real-time tracking of non-rigid objects from a moving camera using Mean Shift
- Used Bhattacharyya Coefficient based metric for better target localization

**Droids in RenderMan**
*Guide: Prof. Parag Chaudhari, CSE Dept, IIT Bombay* Spring 2016
- Designed a humanoid and a non-humanoid (BB-8) bot, inspired from the Star Wars movies
- Used multiple point lights which acted as an area light and generated soft shadows
- Used indirect illumination for Color Bleeding and Photon Mapping for Caustics
- Coded it in RSL and rendered in RenderMan, a renderer by Pixar

**Music Classification based on Genre**
*Guide: Prof. Siva Kumar G., CSE Dept, IIT Bombay* Autumn 2015
- Developed a Music Genre Classifier using Feedforward Neural Network
- Tested the classifier on various kinds of inputs for classifying them into pop, classical, metal, rock etc
- Studied different parameters like total error, sensitivity and specificity and achieved > 80% accuracy
- Coded it in Python using libraries like Pybrain and Neurolab

**JEE Main/Advanced Counselling Portal**
*Guide: Prof. Sharat Chandran, CSE Dept, IIT Bombay* Summer 2015
- Built a Django based web portal where JEE Mains/Advanced students can enter their ranks and interests
- Based on a statistical model, checked the available branches with different probabilities
- Used HTML5, Bootstrap, Javascript, jQuery for designing all the web pages
- Developed a feature using which students can directly upload final choices on official Seat Allocation portal

**Statistical Inference from Dataset**
*Guide: Prof. Ganesh Ramakrishnan, CSE Dept, IIT Bombay* Spring 2014
- Developed a system for attribute extraction from in-domain sentences
- Learned attributes were used to make statistically appropriate conclusions
- Used Python for extraction of patterns from the knowledge database

## Technical Skills

- **Programming Languages:** C++ | Python | Bash | Processing | C# | Java | SWI-Prolog
- **Web Development:** HTML5 | SQL | Django | Bootstrap | CSS | JavaScript | jQuery | Flask
- **Data Analysis:** PyBrain | NumPy | MATLAB | Torch
- **Others:** OpenGL | Unity3D | Qt | PRMan | Gnuplot | LaTeX | Eclipse

## Awards

- **Undergraduate Research Award** from IIT Bombay (2016)
- **TA of the month Award** from IIT Bombay (2016)

## Leadership & Extra Curricular

- Represented CSE class of 2017 in **Department UG Council** and other Intra Dept. Events
- Co-organized various Hackathons by **Microsoft**, **Facebook** and **Web and Coding Club**, IIT Bombay
- Participated in various Hackathons conducted by **Microsoft** code.fun.do, **Facebook**, **Google** Developers Group, **Angel Hack** in Bombay Stock Exchange, **Web and Coding Club**, IIT Bombay
- Reached **National Finals** of **Code Uncode'14**, a hunt for secure programmers by **EC Council**
- Participated in **Build the Shield**, a national level hacking contest hosted by **Microsoft India**