

SIDDHANT MANOCHA

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EDUCATIONAL QUALIFICATIONS

- **Indian Institute of Technology, Kanpur, India** **CGPA: 9.9/10.0**
B.Tech, Computer Science and Engineering, 2012 - Present
- Lawrence and Mayo Public School, Kota, India **Percentage : 96.2 %**
Senior School Certificate(CBSE), 2012
- St.Thomas College, Lucknow, India **Percentage : 95.8 %**
Secondary School Certificate(ICSE), 2010

ACADEMIC ACHIEVEMENTS

- Ranked in **top 5 students in the institute** among 837 students
- Secured **All India Rank 100** in IIT-JEE 2012 among 0.5 million candidates
- Placed in **top 0.05%** (amongst over 1 million students) in AIEEE 2012 with AIR 148
- Awarded **Academic Excellence Award** (given to top 5% students) for exceptional academic performance in 2012-13
- Received **Summer Undergraduate Research Grant for Excellence (SURGE)** 2014, granted by Dean, Resource Planning and Generation, IIT Kanpur.
- Selected for Kishore Vigyan Protsahan Yojna (**KVPY**), 2012 given by Department of Science and Technology, Government of India
- Awarded **Certificate of Appreciation by the Director, IIT Kanpur** for outstanding contribution in software development in Inter IIT Technical Meet held at IIT Bombay
- Amongst top **1% students** in NSEA, pre-final round in Indian National Astronomy Olympiad 2011-2012

WORK EXPERIENCE

Vision Based Robot Motion Planning

SURGE | May 2014-July 2014

Mentor: Dr .Amitabha Mukerjee, Department of Computer Science and Engineering, IIT Kanpur

- Formulated an algorithm to automate the motion and plan the trajectory of CRS Robotic arm using computer vision, image processing and Gaussian models
- Implemented Gaussian Process Latent variable model and Gaussian process regression to figure out the mapping between joint angles of the robotic arm and corresponding images for various configurations for trajectory planning
- Recovered the joint angles of the robotic arm from the corresponding images with about **99.5% accuracy** and generated a smooth trajectory between unknown robot configurations with solution sufficiently close to ground truth solution

Automatic Commentary Generator

Carnegie Mellon University's Winter School | December 2014-Present

Mentor: Dr.Bhiksha Raj, Carnegie Mellon University; Co-Mentor: Pulkit Agarwal, Phd, UC Berkeley

- Develop a system that can automatically generate commentary from the video of a tennis match
- Modeled the problem into recognizing objects(players), recognizing actions, obtaining ball trajectory and analyzing sound for extracting key information regarding the video content
- Utilised Regions with Convolutional Neural Networks(RCNN) approach for object Detection, Histogram of Optical Flow(HOF) as motion based features for action recognition and Optical Flow for ball tracking
- Awarded one of the **best project** at Carnegie Mellon University's Winter School held at National Institute of Technology, Karnataka

Nachos

Course Project | July 2014-Nov 2014

Mentor: Prof. Mainak Chaudhari, Department of Computer Science and Engineering, IIT Kanpur

- Implemented system calls pertaining to Fork, Exec, Join, Yield, Sleep and Exit for Nachos
- Programmed process scheduling algorithms including First in First Out, Round Robin, Shortest Job First and UNIX Scheduling and analysed their relative performance
- Implemented page replacement algorithms including First in First Out, Least Recently Used(LRU) and LRU Clock and Random Page Allocation and evaluated their performance in different scenarios

Cloud Based File Hosting Service

Computing Laboratory | July 2014-Nov 2014

Mentor: Dr. Arnab Bhattacharya, Department of Computer Science and Engineering, IIT Kanpur

- Designed a file hosting service with a web interface and a python based linux desktop client that offered cloud storage, online editing, file sharing and file synchronization
- Developed the web platform to enable users to upload, edit and share files and desktop client to automatically sync files between the local machine and the cloud
- Implemented a peer-to-peer protocol for video, audio and text transfer in Node.js to enable users to communicate and collaborate via the web interface

City Watch, Crowd Source Android Application

Android Application | December 2013

- Conceptualized a crowd source solution to address local infrastructural issues in the city and report problems to the municipal government for immediate consideration
- Developed an Android Application using web standards(HTML,CSS,JavaScript,PHP) through Intel XDK framework
- Awarded **2nd prize** in Software Development **amongst 20 teams at Inter IIT Technical Meet** held at IIT Bombay

My Impress, Cloud Based Presentation Software

Web Application | May 2013-June 2013

- Designed an online platform to create presentations with cloud support and improved presentation transition effects
- Utilized Impress.js framework and Web standards(JavaScript,PHP,MYSQL)to construct an editing and hosting platform
- Devised a user interface for Impress.js presentations that provided a powerful tool to add 3-D scale, zoom and rotate features which distinguished them from standard PowerPoint presentations

TECHNICAL SKILLS

- Programming languages: C, C ++ , Perl, Bash, HTML, JavaScript, CSS, PHP, MYSQL, Python
- Platforms/Tools: Windows, Linux, Octave, GNU Plot, Latex, Matlab, Socket Programming

RELEVANT COURSES

Machine Learning Techniques*	Artificial Intelligence*	Data Structures and Algorithms
Linear Algebra	Principles of Databases*	Computer Networks
Operating Systems	Compiler Design*	Probability and Statistics

*: ongoing

POSITIONS OF RESPONSIBILITY

- **Secretary, Programming Club, IIT Kanpur** June 2013-April 2014
Organized lectures at the hall level , promoted participation in programming events and mentored juniors in Summer Project
- **Academic Mentor, Counseling Service, IIT Kanpur** April 2013-June 2014
Provided academic assistance to students from junior batches in Fundamentals of Computing (ESC 101)

EXTRA-CURRICULAR

- Secured **2nd position** in BattleCity, an AI strategy game event, and El Eduvate, a web development event held at Techkriti(2014), annual technical festival of IIT Kanpur
- Awarded Certificate of Appreciation for outstanding project as a part of Manufacturing Process course for fabricating Mechanical Odometer