Abhinav Moudgil

Third Year Undergraduate, Dual Degree
Electronics and Communication Engineering
International Institute of Information Technology

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Education

International Institute of Information Technology (IIIT), Hyderabad *2013 - 2018 (expected)*
B.Tech (Hons.) and MS by Research in Electronics and Communication Engineering
- Advisor: Prof. P J Narayanan, Director, IIIT-H
- Research Interests: **Machine Learning**, **Computer Vision**, **Algorithms**
- Cumulative Grade Point Average (CGPA) of 7.96 on a scale of 10.

D.A.V. Public School, Kurukshetra *2011 - 2013*
All India Senior Secondary Certificate Examination (AISSCE)
- Aggregate: 90.5%
- Batch Rank: **4/141**

D.A.V. Public School, Kurukshetra *2011*
All India Secondary Certificate Examination (AISCE)
- CGPA: 9.8/10
- Batch Rank: **2/186**

Achievements and Honours

- Stood **1st** in district in **Mathematics** and secured position in **top 1%** students among **1.1 million students** from all over India who appeared for JEE Mains, 2013.
- Among **top 0.01%** high students from all over India who qualified **National Talent Search Examination (NTSE)** in 2009.
- **O(log N) programmer** on HackerRank with percentile score of **96.12**.
- Secured **All India Rank(AIR) 196** in **11th National Science Olympiad** out of around **0.5 lakh students** in 2009.
- Secured **1st position** in **Science Quiz Contest** organized by Haryana State Council for Science and Technology, Panchkula in 2012.
- Secured **2nd position** in Science stream in school with CGPA of **9.8/10** in CBSE examination, 2011.
- Awarded **Rashtriya Sanskrit Sansthan Scholarship** for consecutive two years, 2009 and 2010.

Work Experience

Undergraduate Teaching Assistant, IIIT Hyderabad *Aug'15 - Dec'15*
Course: Science 1
- Conducted tutorial sessions for the course taken by around **210 sophomores** to make them comfortable with the subject.
- Responsible for grading quizzes, assignments and terminal examinations.

Undergraduate Research, Center for Visual Information Technology, IIIT-H *May '15 - Ongoing*
Synchronized Multi-device Collobrative Photography
Mentored by: Prof. P J Narayanan, Director, IIIT-H
- Using multiple android phones as a low cost and light weight alternative to camera arrays to capture a scene from multiple angles.
- Precise synchronization between phones by GPS to realize popular visual effects like bullet time and applications like motion capture and 3D reconstruction.
- Extensive study of computer vision approaches like light field rendering, plenoptic stiching, piece-wise planar stereo etc. to generate new views from other angles of the target.

Winter Trainee, Robosapiens Technologies Pvt. Ltd. *Dec '15*
Embedded Systems
- Studied in detail about embedded systems, their working and applications.
- Built variety of bots like line-follower, edge avoider etc. with 8051 Microcontroller using Embedded C.

Major Projects

Host Based Intrusion Detection Systems *Sep'15 - Nov'15*
Course Project: Dr. Avinash Sharma (Asst. Professor, IIIT-H), Statistical Methods in AI (CSE471)
- Project aimed at detecting malicious attacks or anomalies in network from logs.
- Used classification models: SVM, Neural Network, Decision Trees, Random Forest, Ensembling to build the final classifier. It correctly classified **17/25** samples of U2R class in KDD CUP dataset of **0.25 million samples**.
- Implemented fast feature reduction technique to significantly reduce execution time.

- Demonstrated the performance of various classifiers on KDD CUP 1999 and HTTP CSIC 2010 dataset.

Multi-Camera Synchronization *Aug '15 - Ongoing*

Honours Project under Prof. P J Narayanan (Director, IIIT-H)

- Synchronized multiple phones under same wireless network within **10milliseconds** with the help of GPS.
- Developed an android camera application which allows for manual control of various camera parameters like focal distance, exposure time, sensitivity etc. using new Android camera 2 API.
- Currently working of improving the interpolated view generated by capturing scene from multiple phones with minimum computation and exploring the ongoing research in this field.

Marker Detection Under Occlusion *Sep '15 - Nov '15*

Course project: Dr. Vineet Gandhi (Asst. Professor, IIIT-H), Digital Image Processing (CSE478)

- Project aimed at developing fiducial marker system which automatically detects markers and corrects possible errors using OpenCV.
- Solution to the occlusion problem was proposed by generating configurable marker dictionaries which maximise inter-marker distance and number of bit transitions.

16 bit Simple Processor Design *Feb '15 - Apr '15*

Course Project: Dr.Rahul Shrestha (Asst. Professor, IIIT-H), Electronics Workshop 2 (ECE291)

- Designed a simple 16 bit processor consisting of 8 registers, ALU and FSM control unit.
- Implemented 8 basic instructions like mov, sub, add, branch, compare etc.
- Coded all the modules of processor in Verilog and ran simple algorithms like fibonnaci series, prefix sum etc. on this processor, implemented on Spartan 3E FPGA.
- Analysed timing diagrams of various instructions and algorithms using Xilinx ChipScope Pro software.

Mobile Controlled Robot *Jan '14 - Apr '14*

Course Project: Dr.Rambabu Kalla (Asst. Professor, IIIT-H), Electronics Workshop 1 (IEC104)

- Objective was to build a hardware robot that can be controlled from far away places.
- Designed a logic circuit using basic logic circuit and DTMF decoder for communication between user and bot using GSM signals.

Relevant Courses (*Pursuing in Spring '16)

Artificial Neural Networks*	Computer System Organization
Computer Vision*	Digital Logic and Design
Statistical Methods in AI	Signals and Systems
Data Structures	Embedded Hardware Design
Computer Programming	Basic Electronics Circuits
Mathematics I, II	Probability and Random Processes
Digital Image Processing	Science 1
Digital Signal Processing	Engineering Systems

Computer Skills

Languages (Proficient): C, C++, Python, MATLAB, Verilog
Operating Systems: Linux (Ubuntu), Mac OS X, Windows
Tools/Libraries: Numpy, Scikit, OpenCV, Git, Bash, Vim, LaTeX
Softwares: Xilinx ISE Design Webpack, Altera ModelSim, NI Multisim, AVR

Extra Curricular Activities

- **Coordinator** of Kings of ML, a **Machine Learning hackathon** event of Felicity '16, annual technical and cultural fest of IIIT Hyderabad - Curated problems and organised the online event with a team of 4 members.
- Active participant in **online programming contests** on CodeChef, HackerRank and Codeforces with handle *codeaholic* and qualified for the Round 1 of Facebook Hacker Cup, 2016.
- Played in **inter-batch badminton singles** matches on behalf UG2013 batch at IIIT Hyderabad.
- Participated in inter-house **group and solo singing competition** on behalf of Agni house at IIIT Hyderabad.
- Achieved **1st division** in **vocal classical singing** in annual examination conducted by **Pracheen Kala Kendra, Chandigarh**.
- My hobbies include training at the gym, reading current affairs in the press, photography, watching movies and listening to music.

[*Last Updated on 2nd February, 2016*]