ABHINEET JAIN

https://abhineetjain.github.io

Final Year Undergraduate, Computer Science and Engineering
International Institute of Information Technology, Hyderabad

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Education

Year	Degree/Certificate	Institute/Board	CGPA/Percentage
2013-2017	B.Tech. (Hons.) in CSE	IIIT Hyderabad	9.57/10 (6 semesters)
2011-2013	AISSCE	CBSE	96.4%
2009-2011	AISCE	CBSE	10/10

Experience

Visiting Scholar, Robotics Embedded Systems Lab, University of Southern California *May '16 - Jul '16*
Guide: *Dr. Gaurav S. Sukhatme, Dr. Oliver Kroemer*
Project: Exploring CNN based Feature Transfer for Robot Affordances [poster]

- Used TensorFlow to learn CNN on previously annotated affordance data, used Transfer Learning to learn new affordances (with few samples).
- Annotated *grasp* and *push* data by manipulating PR2 using ROS.

Undergraduate Researcher, Robotics Research Center, IIIT Hyderabad *May '15 - Ongoing*
Guide: *Dr. K. Madhava Krishna*

- *Optimization on Ceres Backend*: Modify loss functions to optimize Ceres solver for bundle adjustment.
- *CNN for Keypoints Detection*: Modified existing CNN networks to detect keypoints in PASCAL car dataset. Trained for 14 keypoints using Caffe.
- *Dynamic Semantic Motion Segmentation*: 3D reconstruction of an outdoor environment, tracking moving objects in the frames dynamically, semantic segmentation of the frames, using InfiniTAM (C++)
- *Driverless Car Challenge*: Part of development of driverless car, worked on camera calibration, motion segmentation, application of B-Spline curve fitting, and obstacle detection

Teaching Assistant, IIIT Hyderabad *Aug '15 - Dec '16*
Courses: *Digital Logic and Processors, Computer Systems Organization, Computer Programming*

- Server administrator for Online Judge, for submission and evaluation of codes for programming assignments.
- Conducted laboratory sessions for C language and MIPS processor programming.
- Conducted weekly tutorial sessions, curated assignments, corrected assignments and terminal exams.

Relevant Projects

Analysis of Deep Learning Neural Networks *Oct '16*
Machine Learning, Dr. C.V. Jawahar

- Used Keras/Theano to analyse trends of loss, and accuracy on basic CNN for MNIST and CIFAR-10, with varying parameters like batch size, learning rate, training samples, number of filters, number of layers.

Image Mosaicing and Metric Rectification *Feb '16 - Mar '16*
Computer Vision, Dr. Anoop Namboodiri

- Used homography to stitch a bunch of overlapping images, correct perspective distortion, and implement graphic overlay.

Analyzing Facial Features for Recommendation *Aug '15 - Nov '15*
Statistical Methods in Artificial Intelligence, Dr. Avinash Sharma

- Learn user preferences for various facial images, suggest faces based on learning, use of Dense-SIFT, PCA, HOG, GIST algorithms and SVM classifier (team size: 2)

Obstacle Avoidance *Aug '15 - Nov '15*
Mobile Robotics, Dr. K. Madhava Krishna

- Used Bernstein curve fitting, and concepts of configuration space, visibility graph, to implement obstacle avoidance, on TurtleBot using ROS.

Ultimate Tic-Tac-Toe Bot *Mar '15*
Artificial Intelligence, Dr. Praveen Paruchuri

- Implemented bot for playing UT3, used Alpha-Beta pruning, hashing, IDFS, finished 3rd among 100 teams (team size: 2)

Robot Central Management Server *Aug '14 - Nov '14*

Structured System Analysis and Design, Dr. Y. Raghu Reddy

- Using Django, portal to control robots in a workspace, commands executed using ROS at the backend, basic path planning algorithm (team size: 4)

Other Projects

Felicity Threads '15 - Contest Portal *Jan '15 - Feb '15*

Independent Project - Developed a generic API for portals using Django, host contests of any kind - programming, quizzes, machine learning etc. for college tech fest

Course Projects

- Online LOGO, and Paint using Canvas in Javascript
- Web application for General Store DBMS
- Picture Guessing Game in ROR
- Twitter API, Instagram API for crowdsourcing data
- 2D Carrom Game using OpenGL2
- Kernel, Bootloader
- Shell in Python
- P2P File sharing in C

Technical Skills

Programming Languages: C, C++ (with STL), Python
Libraries: TensorFlow, Caffe, Keras/Theano, OpenCV, Numpy, Scikit
Tools: MATLAB, Robot Operating System, Git
Other Tools/Languages: Django, AMPL, MySQL, Web2Py, Bash, HTML, CSS, JavaScript, Bootstrap

Honors and Achievements

- Dean's Merit List (top 5% students, awarded for all semesters)
- Google APAC 2016 (Round E), International Rank: 191
- ACM ICPC Asia-Kharagpur 2016-17, Online: 9th from over 400 teams (team: YeToBadaToingHai)
- ACM ICPC Asia-Amritapuri 2016-17, Online: 32nd from over 1800 teams (team: YeToBadaToingHai)
- ACM ICPC Asia-Amritapuri 2015-16, Online: 64th, Onsite: 51st from over 1500 teams (team: placeboEffect)
- ACM ICPC Asia-Chennai 2015-16, Online: 40th, Onsite: 62nd from over 800 teams (team: placeboEffect)
- Secured All India Rank 309 in Joint Entrance Examination (Mains) 2013 (among 14,00,000 candidates)
- Secured All India Rank 6726 in Joint Entrance Examination (Advanced) 2013 (among 1,30,000 candidates)

Relevant Courses

- Machine Learning
- Computer Vision
- Optimization Methods
- Statistical Methods in AI
- Artificial Intelligence
- Mobile Robotics
- Computer Graphics
- Computer Systems Organization
- Data Structures, Algorithms
- Differential Equations
- Mathematics I, II, III
- Digital Signal Analysis & Application

Positions of Responsibility

- **Speaker, Students' Parliament**, 2016-17: Chair and moderator of Parliament meetings, held discussions on matters of student life on campus, and allocated tasks to fellow members.
- **Coordinator, Felicity Threads**, 2016: Led a team of around 40 people to organize college's technical fest including international contests for competitive programming, mathematical quizzing, ML, AI etc.
- **Elected Member, Students' Parliament**, 2015-16: Served as liaison between faculty, administration and the student community, especially in cases of *disciplinary concerns*.
- **Member, Student Induction Body (Apex)**, 2015-17: Helped freshman students in the admission process by answering their queries, arranging for Welcome Kit, and Orientation tours.
- **Cultural Representative**, Agni House, 2014-15: Led dance troops, and directed and participated in skits, for cultural performances in Inter-house competitions.

Extra-curricular activities

- Teaching Volunteer at Ashakiran - tuition for secondary school kids from nearby slums.
- Active participant and winner in cultural nights - skits, and dance sequences
- Regular participant, finalist in intra-college quizzes
- Interests: Dance, Acting, Poetry, Music, Movies, Table Tennis, Carrom, Cricket enthusiast