Curriculum Vitae

SHUBHAM JAIN

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EDUCATION

Year	Board/Degree	Institution	CPI/%
2017	B.Tech (Chemical Engineering)	Indian Institute of Technology Kanpur	8/10
2013	Class XII (ISC)	Smt. Sulochanadevi Singhania School	95.4%
2011	Class X (ICSE)	Smt. Sulochanadevi Singhania School	97.2%

TECHNICAL STRENGTHS

Computer Languages C, C++, MATLAB, Python, Java, HTML5, MySQL, javascript, php
Software & Tools AutoCAD, Autodesk Inventor, Arduino, LaTeX, Excel, ASPEN Plus

PROJECTS

Video Captioning - Prof. Gaurav Sharma July, 2016 - December, 2016

- Trained Sequence to Sequence-Video to Text(s2vt) and Deep Compositional Captioning (DCC) models in Caffe
- Implemented a novel combination of the above methods to use the temporal information obtained from the RNN of s2vt as an input to the DCC model for generating better captions by using data from DBPedia
- Explored the use of audio data for captioning and successfully demonstrated its use to refine generated captions

Efficient Kernel Methods - Prof. Piyush Rai July, 2016 - December, 2016

- Surveyed and experimented with efficient alternatives to kernel methods like Nyström method, Approximate Feature Maps, Random Kitchen Sinks, fastfood, Memory Efficient Kernels and online kernel methods
- Implemented Random Binning Features and Random Fourier Features in Python
- Performed a comprehensive comparative study between the performance of methods on six different datasets

Pedestrian Simulation and Tracking - Prof. Anurag Tripathi January, 2016 - Present

- Aim to detect and track trajectories of pedestrians and use that data to improve crowd flow simulations
- Implemented Power Law and Helbing models in C++ and did a comparative study between simulation results
- Used the CamShift Algorithm with SIFT features to track humans in successive frames from real-world data

Image Captioning - Prof. Vinay Namboodiri July, 2015 - December, 2015

- Implemented the paper 'Every Picture tells a story : Generating sentences from images' in Matlab and Python
- Obtained an accuracy of close to 60% for obtaining (object, action, scene) triplet for a given query image

Self-Driving Car - Prof. Gaurav Pandey July, 2015 - December, 2015

- Developed algorithms for Lane and Obstacle Detection usable in Indian scenarios for autonomous cars
- Proposed and implemented a modified Hough Line Transform to detect lanes with greater speed and accuracy
- Used laser based LIDAR sensors to obtain a 3D point cloud data for obstacle detection and classification
- Currently the Vision Head of the institute's newly formed IGVC (Intelligent Ground Vehicle Challenge) team

Campus News Website - Programming Club May, 2014 - June, 2014

- Designed a facebook-inspired website where users login and have a personalized newsfeed of all campus events
- Developed an algorithm which uses user's webmail data to autonomously classify and categorise relevant events
- The website automatically scrapes data from institute website, student senate and twitter for up-to-date data

INTERNSHIPS

Quikr India Pvt Ltd — Data Scientist May, 2016 - July, 2016

· Developed an AutoSuggest feature using Tries and Hashing in Python which gave suggestions in real time
· Implemented a Text Based Clustering Algorithm to find Trending Topics using millions of user search queries

Adoro India Pvt Ltd — Computer Vision Intern May, 2015 - July, 2015

· Created a Visual Search Engine that automatically classified types of clothing and suggested similar products
· Used a Matlab implementation of Deformable Parts Model for pose estimation to locate body joints in image
· Trained machine learning models using features like HoG, SIFT and MR8 on both Matlab and C++(opencv)

ABU ROBOCON - ASIA PACIFIC ROBOTICS CONTEST

Green Energy Recharging the world August, 2015 - March, 2016

· Built a semi-auto robot which drives an autonomous bot along a predefined zig-zag path using wind energy
· Developed a novel line following algorithm which uses a regular webcam and an on-board Odroid processor
· Implemented a wall following algorithm using ultrasonic sensors and Arduino microprocessor for PID control
· Second Runners Up among over a hundred teams from engineering colleges all over India

Robominton August, 2014 - March, 2015

· Designed and fabricated two Badminton Playing Robots capable of playing on a full sized badminton court
· Used blob detection and optical flow for shuttle localisation and extended Kalman filter for trajectory prediction
· Could accurately predict shuttle trajectory and its destination in real time with an error margin of just 5-7 cm

Salute to Parenthood August, 2013 - March, 2014

· Made an autonomous robot that could traverse ladders and pipes and a manual robot to carry and place it
· Created self-defined libraries in C++ for controlling Servos, Motors, Pneumatics and sensors using an Arduino
· Secured 6th place in the National Competition and bagged the award for Best Innovative Design

ACHIEVEMENTS

Ranked in National Top 0.2% (amongst 1,400,000 candidates) in JEE Mains 2013 and 3471 (amongst 150,000 candidates) in IIT-JEE Advanced 2013

Secured a rank in top 1% out of 40721 candidates in the National Standard Examination in Physics

Acquired an A* grade in the course Programming in C for an outstanding performance

Nominee of Gopalkrishna Singhania Gold Medal(highest honours in school) in Class 12 for all-round excellence

RELEVANT COURSES

Fundamental Course on C Language
Linear Algebra
Introduction to Computer Vision
Machine Learning Techniques
Data Structures & Algorithms
Numerical Methods in Engineering
Recent Advances in Computer Vision
Probabilistic Mobile Robotics (ongoing)

EXTRA-CURRICULAR ACTIVITIES

Completed 3 years in classical keyboard playing, while clearing annual examinations for the same

Took weekly lectures as an Academic Mentor for the course Fundamentals of C for the junior batch

Won 3rd place in Pitch Ur Product in eSummit'15, IITK for an innovative collage maker using Image Processing

Mentored eight freshers as a Student Guide and helped them emotionally and academically all year round

Participated in a 40 day squash summer camp with a rigorous practice schedule of about six hours per day