Siddhartha Saxena

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EDUCATION

IIT KANPUR | B.Tech in Computer Science | Expected April 2019 — CPI: 9.23/10
VBV, KOTA | 12th Standard | Year 2015 — Percentage : 93.8%
DPS REWARI | 10th Standard | Year 2013 — CGPA: 10/10

RESEARCH INTERESTS

I am broadly interested in the field of machine learning, especially Deep Learning, Bayesian Machine Learning and their applications in Computer Vision and Natural Language Processing

AWARDS AND FELLOWSHIPS

- Received **Academic Excellence Award** at IIT Kanpur for the year 2015-16.
- **First runner-up** in National Autonomous Underwater Vehicle Competition, SAVe-NIOT 2016 in debut attempt.
- Secured Rank **74** in Goldman Sachs Quantify (2016) with teams from all over India.
- Secured rank of **190** in JEE Advanced 2015 out of **150k** students who qualified through JEE Mains.
- Scored 305/360 **(99.99 percentile)** rank of 777 in JEE Mains 2015 out of 1.5 million students.
- Received the prestigious KVPY fellowship 2015 given to **only 400** students in science stream from all over India.
- Received Merit Certificate in Mathematics for being in top **.1%** students in class XII examinations
- Received Merit Certificate in Class X CBSE Board for being in top **.1%** students all over the country.

EXPERIENCE

ENVESTNET YODLEE | Intern | Instance Selection in Big Data
Mentored by Dr Om Deshmukh, Director, Data Science | May 2017 - July 2017 | Report*

- Formed a data-driven Instance Selection approach from scratch that will significantly enhance the generalizability of all Data Science models implemented by the company and go into production.
- Tackled the highly complex problem via an efficient on-line clustering model in spark with growing number of clusters which undercuts the problem of Big Data and creates a proper representation of it.

GENERATING MULTIPLE PLAUSIBLE DEPTH MAPS THROUGH A SEQUENTIAL ADVERSARIAL NETWORK | B.Tech Project mentored by Prof. Vinay Namboodiri | December 2016 - Present

- Developed a novel technique to produce multiple depth maps of a scene from training on just a couple of images.
- Created an artificial dataset from scratch on Unreal Engine 4 and extracted Depth Maps.
- Produced good results on the KITTI dataset, showing the technique's ability to work on real life dataset.
- The work on its evaluation is presently ongoing, targeting AAAI 2018

PROJECTS

IMPROVING VARIATIONAL INFERENCE MODELS VIA NORMALIZING FLOWS | Course Project mentored by Prof. Piyush Rai | January 2016 - April 2017 Code* | Report*

- Implemented Variational Auto-encoders with Normalizing Flows for generating handwritten numbers
- Produced richer latent representations in Variational Auto-encoders suited to data from different classes.
- Surveyed Various Techniques other techniques for Variational Inference, overcoming the mean field assumption.

INTERACTIVE BAYESIAN DOCUMENT CLUSTERING | Course Project under Prof. Piyush Rai | August 2016 - November 2016 | Code*

- Built a clustering model from scratch invoking user feedback via a cycle of rejection/acceptance.
- Implemented a prior over gaussian likelihood, down-weighing rejected clusters and vice-versa for accepted ones.
- Implemented it to cluster documents according to the topics contained in them, extracted through LDA.

AUV-IITK (AUTONOMOUS UNDERWATER VEHICLE) | Software Subsystems under Prof. K.S Venkatesh and Prof Sachin Y Shinde | December 2015 - December 2016 | Code*

- The aim of the project is to build **Institute's first** AUV. The vehicle is capable of following distinctly-colored lines, shoot torpedoes and drop markers autonomously using sensor data and computer vision, which has been integrated using Robot Operating System **(ROS)** .
- Applied Pose Detection via SIFT and SURF Descriptors for an L-shaped gate, identifying the angle made by it.
- Applied Convolutional Neural Networks for pattern detection via Tensorflow.
- Used OpenCV library along with ROS framework to implement various object detection algorithms

SENTIMENTAL ANALYSIS AND HANDWRITING RECOGNITION | ACA Project | February 2016 - April 2016 | Code* | Presentation*

- Classified movie reviews dataset part of NLTK corpus as positive or negative using Naive Bayes Algorithm.
- Did Handwriting Recognition on MNIST dataset using a feed-forward neural network, achieving **96%** accuracy.
- Experimented with quadratic, cross entropy and softmax loss functions to improve accuracy.

SEMINARS AND TALKS

HIDDEN MARKOV MODELS FOR SPEECH RECOGNITION | October 2016 | Presentation*

- Familiarized the audience with Hidden Markov Models and illustrated it's application on Speech Recognition

COMPUTER VISION IN ROBOTICS | Google Dev Group IITK | March 2016 | Presentation*

- Demonstrated the use of C.V. in robotics via ongoing projects using object detection and image matching.

RELEVANT COURSES

Bayesian Machine Learning	Machine Learning Techniques	Data Structures and Algorithm
Introduction To Computing	Differential Equations	Logic in Computer Science
Probability and Statistics	Computer Organization	

PROGRAMMING SKILLS

Torch • Tensorflow • Pyspark • Amazon Web Services • Unreal Engine• ROS • Shell Scripting • MATLAB • OpenCV • Github • Arduino IDE • LaTeX • HTML/CSS • C++ • Python

POSITION OF RESPONSIBILITY

Editor, VOX POPULI | Journalism body of IIT Kanpur

- Moved Vox closer to people with articles voicing the opinions of the campus community and surveys.
- Lead articles on pressing issues like problems of PhD students, effect of coaching on IIT undergrads, statistical analysis of World University Rankings.
- Brought Vox to a larger scale by authoring an article that got published on **Business Insider** and **Times of India** .

President's Nominee Minimum Wage Monitoring Committee

- Took actions to reduce the **child labor** going on within the canteens inside different halls.

Secretary , Robotics Club

- An active member of the club with numerous contributions towards the day to day functioning of the club.
- Prepared a voice recognition Bot for SnT day 2016.
- Presented AUV-IITK in an exhibition in Techkriti 2015, the annual Technical fest of IIT Kanpur.
- Took part in various robotics events like IRGT in Techkriti 2015, Robotricks in Takneek 2015.