

# Siddhartha Saxena

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## EDUCATION

**IIT KANPUR** | B.TECH IN COMPUTER SCIENCE | EXPECTED APRIL 2019

CPI: 9.5/10

**VIJAYVERGHIYA BAL VIDYALAYA, KOTA** | 12TH STANDARD | YEAR 2015

Percentage : 93.8%

**DPS REWARI** | 10TH STANDARD | YEAR 2013

CGPA: 10/10

## 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

- **First runner-up** in the National Autonomous Underwater Competition, SAVE-NIOT (2016) in debut attempt among **17** teams from top Indian Colleges.
- 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

## PROJECTS

**IMPLEMENTING CGANS FOR DEPTH ESTIMATION FROM STEREO IMAGES** | UNDERGRADUATE PROJECT MENTORED BY PROF. VINAY NAMBOODIRI | EXPECTED DECEMBER 2016 - APRIL 2017

- Producing Kinect-like depth estimates from stereo images, training cGANs on Berkeley 3-D Object Dataset.
- Implementing the paper titled "Image-to-Image Translation with Conditional Adversarial Networks" in Torch which uses newly developed **GANs** framework for generating a particular image.

**IMPROVING VARIATIONAL INFERENCE MODELS AND IMPLEMENTING THEM ONLINE** | COURSE PROJECT UNDER PROF. PIYUSH RAI | EXPECTED JANUARY 2016 - APRIL 2017

- Doing a survey of present Variational Inference models to find the variations and improvements done since the introduction of the original VI algorithms.
- Implementing VI for in an online setting for models that have not been made online.
- Applying sampling techniques to calculate the expectation values, hence relaxing the choices for priors and likelihood models.

**INTERACTIVE BAYESIAN DOCUMENT CLUSTERING** | COURSE PROJECT UNDER PROF. PIYUSH RAI | AUGUST 2016 - NOVEMBER 2016 | CODE\* | REPORT\*

- Building a clustering model that clusters the given data according to the user feedback via rejection.
- The feedback mechanism modifies the prior, down-weighting the probability of rejected clusters and increasing for the accepted ones. [link to paper]
- Building document clustering model, clustering documents according to the topics contained in them (extracted through Latent Dirichlet Allocation), and implementing it on the datasets.

## 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

## INTRODUCTION TO MARKOV CHAIN AND HIDDEN MARKOV MODEL | COURSE PROJECT MENTORED BY PROF. NITIN SAXENA | AUGUST 2016 - OCTOBER 2016 | PRESENTATION\*

- Understood the Markov and Hidden Markov Models and the application of these models on speech recognition problem from the paper "An introduction to Hidden Markov Models" by Rabiner.
- Gave a **class presentation** introducing this topic and its application.

## 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 feedforward neural network and tried quadratic, cross entropy and softmax loss function to improve accuracy.
- Did Facial Recognition using Principal Component Analysis in Matlab.

## RELEVANT COURSES

Introduction To Computing  
Data Structures and Algorithm\*  
Differential Equations\*  
**Probability and Statistics \***

**Machine Learning Techniques**  
**Bayesian Machine Learning \***  
Linear Algebra  
Computer Organisation\*

\* expected to be completed before April 2017

## SKILLS

### PROGRAMMING

Torch • Lua • Tensorflow • Matlab • OpenCV • Python C++ •  $\text{\LaTeX}$  C • Numpy • HTML/CSS • Octave Arduino IDE  
Github • Verilog • Assembly

## EXTRA-CURRICULAR ACTIVITIES

### GOOGLE DEVELOPER'S GROUP

Gave a talk on Computer Vision and its application in Robotics, attended by **more than 50 peers and juniors** .

### CORE TEAM MEMBER, VOX POPULI | JOURNALISM BODY OF IIT KANPUR

Worked in more than **15** projects as part of the Core team member completing more than **13** of them.

**Lead** juniors on various projects including an extensive coverage of University Rankings, analyzing them in great detail.

Conducted survey about the Coaching Institutes of Kota in Campus that got published in **The Times of India** .

### MEMBER, 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.

### PRESIDENT'S NOMINEE MINIMUM WAGE MONITORING COMMITTEE

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

Worked towards solving the issues and conflicts involving workers and contractors within the campus.