

# SWAPNIL TANEJA

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## Education

**UC San Diego** – MS in Computer Science, (**GPA – 3.7**)

(Sep '16 – Dec '17)

- Courses - Algorithms, Database, ML, Neural Networks, Advanced Analytics, Graph Mining, Computer Architecture, Recommender Systems, Automated Reasoning in AI, Programming Languages
- Tata Scholar – Awarded Scholarship for higher education among 50000 applicants in 2016.

**Indian Institute of Technology, Roorkee** - B. Tech, Electrical Engineering, (**CGPA – 8.8/10**)

(Jul '10 – May '14)

- Courses – Data Structures and Algorithms, Discrete Structures, Image Processing, Cryptography
- Secured JEE (Joint Entrance Examination) Rank – 1601 among 460,000 candidates in 2010

## Work Experience

**Twitter , Intern – Recommendation**

(Jun'17-present)

- Worked on detecting the Topics of interest for the users to recommend tweets. **Scala, Scalding, Pants, Hadoop**  
Impact: Received great precision up to 85% for recommending Hashtags to users.

**Oracle, Software Developer**

(Jun '14 – Aug '16)

- Built a tool called **Log Miner** to predict the cause of logged errors using Machine Learning algorithms. Got featured in Oracle Social Network for leveraging IEEE research – **Java, KNN** and **decision trees**.  
Impact: Achieved an **accuracy of 90%**, significantly reducing the time for parsing logs and debugging.
- Wrote Life Cycle Management Read APIs using Introspection and Topology manager APIs – **Java**

**Hewlett Packard Education Services, Brand Ambassador, Intern**

(Jun '13 - Jul '13 & May '12 - Jun '12)

- Developed a website prototype for airline reservation. The task was to implement and test a scheduler for flights from different aerodromes preventing clashes - **Asp.Net, C#, SQL Server**
- Built a computer controlled robot with an ability to never fall off the table - **Atmega 16 AVR, IR Sensors**.

## Technical Skills

**Languages/Framework** - Java, Ocaml, Python, Prolog, Scala, Scalding, C++, MySQL, Android, XML, HTML, CSS, Junit, C#

**Platform/Software/Tools** – Linux, MacOS, Pants, Hadoop, Matlab, Antlr4, SQL Server, Android Studio, ANT, Gradle, OpenCV, Git

## Projects and Research

**SAT Solver – Automated Reasoning in AI**

(Dec '17)

- Wrote a custom SAT Solver by implementing DPLL and CDCL algorithms. **C++**. [\[Link\]](#)

**Stance Detection on News Articles**

(Dec '17)

- Worked on aligning headlines and articles by extracting textual and similarity based features. [\[Report\]](#)  
Impact: Achieved 92% accuracy with a SVM classifier and a Multi Layered Perceptron.

**Sign and Link Prediction on Signed Social Networks – Graph Mining**

(June '17)

- Built models and extracted features such as Jaccard's Similarity, Social Imbalance, User's reputation, Community Detection and Restricted Boltzmann Machines on Slashdot Dataset. [\[Report\]](#) **ML - Python**  
Impact: Achieved 91 % F1 score for link prediction and 85.9 % for sign prediction accuracy.

**Capacitive fabric touch controlled Sphero SPRK+ – Healthcare Robotics**

(June '17)

- Built a system to assist growth of infants with hardware restrictions. Kids with hardware restrictions may face flat head syndrome if they do not receive plenty tummy time. This system acts as a playmat for them and captures their attention preventing this. [\[Demo\]](#) [\[Demo\]](#) [\[Report\]](#) [\[Code\]](#) **Java, Android, Arduino**

## Branch Predictor – Computer Architecture

(June '17)

- Created a Tournament Predictor with competing perceptron and local predictors. **C**  
Impact: Achieved 96% prediction accuracy and secured 7<sup>th</sup> rank among 130 in the class.

## Portability Analysis, Text to image Synthesis using GANs

(March '17)

- Used a GAN model to generate artificial flower images from Flower Dataset & number images from MNIST & hand-crafted Dataset – **Python, Tensorflow** . Tested our hypothesis that GAN is generalizable and portable to other datasets. [[Report](#)]

## Improving Recall using features of CNN

(March '17)

- Improved Recall of image similarity search using internal representations of CNNs-**Python, Matlab**. [[Survey](#)]  
Impact: Improved the average recall from 0.56 to 0.79 using CNN features.

## XQuery Processor

(March '17)

- Created and optimized XQuery Processor for executing Xpath 2.0 expressions. – **Antlr 4, Java, XML** [[Link](#)]

## Generating Music using RNNs, Transfer Learning using VGG16 – CNN

(Feb '17)

- Generated melodious music on an RNN model trained on text in ABC notation-**Python** [[Report](#)]
- Trained just the last softmax layer on Caltech 256 and utilized the existing VGG16 model parameters. [[Report](#)]

## Android Applications

(Dec '16)

- Created the following Android apps and optimized the speed of background tasks making the interface more User friendly and Interactive.
  - Weather App: to display weather forecast for preferred location using Udacity API [[Link](#)]
  - Hydration Reminder: to promote timely drinking of water by notifying user every 30 min. while charging. [[Link](#)]
  - Music Visualizer: to display the higher, middle and lower range of frequencies of a song. [[Link](#)]

## Designing & Building Humanoid Robot (Bachelor's Thesis)

(Aug '13- Mar '14)

- Built a humanoid robot having – Locomotion on Wheels, Hand Shake and Face Tracking –DC Motors (wheels) and Servo Motors (face). **Haar Cascade Classifiers (Open CV), Arduino Uno – Atmega 16 AVR**. [[Report](#)] [[Videos](#)]  
Impact: Achieved a 95% facial distinction while ensuring security of the lab.

## One Eyed Robot, Tech Fest Shristi

(Jul '13 - Aug '13)

- Implemented facial recognition for passersby on a Webcam mounted on two servo motors tracking the face of human. Used **OpenCV** and **Arduino Uno** for controlled motion of webcam in the 3 degrees of freedom.