

# Agastya Seth

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## SKILLS

### PROGRAMMING

- Python • C/C++
- MATLAB/OCTAVE
- R • Verilog HDL
- Java • JavaScript (Node.js)

### DEEP LEARNING

- OpenCV • TensorFlow • Keras
- PyTorch • Caffe

### MACHINE LEARNING

- SVMs • Regression
- Random Forest
- Regularization (Model Selection)
- CNNs • RNNs

### SOFTWARE

- RStudio • MATLAB (Simulink)
- Jupyter • Visual Studio (C/C++)
- Xilinx Vivado (HDL)
- Cadence Virtuoso
- Arduino IDE • Android Studio
- Amazon Web Services
- Git and Github

## EDUCATION

### SHIV NADAR UNIVERSITY

#### BACHELORS IN TECHNOLOGY

Electronics and Communication

Minor in Mathematics

Cum. GPA: 7.95 / 10.0

August 2016-May 2020 | UP, India

### STANFORD UNIVERSITY

#### SUMMER SEMESTER

Data Science | Technology

Entrepreneurship

Cum. GPA: 9.5 / 10.0

June 2018 - August 2018

Stanford, CA

### DELHI PUBLIC SCHOOL

#### HIGH SCHOOL

2016 | Percentage: 95%

Noida, UP

## EXPERIENCE

### CADENCE DESIGN SYSTEMS | SOFTWARE ENGINEERING R&D INTERN

August 2020 - Present | Noida, UP

- Working in the software engineering (R&D) team for Quantus Parasitic Extraction tool.
- Responsible for feature enhancements and bug fixes for various libraries.
- Working on requests on memory and clock based profiling using Valgrind and Sunstudio Collect tools.

### LIQVID ENGLISH EDGE <> SNU | DATA SCIENCE CONSULTANT

August 2020 - Present | Noida, UP

- Heading the research group led by Prof. Rajeev Kumar working on an industry project with LiqVid English Edge
- Working on building AI-based solutions for English learning using the SOTA deep language modeling architectures.
- Currently working on novel approaches for Automated Essay Assessment models using BERT Sentence Embeddings with deep models and handcrafted features.

### VISENZE | DATA SCIENCE INTERN

January 2020 - July 2020 | Singapore

- Was responsible for sourcing datasets, training models, model optimizations, and deployment for various projects undertaken.
- Worked on improving fashion attributes models using various dataset cleaning and visualization techniques, model optimizations and hyperparameter tuning.
- Worked on building classification models for various fashion accessories as an extension to ViSenze's one of the biggest tagging models - GPC (General Product Category). Also worked on view angle classification models for various fashion products.
- Built various pipelining and workflow scripts for internal tools, including web scraping scripts to source training images using Selenium and BS4.

### VI DIMENSIONS | COMPUTER VISION INTERN

May 2019 - July 2019 | Singapore

- Explored various background learning/subtraction models for real-time anomaly detection.
- Created object detection model based on Faster-RCNN for detecting persons and bags in surveillance camera feeds.
- Built a background segmentation model using Hough Transform.

### BISQUARE SYSTEMS | IoT INTERN

May 2017 - July 2017 | Noida, UP

- Designed an ESP8266 WiFi microcontroller-based IoT module for an end-to-end IoT platform.
- Designed a mood-light and an IR remote-control module based on the designed module.
- Created AWS Lambda based backend for product registration, control and monitoring, and collected data for big-data analytics.

## KEY COURSES

### UNDERGRADUATE

Analog Electronics  
Applied Machine Learning  
Communication Networks  
Control Systems  
Data Structures  
Data Mining and Applications  
Data Analytics in Societal Applications  
Deep Learning  
Digital Communication  
Digital Signal Processing  
Embedded Systems Hardware  
Graph Signal Processing  
Intro. to Robotics  
Linear Algebra  
Machine Learning in R  
Multivariate Calculus  
Numerical Analysis  
Optimization I  
Probability & Statistics  
Semiconductor Devices  
Signals and Systems  
VLSI Technology and Design

### MOOCs

Machine Learning | Coursera,  
Stanford University

A to Z Machine Learning | Udemy

## SILICON VALLEY INNOVATION ACADEMY

June 2018 – August 2018 | Stanford, CA

- Conceptualized a solution to make consumer product production lifecycle more transparent to achieve SDG Goal #12, using Distributed Ledger Technology (DLT)
- Conceptualized a green-score for consumer products based on their ecological footprint the product development lifecycle.
- Developed a platform for users to track their carbon footprint wrt. their daily consumption (electricity, gas, water, products etc.)

### BETTER WORLD | Co-FOUNDER, CTO

June 2018 – August 2018 | Technology Entrepreneurship Course  
Stanford, CA

- Built a business plan for a DLT-based charity app as part of the Technology Entrepreneurship course (E145) at Stanford.
- Conceptualized a novel social platform to gamify the process of donation, which encouraged users to donate with a leaderboard and rewards.
- Conceptualized an ethereum-based blockchain solution for better security and transparency for the transactions and donations.

## PROJECTS

### MASSIVE MIMO CHANNEL ESTIMATION | MAJOR PROJECT - I

August 2019 – December 2019 | Shiv Nadar University, India

- Explored various deep learning techniques for Massive MIMO channel estimation to minimize pilot contamination and channel noise (under the guidance of Prof. Vijay Kumar Chakka)
- Designed and simulated a DIP-based (Deep Image Prior) DNN architecture for denoising the received signal based on the works by *Balevi et. al.* [↗](#)

### SKIN SEGMENTATION AND MELANOMA CLASSIFICATION | DEEP LEARNING COURSE PROJECT

August 2019 – December 2019 | Shiv Nadar University, India

- Explored and evaluated various state-of-the-art deep learning techniques for skin segmentation. (under the guidance of Prof. Niteesh Sahni)
- Focused on building an explainable model to be able to explain the diagnosis by using various XAI algorithms like GradCam++

### ANALOG VLSI IMPLEMENTATION OF SUPPORT VECTOR MACHINE | VLSI COURSE PROJECT

January 2019 – April 2019 | Shiv Nadar University, India

- Analog VLSI approach to implementing projection neural networks adapted for support vector machine with radial-basis function (RBF) kernel.
- Validated and performed characteristic simulations for the same on Cadence Virtuoso. [↗](#)

### SELF BALANCING BIKE | EMBEDDED SYSTEMS COURSE PROJECT

January 2019 – April 2019 | Shiv Nadar University, India

- Built a prototype of a self-balancing bike based on the STM32F303RE microcontroller.
- Successfully integrated connections (I2C) with various accelerometer/gyro sensors (MPU6050 etc.) [↗](#)
- Were able to demonstrate the balancing mechanism - flywheel rotation was controlled with PID via the sensor tilt angles.

## INTERESTS

Computer Vision

DLT

Technology Entrepreneurship

Machine Learning / Deep Learning

Robotics

VR / AR

Design

UX/UI

Human Cognition

EDA

Sustainable Development

Music Composition

### **LIFI - IEEE 802.15.7 SCHEMES ON VLC | DIGITAL COMMUNICATION COURSE PROJECT**

January 2019 – April 2019 | Shiv Nadar University, India

- Explored communication using LiFi based on the latest IEEE 802.15.7 modulation schemes.
- Verified MATLAB simulations through IR receiver set-up using Arduino. [↗](#)

### **WORD PREDICTOR USING RNN | DATA MINING COURSE PROJECT**

December 2018 | Shiv Nadar University, India

- Built an RNN model (without libraries) to predict the next set of characters given a set of words as inputs (trained on any given book).
- Visualized the back-propagation in time and loss function wrt. the weights. [↗](#)

### **SEQUENCE-TO-SEQUENCE ABSTRACTIVE TEXT SUMMARIZATION | PERSONAL PROJECT**

December 2018 | Shiv Nadar University, India

- Implemented a sequence-to-sequence RNN model for abstractive text summarization according to [this paper](#). [↗](#)
- Improved the above model by using pointer-generator network in accordance to [this paper](#). [↗](#)

### **RNBIP | SINGLE BUS PROCESSOR ARCHITECTURE**

August 2017 – August 2018 | Shiv Nadar University, India

- Built an 8-Bit Single Bus Processor Architecture using HDL synthesis, and successfully flashed it on Xilinx Artix FPGA (under the guidance of Dr. R.N. Biswas). [↗](#)
- Explored possibilities for building a micro-controller based on the processor - building a compiler and ports for the same.

### **SMART DOOR | IoT COURSE PROJECT**

December 2017 | Shiv Nadar University, India

- Built a smart-door solution using a Raspberry Pi to remotely stream live video stream outside the door, and lock/unlock the door.
- Used OpenCV to detect human presence in the video frame to trigger push notification. [↗](#)

### **RESTAURANT DEMOGRAPHICS ANALYTICS | DATA ANALYTICS COURSE PROJECT**

December 2017 | Shiv Nadar University, India

- Using K-means clustering and other manipulations, predicted the success (rating) of a new restaurant given various parameters like location, cuisines, price range etc.
- The model further recommended the optimal location, costs, cuisines etc. required to build a successful restaurant.
- We further visualized trends among various locations based on price ranges and food habits in order to curate and cater for different demographics. [↗](#)

### **FACE DETECTION USING EIGENFACES | LINEAR ALGEBRA PROJECT**

May 2017 | Shiv Nadar University, India

- Implemented a face detection model using eigenfaces method.
- In the process, implemented mathematical transforms using Matlab, without libraries. [↗](#)

## LINKS

Github:// [agastyaseth](#)  
LinkedIn:// [agastyaseth](#)  
Twitter:// [@agastya\\_seth](#)  
SoundCloud:// [agastyaseth](#)  
Sculpture Gallery [↗](#)

## ACHIEVEMENTS

### GOOGLE SCIENCE FAIR 2014 | REGIONAL FINALIST

September 2014 | India

- Built an Android app to empower farmers with real-time crop prices. [↗](#)
- **Idiot-proof UI** to enable illiterate farmers to obtain location-pertinent crop information using TTS in the vernacular language.

### SMART INDIA HACKATHON 2019 - HARDWARE | WINNER

July 2019 | India

- Built a solution for Tata Motors to mitigate **range anxiety** in electric vehicles.
- Developed algorithms to predict range of an EV and optimize the same.
- **Dashboard** to send driver pertinent notifications for optimization, and route navigation.

### TRINITY GUILDHALL LEVEL 5 | ELECTRONIC KEYBOARD

May 2014 | Trinity College, London

## SOCIETIES

### ROBOYANTRIKI | ROBOTICS SOCIETY

Working Committee | September 2016 - present

- Conducted various intra-university workshops on Arduino, IoT etc.
- Worked on an affordable blind-aid robot using Arduino and various sensors.

### SNUPHORIA | MUSIC SOCIETY

Working Committee | September 2016 - present

- Conducted piano lessons for university students through Student Mentorship Program (SMP).
- Worked with the marketing team to promote club awareness.

## REFERENCES

### RAJ MITRA | DIRECTOR, SOFTWARE ENGINEERING

Cadence Design Systems  
[rmitra@cadence.com](mailto:rmitra@cadence.com)

### DR. RAJEEV KUMAR SINGH | ADVISOR, DEPARTMENT OF CS

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### JIANGCHUN LI | SENIOR DATA SCIENTIST

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