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
- CNNs • RNNs
- LSTM •Ensemble Learning
- Regression • XGBoost
- Random Forest
- Regluatization (Model Selection)

EDA
- Parasitic Extraction
- VLSI Design Flow • Digital Systems
- HPC Optimization

SOFTWARE
- Jupyter • MATLAB & Simulink
- RStudio • QtCreator
- Valgrind • Sunstudio Collect
- Xilinks 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: 4.133/4.3
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.
- Presently working on requests on memory and clock based profiling.

LIQVID ENGLISH EDGE <> SNU | Data Science Consultant
August 2020 - Present | Noida, UP

- Heading the research group led by Prof. Rajeev Kumar (Shiv Nadar University, SNU) 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.
- Improved their flagship fashion-attributes models by augmenting the datasets and adding attention models in the pre-processing stage and hyperparameter tuning.
- Worked on "view angle"/perspective classification models for various products. Also built group classification models for various fashion accessories for ViSenze's one of the largest tagging models - GPC (General Product Category).
- 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

- Researched various background learning/subtraction models for their flagship anomaly detection solution (ARVAS).
- Built a novel background segmentation model using distributed Hough Transform, achieving low inferencing time and robustness to lighting conditions.
- Also built a Faster-RCNN based model layer for detecting persons and bags in surveillance camera feeds.

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

SCHIZOPHRENIA DETECTION AND PREDICTION | UG Research

August 2019 – December 2019 | Shiv Nadar University, India

- Used EEG signals and resting state fMRI neuro-biomarkers for Schizophrenia detection and prediction.
- Performed a comparative study of various 3D-CNN models for discrimination. Built an ensemble model achieving high AUC (0.98)
- Experimented on feature extraction on at-risk mental state (ARMS) patients for Schizophrenia prediction.

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.

INTERESTS

Computer Vision
Machine Learning / Deep Learning
Healthcare Technology
Medical Image Analysis
Technology Entrepreneurship
EDA
DLT
Robotics
VR / AR
Design
UX/UI
Human Cognition
Sustainable Development
Music Composition

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.

LIFI - IEEE 802.15.7 SCHEMES ON VLC | Digital Communication Course Project

January 2019 – April 2019 | Shiv Nadar University, India

- Explored communication usinf 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-propogation 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.

LINKS

Github:// **agastyaseth**
LinkedIn:// **agastyaseth**
Twitter:// **@agastya_seth**
SoundCloud:// **agastyaseth**
Sculpture Gallery

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.

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

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