SHREYASVI NATRAJ

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EXPERIENCE

• RESEARCH STUDENT - NCCR SYNAPSY, CAMPUS BIOTECH (GENEVA, SWITZERLAND) 02/2019 – Present

▪ Implemented CNN LSTM RNNs & TSN over a complex ADOS & ESCS video dataset for behavioural and neurological disorder classification (ASD & ADHD).
▪ Currently implementing deep neural networks for gaze estimation, MFCC feature based audio classification for identification of speech and gaze related abnormalities in young children with ASD using ADOS & ESCS datasets.
▪ Created anonymized 3D reconstructions for ADOS, ESCS videos using University of Geneva's HPC cluster.
Fields: *Data Science, Deep Learning, HPC, Seaborn, OpenCV, Pandas, 3D reconstruction, PyTorch, R, Keras, Tensorflow*

• OPENLAB SUMMER STUDENT - CERN (GENEVA, SWITZERLAND) 06/2018 – 08/2018

▪ Developed an algorithm for damage analysis, created a program for stereo image pair and shuttle radar topography based digital elevation models and structure point data for Aleppo, Syria.
▪ Implemented a mechanical turk web instance for refugee camp satellite image polygon data generation.(Talk)
▪ Implemented an event tracker for the crowdsourced social media data mining platform called E2MC.
Fields: *Big Data, Optimization Algorithms (Multi-processing), Numpy, Pandas, OpenCV, Web Development, AWS M-Turk, GCP, HTML, CSS, JS, QGIS, Pybossa, Unsupervised Learning/Clustering Algorithms (HDBSCAN, KNN, DBSCAN)*

• SUMMER INTERNSHIP - GENEVA-TSINGHUA INITIATIVE (GENEVA, SWITZERLAND, BEIJING & SHENZHEN, CHINA) 07/2017 – 08/2017

▪ Implemented multiple machine learning models for object detection with database linkages for accurate trash classification and sorting.
▪ Successfully used crowdsourcing for data collection and AI generation for the digitalization of UNOG archive documents. Implemented the AI using a portable low cost scanner.
▪ Worked on making SPI for Lattice ICE40HX8-RPi communication (cosmic pi).
Fields: *Machine Learning, Crowdsourcing, Data Mining, GCP, Microsoft Azure Services, Xilinx Vivado, Raspberry Pi, OpenCV, SIFT, SURF, RANSAC*

• SUMMER INTERNSHIP - GRAVIKY LABS (MIT MEDIA LAB OFFSHOOT) (Bangalore, India - Hong Kong) 05/2016 – 06/2016

▪ Developed an electrostatic system for the Kaalink device to convert PM2.5 into Air-Ink.
Fields: *Solidworks, Electro-Mechanical manufacturing/assembly, Dry Lab Skills, Arduino*

EDUCATION

• MASTER OF SCIENCE | UNIVERSITY OF GENEVA (GENEVA, SWITZERLAND) 2019 - 2021 (expected)

- **Major:** Neuroscience
- **Masters Thesis:** Prediction of Autism Spectrum Disorder using Deep Neural Networks over OpenPose Normalised ADOS Video Recordings - 81% Accuracy (1st Author, Research paper to be submitted to Nature Scientific Reports in December 2020)

• BACHELOR OF ENGINEERING | R.V. COLLEGE OF ENGINEERING (BANGALORE, KARNATAKA, INDIA) 2015 - 2019

- **Major:** Biotechnology
- **CGPA:** 8.55/10 (First Class with Distinction), Best Outgoing student award (class of 2019), Student with exceptional achievements award (2015-2019)

PROJECTS

• **LVPEI MITRA Engineering the Eye Workshop 2016:** Worked in a team of 6 in developing a smartphone attachment to find corneal topography (Bullseye) and diagnose corneal disorders. Workshop was organized under MIT Media Lab Camera Culture Group and LV Prasad Eye Institute Hyderabad, India.
• **Carnegie Mellon University (Remote Internship Project) 2017:** Generated UV and IR spectrum images of oral cavity by modifying a regular CMOS sensor. Implemented SIFT, SURF and RANSAC for teeth image alignment across multiple images.
• **CERN (Remote Project) 2017:** Carried out simulations using Garfield++ to produce gas tables for Argon-Carbon Dioxide gas mixture and determine ionization, excitation rates, gain curves and find transfer probability and penning effect. (Github Repo)
• **Casie:** Implemented deep-learning model ensembles to compare results from multiple machine learning models for classifying level of lecture learning by students using facial expression changes. (Microsoft imagine cup 2020 EMEA regional finals project mentored under Francesca Lazzeri)
• **OraSc/Lyfe:** Startup project dealing with creating an affordable intraoral scanner using Photogrammetry based 3D modelling of oral cavity and machine learning based diagnosis of oral health.
• **SRISTI-UNICEF Summer School 2017:** Developed a low-cost toxic gas detector for prevention of casualties of salt farmers due to toxic gas leakages in Rann Of Kutch region in Gujarat.
• **Abbie (AR/VR Sensor Based roBot for Intuitive Exploration):** Used Google Project Tango based area learning and a Raspberry Pi to build an autonomous small scale vehicle. (KPIT Sparkle 2017 Top 15 projects)
• **Pam (Purification Actuating Module):** Prototyped a floatation device for stagnant water purification using vacuum pump suction, porous membrane filtering as well as self-balancing using a custom made gyroscope.(Future Ideas 2015 top 15 finalist projects)
• **Low cost miniaturized bacteriological culture incubator:** Arduino regulated Peltier heating in adiabatic thermocol box for making a low cost incubator.

SKILLS

Data Science, Machine Learning & Deep Learning (PyTorch, Keras, Tensorflow and R), HPC, Image Processing (OpenCV), Web Development (Flask & ShinyApps), SolidWorks, Microcontrollers, ARM Processors, FPGA, Software Defined Radios

ACCOMPLISHMENTS

SRISTI UNICEF 2015 Award Winner, National Entrepreneurship Challenge 2015/16 Winner, MIT Media Lab-LVPEI Certificate Of Team Excellence, Microsoft Imagine Cup 2020 EMEA region top 10 teams, Future Ideas 2015 worldwide competition top 15 finalist, KPIT Sparkle 2017 top 15 Finalist, Shell Ideas 360 2015/16 Stage 2 Qualifiers, Airbus Fly Your Ideas Round 2 Qualifiers 2015, OraSc/Lyfe selected for top 10 startups for AIT 2020 Program

References available upon request