Shreyasvi Natraj

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WORK EXPERIENCE

National Centre for Competence in Research Synapsy
Graduate Student Researcher/ Research Assistant [01/02/2019 – 31/01/2023]

- Carried out 3D localization and pose estimation using photogrammetry and point cloud analysis.
- Developed gaze, audio & video neural network classifiers for screening of autism spectrum disorder.
- Developed deep learning and machine learning tools for digital phenotyping of autism spectrum disorder.
- Contributing to writing several research articles and research grants (Swiss National Foundation Sinergia grant).

(Supervisors: Marie Schaer, Thomas Maillart)
Slurm, Seaborn, PyTorch, Scipy, Keras/TensorFlow, OpenCV, Pandas, R-Caret, Streamlit

CERN
Technical Student [01/07/2021 – 30/06/2022]

- Used terraform & ansible for EOSC Testsuite for high energy physics, deep learning and high-performance computing workload benchmarking on several Cloud computing providers
- Developed a Openshift based web interface/dashboard for results visualization and analysis.
- Conducted FAIR testing and developed several kubernetes-based tools for the Archiver project.
- TestSuite awarded best demo at EGI Conference 2021, Archiver Awarded by the Digital Preservation Coalition.

(Supervisors: Joao Fernandes, Bob Jones)
Terraform, Ansible, kubernetes, docker, slurm, GCP, Azure, AWS, IBM Cloud, Tensorflow/Keras, PyTorch

CERN
Openlab Summer Student [04/06/2018 – 31/08/2018]

- Developed automated damage analysis extraction tool for stereo image pair & shuttle radar topography-based digital elevation models and structure point data for Aleppo, Syria & Herat, Afghanistan.
- Developed mechanical turk web instances for refugee camp polygon data generation. (Talk)
- Implemented event tracker for social media-based disaster data collection tool called E2MC
- Carried out ionized gas simulations using Garfield++ to determine ionization/excitation rates, gain curves and penning effect transfer probabilities.(Github Repo)

(Supervisors: Lars Bromley, Francois Grey, Sofia Vallecorsa)
Pandas, OpenCV, AWS M-Turk, GCP, HTML, CSS, JS, QGIS, Pybossa, DBSCAN, KNN, Garfield++, Root

University of Geneva -Tsinghua University Initiative
Summer Student [03/07/2017 – 26/08/2017]

- Implemented multiple CNN models for object detection and trash classification in an automated trash sorting system.
- Successfully generated annotated dataset from crude data using crowdsourced Zooniverse campaign
- Launched Alcrowd challenge to create a text detection neural network-based portable low-cost scanner for automated digitalization of UNOG Archive Data. (Press Release)
- Contributed to making SPI for FPGA-RPi communication (cosmic pi).

(Supervisor: Francois Grey, Colin Wells)
OpenCV, TensorFlow, GCP, Microsoft Azure Services, Xilinx Vivado/VHDL, Raspberry Pi, Lattice ICE40HX8

Graviky Labs (MIT Media Labs Offshoot)
Summer Research Intern [01/05/2016 – 30/06/2016]

- Developed an electrostatic system for a device called Kaalink to convert PM2.5 into Air-Ink
- The project was showcased in a documentary at the Cannes Film Festival.

(Supervisors: Anirudh Sharma, Nikhil Kaushik)
Solidworks (3D Modeling & Simulation), Manufacturing/assembly, Dry Lab Skills, Ansys

PUBLICATIONS

COVID-19 Activity Risk Calculator as a Gamified Public Health Intervention Tool
[05/12/2022]

S. Natraj, M. Bhide, N. Yap, M. Liu, A. Seth, C. Glorioso, Preprint (Link)

Using 2D Video-based Pose Estimation for Automated Prediction of Autism Spectrum Disorders in Preschoolers
[23/07/2021]

S. Natraj*, N. Kojovic*, S.P. Mohanty, T. Maillart & M. Schaer, Scientific Reports ([DOI](#)) (* first co-authorship)

EDUCATION AND TRAINING

R.V. College Of Engineering
Bachelor of Engineering [01/05/2015 – 30/05/2019]

Field(s) of study: Biotechnology
Final grade: 8.55/10

University of Geneva
Master of Science [08/09/2019 – 01/08/2022]

Field(s) of study: Neuroscience
Final grade: 5.56/6

VOLUNTEERING PROJECTS, SKILLSET & ACHIEVEMENTS

Selected Projects

• **NeuralWorks**: Working on a startup project called [NeuralWorks](#) based on developing Brain-machine interfaces [Brainflow](#).

• **Brain fMRI Data Analysis Platform**: Worked on developing a brain fMRI data analysis platform using [XNAT](#), [DCM4CHEE](#) and [AWS Cloud](#) during a summer internship at [FCBG](#) under [Michael Dayan](#)).

• **Abbie (AR/VR Sensor Based roBot for Intuitive Exploration):** Used Google project tango's area learning and raspberry pi to build an [autonomous pod-like vehicle](#). (KPIT Sparkle 2017 National top 15 finalist).

• **Casie (Context Acquired detail Sensing in Indoor/outdoor Environment):** A deep-leaming model to compare results from machine learning models for emotion recognition using voice and image. *(Microsoft imagine cup [EMEA region top 10 projects](#))*

• **LVPEI MITRA Engineering the Eye Workshop 2016:** Worked on developing BullsEye, a smartphone attachment to determine corneal topography during an [MIT Media Lab Workshop in LVPEI](#). (Awarded Certificate of team excellence)

• **SRISTI-UNICEF Summer School 2017:** Developed a [low-cost toxic gas detector](#) for the prevention of casualties of salt farmers due to poisonous gas leakages in [Rann Of Kutch region in Gujarat](#).

Skillset

- Python,
- R,
- C++,
- Microcontroller/ARM programming (Embedded C, arduino),
- FPGA programming (VHDL),
- Web Development (HTML, CSS, JS),
- Dry & Wet Lab Skills (Growing and handling of micobial cultures, HPLC analysis, gel electrophoresis),
- 3D Modelling & Simulations (SolidWorks/Simulink)

Achievements

- [NeuralWorks](#) awarded [Talentkick](#) 2022 grant,
- Selected among top 10 startups for Venturelab's [AIT 2020 Program](#),
- [HackZurich 2020](#) Sponsor Challenge Winner,
- Microsoft Imagine Cup 2020 [EMEA Top 10 Projects](#),
- SRISTI UNICEF 2015 Award Winner,
- Awarded Best Outgoing Student at R.V. College of Engineering, Class of 2019,
- [National Entrepreneurship Challenge](#) 2015/16 Winner