Anway Pimpalkar

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Summary

Research and development oriented individual with background in electronics, signal processing, and artificial intelligence. Rounded prior experience through multiple positions at universities and startups. Excellent creativity, leadership, and teamwork skills demonstrated through projects and extra-curricular activities.

Education

Johns Hopkins University – Baltimore, USA — Starting August 2023
MSE in Biomedical Engineering

College of Engineering Pune (now COEP Technological University) – Pune, India — Aug 2019 to May 2023
BTech in Electronics and Telecommunication Engineering | CGPA: 8.24 / 10.00 (First Class with Distinction)

Publications

[2] **Pimpalkar A*.**, Niture D. **Building Contactless Elevators with tinyML using Person Detection and Keyword Spotting.** Under review for IEEE Micro: Special Issue on tinyML. 2023.

[1] **Pimpalkar A*.**, Patole R., Kamble K., Shindikar M. **Performance Evaluation of Vanilla, Residual, and Dense 2D U-Net Architectures for Skull Stripping of Augmented 3D T1-weighted MRI Head Scans.** Under review for Springer's Communications in Computer and Information Science Series. 2023. [arXiv:2211.16570]

Notable Awards and Fellowships

Best Paper | 2nd International Conference on Biomedical Engineering Science and Technology — Certificate | Feb 2023
- Awarded for the publication [1] listed in the above section.

Mitacs Globalink Graduate Fellowship | Mitacs — Dec 2022
- Fellowship of CA$ 15,000 towards pursuing a graduate program at a Canadian university - did not avail.

Best Project | 5th IEEE National Level Project Competition — Certificate | Jun 2021
- Out of a pool of 1000+ projects for 'Smart Elevator Systems using Embedded Machine Learning.'

Research Experience

Indian Institute of Technology (IIT) Bombay – Research Intern — Dec 2022 to Present
Mumbai, India (Hybrid) | Supervisor: Prof. Nivethida Thirugnanasambandam
Domains: Motor Neurophysiology and Cognition, Neural Signal Processing, Feature Engineering, Machine Learning

- Elucidating the electrophysiological correlates of the prospective component of sense of agency and intentional binding using machine learning.
- Identifying premotor EEG features that can predict the quantitative intentional binding for a particular action in cohorts of healthy individuals.

COEP Technological University – Undergraduate Researcher — Aug 2022 to Present
Pune, India (On-site) | Supervisors: Prof. Rashmika Patole, Prof. Ketaki Kamble, Prof. Mahesh Shindikar
Domains: Neuroimaging, Deep Learning, Neuropsychology

- Identifying the regional brain volume changes or neuroimaging biomarkers that can be seen in the sMRIs of patients diagnosed with Major Depressive Disorder using deep learning, and trying to predict feasibility of early risk evaluation.
- Developed skull stripping pipelines robust to the multi-scanner variability issues using U-Net neural network architectures and achieved a preliminary accuracy of 99.75% on test data.

Dalhousie University – Mitacs Globalink Research Intern — Certificate | May 2022 to Aug 2022
Nova Scotia, Canada (On-site) | Supervisor: Prof. Travis Esau
Domains: Precision Agriculture, Point Cloud Processing, Image Processing and Segmentation, Electronic Control Systems

- Awarded and funded through Mitacs Globalink, a highly competitive program for undergraduates worldwide.
- Implemented real-time point cloud segmentation and volumetric analysis of the wild blueberries harvested in bins within a ±10% accuracy range using industrial Time-of-Flight and RGB imaging tools.
- Designed a control system to automate the harvester head height using prescription maps of wild blueberry fields collected using multi-spectral drone data.

Research Experience (continued)

Queliz Lifetech – Research Intern Certificate | Jun 2021 to Sept 2021
Pune, India (Remote) | Supervisor: Mr. Swapnil Bukshete
Domains: Rehabilitation Science, Control Systems, Digital Electronics, Computer Vision

- Developed novel control system prototypes for a hand rehabilitation device to help patients with acute burn injuries to their MCP, DIP, and PIP joints.
- Generated computerized models of finger movement paths in flexion-extension cycles and a GUI-based feedback system to calibrate and control a lead-screw actuation mechanism based on STM32.

Academic Projects

PicoBoo - Thermal Imagery based Security System using Deep Learning GitHub | Jan 2022 to May 2022
College of Engineering Pune – India | Supervisor: Prof. Srinivas Mahajan
Domains: Computer Vision, Microcontroller Programming, Web Development, Internet of Things

- Evaluated the performance of multiple CNNs trained on a constructed thermal image dataset; optimized them for accuracy metrics and latency at the edge, and enabled remote access to the inferences through a PaaS model.

TinyMLevator - Smart Elevator System using Embedded Machine Learning GitHub | Apr 2021 to May 2021
College of Engineering Pune – Pune, India | Supervisor: Prof. Deeplaxmi Niture
Domains: Deep Learning, Microcontrollers, TinyML, Signal Processing

- Constructed a novel multi-tenant TinyML based device capable of detecting a person standing in front of an elevator and identifying a number spoken, indicating the floor number the user would like to reach.
- Best Project Award at the 5th IEEE National Level Project Competition (Mysore, India - 2021).

CovPrev - COVID-19 Symptom Checking and Sanitization Unit with App GitHub | Feb 2021 to Mar 2021
College of Engineering Pune – Pune, India| Supervisor: Prof. Neelima Kolhare
Domains: Microcontrollers, Internet of Things, Web Development

- Designed a pandemic-relevant system using physiological sensors and assemblies to provide selective entry to venues based on a patient's health conditions with a mobile application to access to real-time graphical visualizations.

Conference Activity

2nd International Conference on Biomedical Engineering Science and Technology Feb 2023
NIT Raipur, India | Oral Presentation | Best Paper Award

3rd No Garland Neuroscience (NGN) Conference Feb 2023
IISER Pune, India | Oral and Poster Presentation

Canadian Society for Bioengineering 2022 AGM Conference July 2022
Charlottetown, Prince Edward Island, Canada | Volunteer

Self-Learning Initiatives

All Records

Introduction to Neurohacking in R | Johns Hopkins University on Coursera Sept 2022
Fundamental Neuroscience for Neuroimaging | Johns Hopkins University on Coursera Sept 2022
Deep Learning Specialization | DeepLearning.AI on Coursera Mar 2022
Tiny Machine Learning (TinyML) Specialization | HarvardX on edX Apr 2021
Using Python for Research | HarvardX on edX Mar 2021

Extra-Curricular Activities and Leadership Roles

COEP Rowing Team | 1X and 2X Sculler Jan 2020 to May 2023

- Won multiple race events and awards commending enthusiasm and skill. Represented Pune City at inter-zonal races.

COEP's Data Science and Artificial Intelligence Club | Research Lead & Member Sept 2020 to May 2023

- Led the research activities of the club consisting of 49 members, focused on tracking vehicle plates on campus.

COEP Impressions (Annual Cultural Festival) | Head of Events and Proshows Aug 2019 to Jun 2022

- Led 15 members responsible for planning and executing concerts, competitions, and celebrity management.

YOUmanity Pune | Founding Member Oct 2015 to Oct 2018

- Led 150 volunteers of the non-profit organization aiming to spread humanity in Pune, India.