Anurag Gade

US Citizen

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Education

- **Birla Institute of Technology and Science, Pilani (BITS Pilani)** — Hyderabad, India
  Bachelor of Engineering in Electrical and Electronics — *2020 - 2024 (Ongoing)*
  Courses: *Machine Learning, Artificial Intelligence, Foundations of Data Structures and Algorithms, Operating Systems, Internet of Things, Computer Programming, Probability and Statistics*

Experience

- **Harvard Medical School** — Boston, MA
  Research Assistant — *July 2023 - Present*
  - Working at the Psychiatry Neuroimaging Laboratory (PML) under the supervision of Prof. Yogesh Rathi.
  - Researching on **Neural Fields** in Medical Imaging, and **deep learning** based image **super-resolution**.
- **Massachusetts Institute of Technology** — Cambridge, MA
  Research Intern — *June 2023 - Present*
  - Working at the Senseable Intelligence Group under the supervision of Prof. Satrajit Ghosh.
  - Working on segmentation and labelling algorithms for **3D MR imaging**.
  - Developed a MR Segmentation pipeline in **PyTorch** for slices of various orientations.
- **Birla Institute of Technology and Science, Pilani** — Hyderabad, India
  Undergraduate Research Assistant — *Oct 2021 - May 2023*
  - Worked on **Representation Learning** with Prof. Rajesh Tripathy. 1 journal paper accepted and 1 journal paper currently under review, on the topic of Deep Representation Learning for Medical Imaging.
  - Worked on **Deep Learning** for fabricated sensor data with Prof. Parikshit Sahatiya. 1 journal paper and 1 conference paper under review on Sensor Data Classification
- **University of Agder** — Grimstad, Norway (Remote)
  Undergraduate Research Assistant — *Jun 2022 - Sep 2022*
  - Worked with the Autonomous and Cyber-Physical Systems (ACPS) group under the guidance of Prof. Linga Reddy C.
  - Worked on classification of unmanned aerial vehicles (UAVs) using **Deep Learning**, and published a conference paper on UAV classification using RF fingerprints.

Publications (Google Scholar)

* indicates equal contribution (co-first author)

- **Gade, A.**, Dash, D. K., Kumari, T. M., Ghosh, S. K., Tripathy, R. K., Pachori, R. B. (2023). Multiscale Analysis Domain Interpretable Deep Neural Network for Detection of Breast Cancer using Thermogram Images. *IEEE Transactions on Instrumentation and Measurement.* [Paper]
- Bhaskarpandit, S*., **Gade, A***., Dash, S., Dash, D. K., Tripathy, R. K., Pachori, R. B. (2023). Detection of Myocardial Infarction From 12-Lead ECG Trace Images Using Eigendomain Deep Representation Learning. *IEEE Transactions on Instrumentation and Measurement*, 72, 1-12. [Paper] [Code]
- Yakkati, R. R., **Gade, A.**, Koduru, B. H., Pardhasaradhi, B., Cenkeramaddi, L. R. (2022). Classification of UAVs using Time-Frequency Analysis of Remote Control Signals and CNN. *IEEE International Symposium on Smart Electronic Systems (iSES)* (pp. 1-6). [Paper] [Code]

Projects

- **MRI Super-resolution using Deep Learning (Computer Vision, Image Processing)** (Work in progress) Working with neural fields and diffusion tensor imaging. Developed a pipeline for the **partitioning of cubic/cuboidal masks** for usage in MR super-resolution. Working on techniques using **Neural Networks for estimating Orientation Distribution Fields (ODFs) for super-resolution** using the partioned cubic/cuboidal masking scheme. **Tech**: Python, PyTorch, MATLAB, 3D Slicer, OpenGL
- **Alphabet Pattern Classification using Temporal Outputs from Fabricated ReS/MXene sensors (Deep Learning)** Developed a lightweight **convolutional neural network (CNN)** architecture for the classification of alphabet patterns obtained as temporal signals from a fabricated Res/MXene sensor. Compared the performance with various pre-trained models in the extension of this work. Obtained a classification accuracy of **96.20%** with 26 English alphabet classes. Work accepted in **IEEE Journal on Flexible Electronics (J-FLEX)**. **Tech**: Python, TensorFlow, Keras, MATLAB
- **Semantic Segmentation Pipeline (Computer Vision)** Built a Semantic Segmentation pipeline with networks such as **SegNet and UNet**. Pipeline is being used on the CamVid dataset, and is being continuously maintained and updated. **Tech**: Python, TensorFlow, Keras [Code]
- **Car Price Prediction using Machine Learning (Machine Learning)** Predicted the selling price of a car, based on 9 attributes. **Linear and Logistic regression** are compared with one another. Performed data cleaning and visualization with Python libraries. Obtained similar metrics for the Logistic and Linear Regression fits. **Tech**: Python, Scikit-learn, NumPy, Pandas, Matplotlib, Seaborn [Code]

Skills

- **Languages** Python, C, C++, MATLAB, Kotlin, JavaScript
- **Frameworks** Numpy, Pandas, Matplotlib, Scikit-learn, Tensorflow, Keras, PyTorch, OpenCV, NLTK, SpaCy, ROS
- **Tools** Git, SQL, Docker
- **Platforms** Linux, Windows, Arduino, Raspberry Pi, AWS