Anurag Gade

Portfolio: anurag-gade.github.io
U.S. Citizen

Email: anuraggade16@gmail.com
Mobile: +1 925-310-7455

Education

- **Birla Institute of Technology and Science, Pilani** — Hyderabad, India
  B.Eng - Electrical and Electronics Engineering — *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, U.S.A.
  Undergraduate Researcher — *June 2023 - Dec 2023*
  - Funded onsite thesis at Psychiatry Neuroimaging Laboratory supervised by Dr. Yogesh Rathi.
  - Devised an end-to-end **pipeline** for computing **brain connectivity statistics**.
  - Used **3-dimensional reconstruction** techniques such as UKFTractography along with parcellation algorithms in the pipeline. Also worked with **neural fields** using a SIREN architecture for connectivity statistic enhancement.
- **Massachusetts Institute of Technology** — Cambridge, U.S.A.
  Research Intern — *June 2023 - Oct 2023*
  - Internship at the Senseable Intelligence Group guided by Dr. Satrajit Ghosh.
  - Formulated a multi-class brain slice **segmentation** pipeline.
  - Worked on generating magnetic resonance imaging (MRI) equivalents for photorealistic brain slices using **generative adversarial networks** (GANs) and curated a dataset for the same.
- **University of Agder** — Grimstad, Norway
  Research Intern — *July 2022 - Oct 2022*
  - Remote research internship supervised by Dr. Linga Reddy Cenkeramaddi.
  - Developed a lightweight **convolutional neural network** architecture for UAV classification using time-frequency representations of RF signals obtained from wavelet synchrosqueezed transform (WSST), and found the performance of the proposed model superior to that of thirty state-of-the-art models.

Publications (Google Scholar)

* - equal-contribution (joint-first author)

- **Gade, A.**, Consagra, W., Zhang, F., O'Donnell, L., Jahanshad, N., Schilling, K., Newlin, N., Landman, B., Rathi, Y. Similarities and Differences in Structural Brain Connectivity from Large Anisotropic Voxel Clinical Scans and High Resolution Research Scans. *International Society of Magnetic Resonance in Medicine.* (under review)
- **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]
- Siraj, S., Bokka, N., **Gade, A.**, Akella, S., Kolli, C. S. R., Sahatiya, P. (2023). Development of Flexible ReS2/MXene Based Electromechanical Sensor for Deep Learning Assisted Temporal Dependent Alphabet Pattern Recognition. *IEEE Journal on Flexible Electronics*, 2, 366-373. [Paper]
- 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]

Projects

- **Photorealistic2MR** Framework which uses generative adversarial networks to convert photorealistic slices to MR equivalents. Trained using a curated high-quality dataset generated by style transfer models.
- **Overlap-based masking scheme** Automated masking algorithm to partition a grid or space into overlapping masks. Flexible to various masking configurations. Uses number of sub-cuboids (masks) desired and the overlap factor for partitioning. [Code]
- **Two-dimensional fixed boundary point-based EWT toolbox** Python toolbox to obtain modes of an image using 2D empirical wavelet transform with fixed boundary points. [Code]
- **Semantic Segmentation Pipeline**Pipeline to perform semantic segmentation on 2-dimensional images. Segmentation models included in the framework are UNet, VGGSegNet and SegNet. [Code]
- **Image Rendering with Neural Radiance Fields** Performed image rendering with Neural Radiance Fields (NeRFs). A 10 layer multilayer perceptron (MLP) model using sinusoidal positional encoding with 3 output neurons for each channel in the RGB color space is utilized. [Code]

Skills Summary

- **Languages** Python, C, C++, MATLAB, Kotlin, JavaScript, R, Arduino, SQL
- **Frameworks and Libraries** Numpy, Pandas, Matplotlib, Scikit-learn, Tensorflow, Keras, PyTorch, OpenCV, NLTK, SpaCy, ROS, OpenAI Gym
- **Operating Systems and Platforms** Linux, Windows, Raspberry Pi OS, AWS