Atmadeep Banerjee

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Github | Kaggle | Google Scholar

EXPERIENCE

MEDARC | Open Source ML Researcher | Nov 2022 - Present
- Working in collaboration with **Stability AI** on open source research projects leveraging **AI for neuroscience**.
- Trained a **stable diffusion** model **conditioned on fMRI** scans. [**Code**].
- Working on the **Algonauts 2023 Challenge** to **predict brain response** from a given **image**.

MORPHLE LABS | ML Engineer | Sep 2021 - Oct 2022
- Worked on the entire AI lifecycle from **data annotation** to model **training** to **deployment** as the sole ML Engineer.
- **Integrated multiple AI models** into existing **robotic microscope**, for **multi-stage slide scanning**.
- **Area detection** and **path planning** using AI on low resolution images followed by high resolution rescanning and **AI pre-diagnosis**.
- Built a **real time instance segmentation** pipeline for **detection, classification and sorting of cells**.
- Built an AI tool to detect **brain cancer metastasis** from whole slide scans.

AALTO UNIVERSITY, FINLAND | Research Assistant | Jun 2021 - Jul 2022 | Advisor: Dr. Rohit Babbar
- Worked on **extreme classification (XMC)** of text and **information retrieval**.
- Created a novel lightweight CNN which achieves **SOTA** for **short text XMC**, outperforming transformers like Bert [**Paper**].
- Worked on a **novel training technique** to further improve our model in presence of label features (paper under review).
- Achieved **SOTA** for **long text classification** using a novel **hierarchical transformer** model [**Paper**] (published, Neurips 2022).

PIXXEL | AI Researcher | May 2018 - Aug 2020
- Trained a model to synthesize **multispectral** imagery using **radar satellite** data.
- Trained a **meta-learning** model for **few-shot segmentation** of object classes in **XView dataset** from satellite imagery.
- Trained a novel model for **segmenting buildings and roads** from satellite imagery to **measure urban development**.

PROJECTS

- **AI Video Dubbing:** Worked with an early stage startup to build their **AI dubbing** MVP. The pipeline consisted of (1) **transcription** with OpenAI's **Whisper** + Voice Activity Detection (2) **forced alignment** with **Gentle** HMM (3) **translation** with **DeepL** and (4) **text-to-speech** with **Azure TTS**.
- **Unreality:** Developed a **VR action game** in **Unity3D**, depicting an alternate reality version of our campus. Played by over **600 participants over 3 days** in the cultural fest of BITS Pilani. [**Code**]
- **Twitter Sentiment Analysis: Stream tweets** relevant to user query in **real-time**, using Twitter's API. Read streamed text corpuses using a **CNN model** and **word2vec** embeddings, and calculate **mean sentiment** on a scale of 0 to 1. [**Code**]

PUBLICATIONS

- Kharbanda S., **Banerjee A.**, Schultheis E., Babbar R. (2022). **CascadeXML: End-to-end Multi-Resolution Learning for Extreme Multi-Label Text Classification**. *Neurips 2022* [**Paper**]
- Lin Z., Garg P., **Banerjee A.**, et al. (2022). **Revisiting RCAN: Improved Training for Image Super-Resolution**. *arXiv e-print 2201.11279 (submitted, ICCV 2023)* [**Paper**]
- Kharbanda S., **Banerjee A.**, et al. (2021). **InceptionXML : A Lightweight Framework with Synchronized Negative Sampling for Short Text Extreme Classification**. *arXiv e-print 2109.07319 (submitted, SIGIR 2023)* [**Paper**]
- **Banerjee, A.**, (2021). **Meta-DRN: Meta-Learning for 1-Shot Image Segmentation**. ***IEEE*** *India Council International Conference (**Indicon**)* [**Paper**]

EDUCATION

BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI
B.E. in Computer Science with Minor in Data Science | August 2017 - July 2021 | CGPA: 8.72/10
Relevant Coursework: • Neural Networks and Fuzzy Logic • Machine Learning • Design and Analysis of Algorithms • Data Structures and Algorithms • Database Management Systems • Object Oriented Programming • Applied Statistical Methods

ACCOMPLISHMENTS

- **Kaggle Competitions Expert:** Top 1.7% of competitors on Kaggle. Won silver medals in 2019 APTOS Blindness Detection (rank 131/2928) and 2022 UW-Madison GI Tract Image Segmentation (rank 72/1548).
- **NTIRE 2020** Ranked 12/103 teams in NTIRE 2020 Spectral Reconstruction Challenge [**Paper**][**Code for our submission**]
- **2nd Runner's Up Philips Code2Care Hackathon, 2019:** Won 2nd place among over 7000 participating teams across India.

SKILLS

- **Expert:** Python, Pytorch, Numpy, Pandas, Scikit-Learn, Detectron2, Pytorch-Lightning, OpenCV
- **Moderate:** Tensorflow, Keras, Unity3D, Django, Flask, Docker
- **Basic:** Unity3D ML Agents, SQL, HTML, CSS, GCP, AWS, Java, C#, C