Abhiroop Talasila

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Education

International Institute of Information Technology **August 2022 – Present**
Master of Science by Research in Computer Science and Engineering — ***CGPA: 9.5*** *Hyderabad, Telangana*

Manipal Institute of Technology **July 2017 – July 2021**
Bachelor of Technology in Computer Science and Engineering *Manipal, Karnataka*

Experience

International Institute of Information Technology **June 2021 – Present**
Research Fellow, Healthcare & Artificial Intelligence (HAI) *Hyderabad, Telangana*

- Worked on improving the interpretability of classification models for disease diagnostics using self-supervision within the purview of Chest X-rays. Advised by Dr. U. Deva Priyakumar.
- Achieved downstream multi-label classification scores comparable to current supervised SoTA and superior performance in terms of Grad-CAM localization. Accepted for publication at IJCNN 2023.
- Ranked 3rd in the X-ray Projectomic Reconstruction Challenge hosted by Harvard Medical School. Developed an Attention-inspired U-Net to predict axon trajectories in volumetric XNH images. Presented at ISBI 2023.

BlackRock **Jan. 2021 – July 2021**
Data Engineering Intern *Gurgaon, Haryana*

- Developed a real-time ML pipeline to predict trade settlement failure using large, imbalanced, and distributed datasets
- Worked with financial and regulatory teams to perform EDA and pre-process datasets
- Experimented with models like XGBoost and SVM and achieved a fail-capture rate of 84%

IOP Technologies **June 2020 – Aug. 2020**
Machine Learning Intern *Remote*

- Trained and integrated an Automatic Speech Recognition model for a video-conferencing platform
- Improved word error rate by 30% over benchmark with custom fine-tuned models for better generalization to the Indian Accent using Indic Speech data. Implemented RESTful APIs as Linux systemd processes, improving TAT by 50%

Projects

Automated Detection and Classification of Renal Lithiasis in Computed Tomography Scans

- Implemented a modified U-Net with dense skip connections to generate localization maps for kidney stones
- Model achieved an AUC of 0.83 and an accuracy of 86% while predicting stone composition using DICOM voxel values
- This work won the Best Poster Award at USICON 2021

AI Applications in Ophthalmology Influencing Clinical Practice **[Publication Link]**

- Evaluated studies related to retinal diseases like Diabetic Retinopathy, Glaucoma, and Macular Degeneration

AutoSub | *Python, scikit-learn, Mozilla DeepSpeech* **[Merged into Mozilla's GitHub]**

- Developed a CLI application to generate subtitles for video files on-device automatically
- Implemented MFCC features to segment audio on non-speech segments and perform speech recognition
- Improved performance using an external scorer (language model) and added support for GPU-based inference

Bioactivity Prediction | *Python, RDKit*

- Used regression models to predict biological activity (pIC50 values) of protein targets from ChEMBL database
- Calculated Lipinski and PaDEL descriptors using Acetylcholinesterase (AChE) as the target protein
- The best Decision Tree Regressor model achieved an R-squared value of 0.86

Technical Skills & Certifications

Languages: Python, C/C++, MySQL, Java, Bash
Libraries & Tools: PyTorch, NumPy, scikit-learn, TensorFlow, Git, Linux, VS Code, LaTeX, slurm
Certifications: Stanford - ML, CS231n | deeplearning.ai - Neural Networks and Deep Learning, AI for Medicine

Leadership / Extracurricular

- Started a fitness club and coached 50+ students on nutrition and workout routines
- Led the social media team for my university's cultural and technological fests
- Member of Student Parliament at IIIT Hyderabad