NIMISH MAGRE

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PROFESSIONAL EXPERIENCE

MACHINE LEARNING RESEARCHER | BROAD Institute of MIT & Harvard | Cambridge, MA   Aug 2024 – present

- Developed and evaluated five variations of lightweight linear supervised models for robust cell type classification using scRNA data while incorporating cell ontology relationships, introducing innovative soft constraints and group weighted loss functions to enhance performance.
- Trained each of the models through the GCP platform on ~ 42 million samples and evaluated the models using a novel hierarchical hop F1 scoring method that accounts for cell type predictions at varying hierarchical levels of cell ontology. Best model achieved a mean Hop-0 F1 score of ~0.84.
- Currently benchmarking model performance against leading cell type classification tools such as scPred, OnClass and CellTypist while refining a pre-print draft available on my Github.

COURSE DEVELOPMENT ASSISTANT | Northeastern University | Boston, MA   Mar 2024 - Sep 2024

- Assisted the course professor to co-author a comprehensive book on Algorithms and Programming Structures.
- Provided technical assistance to the university's online course development team and Coursera to seamlessly integrate course content onto the Coursera Platform.
- Led the development of a RAG application tailored for the Algorithms course, facilitating student interaction and engagement with course specific content.

PYTHON DEVELOPER (DATA SCIENCE) | Squark Inc. | Boston, MA   Dec 2022 - Mar 2024

- Adapted the Word2Vec algorithm to obtain word vectors for each text column and transformed the vectors with the average aggregation method to obtain vector representation for each row.
- Developed a weighted-averaging technique to articulate Variable Importance in H2O-based Stacked-Ensemble models, contributing to improved model understanding and decision-making.
- Optimized data handling by transitioning from Pandas to the faster Polars library, adapting the codebase to efficiently download, store, and clean training data, enhancing overall data processing speed.

MACHINE LEARNING RESEARCHER (CO-OP) | Harvard Medical School (MGH) | Boston, MA   Jan 2022 - Jun 2022

- Implemented a self-supervised denoising network to denoise MRI scans (notably contributed to reducing the time required for patients to complete an MRI scan).
- Demonstrated superior performance by achieving average Peak Signal-to-Noise Ratio (PSNR) results consistently 1.5dB higher than relevant single-image denoising methods when dealing with Additive White Gaussian Noise.
- Evaluated the model's robustness using a real-world noisy dataset (PolyU), attaining an average PSNR value of 37.52 dB. This achievement aligns closely with the performance of the best-performing model in the field, which recorded a PSNR value of 37.55 dB.

TECHNICAL SKILLS

Python | Google Cloud Platform | Pytorch | Docker | Numpy | Scipy | Pyro | Pandas | MySQL | MATLAB | Matplotlib | Seaborn | AWS-S3 | AWS-EC2 | Scikit-learn

EDUCATION

MASTER OF SCIENCE | Electrical and Computer Engineering | Northeastern University   2020 – 2022
BACHELOR OF ENGINEERING (HONORS) | Mechatronic Systems | Australian National University   2015 – 2019

HONORS AND AWARDS

- Gold and Silver medal on Kaggle for typography dataset (*[TMNIST-Alphabet](#), [TMNIST](#), [TMNIST_Glyphs](#)*)
- 2-year data hosting sponsorship by AWS