Ansh Sharma

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Education

University of Illinois Urbana-Champaign, GPA: 4.0/4.0 May 2024
B.S. in Computer Science, Minor in Mathematics *Champaign, IL*

Work Experience

Amazon New York City, NY
Software Development Engineer Intern (ML) - Amazon Translate *May 2023 - Aug. 2023*

- Evaluated and fine-tuned various large language models (LLMs) for automated translation quality evaluation tasks
- Reimplemented research papers and worked with applied scientists to evaluate techniques on internal LLMs and datasets
- Created an LLM-based scoring workflow in the translation model deployment pipeline to compute automated quality metrics

Argonne National Laboratory Chicago, IL
Machine Learning Intern - National Center for Supercomputing Applications (NCSA) *Sept. 2022 - May 2023*

- Containerized and deployed an AlphaFold2 Docker image on the Delta Supercomputer for use by biology researchers
- Improved inference pipeline runtime from 75 minutes to 20 minutes through CPU parallelization and multiple GPUs

AbbVie Chicago, IL
Machine Learning Intern - Pharma R&D (AbbVie - Calico) *Aug. 2022 – May 2023*

- Researched representation learning models for cell painting using self supervised contrastive learning and arcface loss
- Implemented and trained a ResNet based architecture on terabytes of molecular perturbation data using PyTorch and AWS

Machine Learning Intern - Pharma R&D *Jan. 2022 – May 2022*

- Transfer learned a 3D U-NET model to segment kidneys and cysts from MRI scans for tracking PKD progression in mice
- Utilized multiomic data (MRI scans, RNA-Seq, blood/urine biomarkers) to cluster and predict response to drug treatment
- Identified potential biological pathways for a novel treatment via gene ontology analysis, enabling further drug optimization
- Published a paper in an internal reviewed journal and an extended abstract at the World Molecular Imaging Congress 2022

Research Experience

Cascaded Generative Modeling for Remote Sensing Champaign, IL
Research Intern: Computer Vision @ UIUC (Adv. Shenlong Wang) *May 2023 – Present*

- Designing generative models that can synthesize cohesive planet-scale maps at resolutions ranging from continents to houses
- Compiled a multi-terabyte scale dataset of satellite and aerial image pyramids covering 100,000x zoom for training data
- Fine tuning cascaded diffusion models on super-resolution and inpainting tasks for synced multi-layer map tile generation

Early Detection & Prediction of Parkinsonism Using Multi-Modal Few-Shot Learning Champaign, IL
Research Intern: Computer Vision @ UIUC (Adv. Yuxiong Wang) *Oct. 2022 – Present*

- Utilizing SOTA few-shot/meta-learning techniques to detect Parkinsonism from audio/visual modalities on a novel dataset
- Built data acquisition/processing pipelines for various modalities and explored intermediate/late stage multimodal fusion
- Submitted paper to NeurIPS 2023 (Under Review)

DL based Neurocognitive Performance Testing via Object Following in MR Champaign, IL
Research Intern: Health Care Engineering Systems Center (Adv. Shenlong Wang) *June 2022 – Sept. 2022*

- Researched methods to provide a standardized concussion diagnosis method using augmented reality and machine learning
- Designed and trained a transformer based deep learning architecture to learn from physician-annotated time series data
- Created visualizations with Open3D to model patient trajectories during testing and assist with generating annotations
- Published at IEEE/ACM Conference on Connected Health: Applications, Systems and Engineering Technologies 2022

Awards & Technical Skills

Awards: John R. Pasta Outstanding Undergraduate Award, Chancellor's Scholar (Top 1% of Class at UIUC), Putnam Top 500, USA Math Olympiad (USAJMO) Qualifier, USA Computing Olympiad (USACO) Gold Division, USA Physics Olympiad (USAPhO) Top 50, Regeneron International Science and Engineering Fair (ISEF) Finalist

Proficient: Java, Python, C++, LaTeX, SQL, Linux Shell, Git, Pytorch, Pandas, Numpy, MatPlotLib, OpenCV, Qiskit

Familiar: JavaScript, HTML/CSS, Node.js, React, Express, Bootstrap, Sass, Catch2, Flask, OpenGL, Tensorflow, Keras