Albert Xiao

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Education

University of Illinois Urbana-Champaign Champaign, IL

BS in Computer Science, Minor in Mathematics *Expected May 2024*

Relevant Coursework: Data Structures, Algorithms, Systems Programming, Computer Architecture, Deep Learning, Computer Vision, Databases

Experience

Research Assistant Jan. 2023 – Present

Forward Data Lab – Supervisor: Prof. Kevin Chang *Champaign, IL*

- Leveraged and fine-tuned large language models to manifest controllable knowledge summarization
- Apply dense retrieval augmented generation pipeline to retrieve and process source documents from large corpus
- Train contrastive loss model on evidence selection for long-form, multi-hop question answering, and query-focused summarization

Python Developer Nov. 2022 – Present

AbbVie *Champaign, IL*

- Develop histopathology data pipeline of mass spectrometry and whole slide tissue scans; overlay unaligned scans from different instruments using Scale Invariant Feature Transform
- Adapted Vision transformer models for use in anomaly detection and localization in tissues

Software Engineering Intern May 2022 – Aug. 2022

Aechelon Technology *Kansas City, KS*

- Develop end-to-end features in main, client-facing, flight simulation product using OpenGL, ARB ASM, and C++
- Implement core features: mathematically automate transitions in 3D sea models' graphical animations
- Enhance all 3D models with new procedural-mapped decal textures using linear algebra and vector calculus

Research Intern June 2022 – Present

Argonne National Labs *Lemont, IL*

- Design and experiment with models (neural networks, random forests) to predict properties of nuclear fuel pins
- Improve accuracy of predicted values to within measurement error, a 97% decrease from previously published regression models

Software Developer Jan. 2022 – May 2022

iBioFAB @ Carl R. Woese Institute for Genomic Biology *Champaign, IL*

- Create a versatile, robust, automated end-to-end platform that allows error-free construction of plasmids of any sequences in a high-throughput manner.

Software Engineering Intern June 2021 – April 2022

Accurant Biotech *Cranbury, NJ*

- Designed and implemented robust online training and inventory management system using Flask, HTML/CSS, JavaScript, and PostgreSQL
- Scoped and developed core functionalities for managing users, uploading/accessing training documentation, and tracking training/inventory

Skills

Languages/Technologies: Java, Python (Flask, NumPy, Pandas, PyTorch, OpenCV, SciPy, SKLearn, Optuna), C++ (OpenGL, Catch2), SQL (Postgres, SQLite), JavaScript (Node.js, Express.js, React.js, Redux), HTML/CSS, Git, ASM

Projects

Neural Music Transcription with Spatiotemporal Vision Models | *Python, Pytorch* Nov. 2022 – Dec. 2022

- Analyzed digital music files using digital signal processing, Mel Spectrograms, and Fast Fourier Transform.
- Experimented with different DL models, including FCNN, RCNN, and Seq2seq transformer.

Falling Fruit | *React, Redux* Sept. 2021 – Dec. 2021

- Rebuilt and optimized front end of Falling Fruit progressive web application for improved scalability
- Created and styled several performance-oriented components
- Reworked type-filtering tree data structure for improved performance and utility