Anjie Yang

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Work Experience

Undergraduate Researcher *Nov 2023 – Present*
Northwestern University Evanston, IL, USA

- Developed FabDreamer, an innovative text-to-SVG pipeline for multi-layer laser cutting, leveraging Stable Diffusion for initial text-to-image generation, followed by advanced processing to create precise, multi-layered SVG designs.
- Implemented an intelligent layer assignment system using a Multimodal Large Language Model (MLLM), optimizing depth ordering and semantic relationships to transform Stable Diffusion outputs into complex, multi-layered designs.
- Enhanced FabDreamer with BrushNet for sophisticated layer separation and background completion, coupled with edge detection techniques to ensure high-fidelity SVG outputs suitable for precision multi-layer laser cutting.
- Optimized FabDreamer's performance through HPC deployment and developed a user-friendly interface using Flask and React, streamlining the text-to-SVG design process for users across various skill levels.
- Technologies: **Stable Diffusion, MLLM, BrushNet, Flask, React, Ngrok, HPC, SVG Conversion**

Software Development Intern *Apr 2024 – Present*
Dreamflows Remote

- Developed and optimized data pipelines for a text-to-video generation model, enabling the creation of videos where subjects speak given text, enhancing Dreamflows' AI-driven content creation capabilities.
- Architected a scalable distributed task management system using RabbitMQ and PostgreSQL, reducing manual effort by 95% and increasing download speed by 98%, while eliminating duplicate downloads across servers.
- Created a high-performance video processing pipeline for extracting precise head area footage from raw videos, crucial for training specialized facial animation models in the text-to-video generation process.
- Engineered a comprehensive video assessment pipeline incorporating factors such as face area percentage, lighting conditions, image clarity, and facial integrity, ensuring optimal input for model training.
- Technologies: **RabbitMQ, PostgreSQL, Python, OpenCV, FFmpeg, Docker, Git, PyTorch**

Undergraduate Research Assistant *Aug 2022 – Present*
University of Ottawa Ottawa, ON

- Developed full-stack web app with Flask and React.js to analyze and visualize epidemiology data, improving researcher efficiency by 40%.
- Constructed Bayesian networks and directed graphical models in Python to identify high-risk TB infection areas based on climate, population, and topographical data.
- Engineered Python OCR pipeline with OpenCV and Tesseract to extract geographic coordinates from 10,000+ complex PDF maps with over 98% precision, saving the team 100+ hours of manual data extraction.
- Developed interactive data visualization tools using React.js and D3, enhancing the real-time tracking and analysis of spatiotemporal TB infection trends.
- Technologies: **Python, Flask, React.js, D3.js, OpenCV, Tesseract**

Software Development Intern *May 2022 – Aug 2022*
Xu Investment Management Ltd. Beijing, China

- Engineered a high-performance data migration tool in C++ and Python, significantly enhancing data transfer efficiency across multiple PostgreSQL instances, resulting in a 30% operational cost reduction.
- Technologies: **C++, Python, PostgreSQL, MongoDB, Kafka, Spark**

Open Source Project Experience

Bisection Performance Analysis Tool

- Articipated in the openEuler Community, which boasts over 200 forks and wide-ranging adoption in various industries, in Open Source Promotion Plan (OSPP) 2023, developed a Python-based Bisection Performance Analysis Tool, which has improved commit tracking efficiency by 80% and reduced manual performance tuning efforts by 95%.
- Designed an efficient CLI, reducing setup time by 40% and integrating real-time tracking and logging, enhancing productivity and debugging speed.
- Technologies: **Python, Linux, Git, Jenkins**

Education

University of Ottawa *Expected April 2025*
Bachelor of Engineering in Computer Science Ottawa, ON

Skills

Java | Python | C++ | C# | TypeScript | Go | Swift | PostgreSQL | NoSQL | Redis | Spring Boot | Angular | Vue | React | AWS