

DIJKSTRA LIU

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SUMMARY

Seeking **Computer Science Research opportunity**: Experienced in full-stack, web, and game development using tools like **React, Spring Boot, Flask**, and languages such as **Java, C++, Python, PHP, JavaScript**. Knowledgeable in **TensorFlow/PyTorch** and models like **CNN, RNN, Transformers**, as well as algorithms such as **SVM, decision trees, PCA, KNN...** Proficient with **Computer Vision, Computational Geometry** and **Computational Biology** algorithms and libraries.

EDUCATION

Washington University in St. Louis August 2022 - May 2026
Bachelor of Science in Computer Science **GPA 4.0/4.0**

TECHNICAL SKILLS:

Languages: Java, C++, Python, PHP, JavaScript, C# **Frameworks and Libraries:** React, Spring Boot, Flask, Django, Node.js, Express
Databases: MongoDB, MySQL, Milvus **Machine Learning Models:** CNN, RNN, Diffusion, Transformers...
Tools and Platforms: Git, TensorFlow, PyTorch, GPT API, Docker, AWS... **Computational Biology Algorithm:** MEME, EM...

WORKING EXPERIENCE:

Washington University in St. Louis, AI for Health Institute Oct 2024 – Now
Undergraduate Researcher

- Model Implementation:** Implemented action segmentation algorithms using **Temporal Convolutional Networks (TCN)**, **Gated Recurrent Units (GRU)**, and Task Graphs for enhancing action classification and progress prediction in video sequences.

Chinese Academy of Sciences, Institute of Chemical Process Engineering May 2024 – July 2024
Computer Science Researcher Intern

- Algorithm Development:** Developed and implemented robotic arm object grasping algorithms using **RANSAC, k-d trees, Voronoi diagrams, and DBScan clustering** for object recognition and grasping point selection.
- Mineral Identification Project:** Utilized laser scanning data and visual images, applied random oversampling and polynomial feature expansion, and enhanced identification accuracy by 102% using **Vision Transformer** compared to traditional mathematical models.

Cogno July 2023 – June 2024
Lead Software Developer

- WeChat Bot Development:** Created a bot using the **Milvus** database and **Langchain** to respond to user messages, including documents, audio, and images.
- E-commerce Platform:** Using **React, Flask**, and **MongoDB** to design and implement an E-commerce Platform, providing AI seller and assistant during shopping. Currently providing customer service for 30+ e-commerce sellers.

DHC Software Co., Ltd, Financial Big Data Technology Department May 2023 - July 2023
Computer Science Researcher Intern

- Backend Development & Designing:** Designed and established the backend, using Django to handle frontend requests and interactions with the LLM API. Implemented GPTCache to reduce API call costs by 30%. The API has had over **50,000 calls**.
- Model Training:** Employed **P-tuning** to train **ChatGLM-6B**, allowing it to perform credit assessments based on bank data.

PROJECT EXPERIENCE:

Mixed-View Panorama Synthesis with Depth and Texture Consistency (Diffusion, Satellite, Street-View) Aug 2024 – Now

- Led data collection and preprocessing, ensuring alignment and quality control of satellite and street-view images across diverse environments and seasons
- Implemented an efficient input/output pipeline for mixed-view synthesis, improving model data management.
- Contributed to enhancing depth and texture estimation techniques, integrating structural information from satellite views with nearby panoramas to ensure spatial and stylistic fidelity in generated panoramas.

Human Pose Based Video Generation with Dual ControlNet-Enhanced Diffusion Models (Diffusion, ControlNet, CV, LoRa) Mar 2024 – Jun 2024

- Mastered the theoretical frameworks underlying the dual layers of **ControlNet**, ensuring understanding of its operational methodologies.
- Executed the Diffusion training regimen directly from the source code, validating procedural integrity and cementing foundational knowledge of its internal architectures.
- Conducted an in-depth analysis of the theory behind **reference-only control and LoRA**, and successfully implemented video generation based on existing character actions.

Bear Bazaar: Experimental WashU Internal Second-hand market (Java, Spring Boot, React, AWS) July 2023 – Oct 2023

- Orchestrated the architecture and development of a high-performance trading platform for WashU, scaling to **serve over 3,000 students and faculty**. Leveraged **Java** and **Spring Boot** for creating resilient backend services and **React** for a responsive frontend, ensuring an engaging user interface.
- Led a cross-functional team of seven using Scrum methodologies, employing **AWS** for cloud infrastructure, ensuring robustness, scalability, and continuous **integration/continuous deployment (CI/CD)** practices with **Git** for version control.
- Implemented a continuous feedback loop with **stakeholders**, utilizing analytics and user feedback to iteratively refine platform features, focusing on **performance optimization, security enhancements**, and ensuring alignment with evolving user needs.

Music Style Classification Using ResNet (CV, ResNet, Data analysis) Oct 2022– Dec 2022

- Designed and implemented a system to classify music styles based on their spectrum, employing a deep residual network (ResNet) for efficient analysis.
- Processed and analyzed large datasets of music files to train the ResNet model, achieving high accuracy in distinguishing between various music genres.
- Integrated the model into a web application, using cloud services for scalable processing and storage of music files.

HONORS AND AWARDS

- Antoinette Frances Dames Award April 2024
- 1st Place in Gold Division (out of 723 participants) of the USACO Contest Jan 2020
- Top 2% of 148,880 students, National Olympiad in Informatics in Province (NOIP) May 2019

ORGANIZATION:

Washington University Chinese Groundbreakers(WUCG) July 2024 - Now
Founder & Leader

- Organizational Leadership:** Led a team of 10+ executive members and managed a community of 160+ active members, fostering collaboration and mutual support among Chinese computer science students and researcher at Washington University.
- Event Management:** Organized and executed bi-monthly activities, including WashU First Chinese Hackathon, computer science research seminars, workshops in themes like React.js, Vision transformer... enhancing the professional development of members.