

# Tingjun Liu

Phone: +1 3149349814      **LinkedIn:** [linkedin.com/in/tingjun-liu-2a541127b](https://www.linkedin.com/in/tingjun-liu-2a541127b)  
Website: [www.dijkstra.liu.com](http://www.dijkstra.liu.com)      **Email:** [dijkstra20031023@gmail.com](mailto:dijkstra20031023@gmail.com)

## 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, Transformer**, as well as algorithms such as **SVM, decision trees, PCA, KNN, k-means clustering, random forests, naive Bayes, and DBSCAN**... Proficient with Computer Vision and Computational Geometry Algorithm 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 (Llama, ChatGLM)  
**Tools and Platforms:** Git, TensorFlow, PyTorch, GPT API, Docker, AWS, LangChain,

## WORKING EXPERIENCE:

**Chinese Academy of Sciences, Institute of Chemical Process Engineering (Robotics, Machine Learning, C++, Python, Open3D)** May 2024 - Now  
*Computer Science Research 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 100% using CNN compared to traditional mathematical models.

**Qutute: Fashion Trading Platform (Python, TensorFlow, YOLOv5, OpenCV)** April 2024 - Now  
*Computer Vision Researcher Intern*

- Fashion Image Analysis:** Developed and implemented deep learning models for garment segmentation and keypoint detection. Leveraged **YOLOv5** and **U-Net** architectures for accurate localization of garments and identification of key features.
- Virtual Try-On & Outfit Recommendation:** Built a virtual try-on system using segmentation and keypoint detection results. Developed personalized outfit recommendations based on garment attributes, styles, and user preferences. Explored **GANs** for generating realistic try-on effects.
- Model Optimization & Deployment:** Continuously optimized model performance for accuracy, speed, and resource efficiency. Deployed models to production environments for reliable service.

**Cogno (Flask, Docker, Milvus, AWS, React, MongoDB, Product Design, Gemini API)** 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.
- Vision based product upload:** Implemented Gemini Vision Pro API and search agent integration to streamline product search and upload for eCommerce platform users, enhancing user experience and contributing to platform growth.

**DHC Software Co., Ltd, Financial Big Data Technology Department (Django, React, LLM)** May 2023 - July 2023  
*Software Development Intern*

- Platform Creation:** Developed a user credit assessment and anti-money laundering platform using **React**, used by three banks to judge user creditworthiness and potential money laundering suspicions based on transaction records.
- 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:

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

- 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 Crypto Second-hand market (Solidity, 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.
- Implemented smart contract using **Solidity** to handle on-chain transactions to facilitate secure and transparent trading of second-hand goods, ensuring trust and immutability through blockchain technology.
- 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 accurate and efficient analysis.
- Processed and analyzed large datasets of music files to train the ResNet model, achieving high accuracy in distinguishing between various music genres.
- Developed a user-friendly interface to allow users to upload music tracks and receive immediate classification results, enhancing accessibility and user engagement.
- 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
- Distinction Rank (Top 5%) in 2021 AMC 12A Dec 2021
- 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