

DIJKSTRA LIU

Phone: +1 3149349814

LinkedIn: [linkedin.com/in/tingjun-liu-2a541127b](https://www.linkedin.com/in/tingjun-liu-2a541127b)

Website: www.dijkstra.liu.com

Email: l.tingjun@wustl.edu

SUMMARY

Seeking **Computer Science Research and Software Engineer Intern 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. Skilled in blockchain development with **Solidity** and **FunC**.

EDUCATION

Washington University in St. Louis

Bachelor of Science in Computer Science

August 2022 - May 2026

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

Researcher Assistant

- **Smart Kitchen:** Working as a Research Assistant at the AI for Health lab, involved in the SmartKitchen project. Contributions focus on research in action segmentation, video recognition, and data processing.

Washington University Student Media, Inc. dba Student Life Newspaper (<https://www.studlife.com/>)

April 2024 - Now

Senior Web Editor

- **Web Team Leadership:** Led the web team, utilizing **Jira** and **Google Workspace** to streamline site functionality and boost team collaboration.
- **Website Resign:** Spearheaded the web team in redesigning the 2024 version of the website, leveraging **PHP, JavaScript**, and WordPress for implementation.
- **Web maintaining:** Maintained the server using **Cloudflare, A2hosting, and phpMyAdmin**, resolving over 50+ bugs within a two-month period.

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.

Telegram: The Open Network (TON)

May 2024 – August 2024

Software Development Intern

- **Web3 Integration:** Developed and integrated a Web3 system using **Solidity** and **Python**, focusing on user data collection, processing, and constructing user profiles to optimize marketing and user acquisition strategies.
- **LLM Fine-Tuning:** Contributed to the infrastructure setup for TON's intelligent assistant, TonGPT, by **fine-tuning large language models (LLMs)** to enhance system performance.

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.
- **Vision based product upload:** Implemented Open AI 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

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.

Capital Normal University, Guilin Experimental Middle School

July 2019 - July 2022

Software Development Intern

- **Leadership in Teaching program:** Initiated a computer support teaching project at Guilin Experimental Middle School Affiliated with Capital Normal University, where I taught over 100 students and gave over 200+ lectures.

- **Teaching in Olympiad in Informatics:** Taught information competition classes to help students learn competition algorithms and prepare for major international information technology competitions.

PROJECT EXPERIENCE:

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- Mixed-View Panorama Synthesis with Depth and Texture Consistency** 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.
- Split! Team Expense Manager** (<https://github.com/TJor-L/Split>) June 2024 – Aug 2024
- Developed a sophisticated team expense management application using **Flutter** for the frontend to deliver an intuitive user interface, and **Node.js/Express** for a high-performance backend, ensuring smooth and efficient operation.
 - Applied graph theory algorithms to simplify financial transactions among team members, enhancing the user experience by reducing complexity settling expenses.
 - Utilized **Docker** for deployment to maintain consistent environments across development, testing, and production stages. Adopted Git for source code management, fostering collaborative development and efficient version control.
 - Implement **Open AI API** to detect bill and checks to analysis payment data.
- Human Pose Based Video Generation with Dual ControlNet-Enhanced Diffusion Models** Mar 2024 – May 2024
(<https://github.com/TJor-L/SD-based-video-generator/blob/main/Final-Report.pdf>)
- 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** (<https://github.com/TJor-L/BearBazaar>) 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.
- Recoil Raiders: A multi-player 2D RPG shooting game** (<https://kennyrao.itch.io/recoil-raiders>) Jun 2023– Sep 2023
- Spearheaded the development of "Recoil Raiders," a multi-player 2D RPG shooting game using **Unity** and **C#**.
 - Took the helm in game design, conceptualizing and detailing the game's narrative, characters, and setting to create a compelling backdrop for the gameplay.
 - Implemented **local area network (LAN)** multiplayer capabilities, permitting players to team up or combat in real-time.
 - Designed and integrated character skill effects, enriching gameplay dynamics.
- Team Event Management System Similar to Google Calendar** Jan 2023– March 2023
- Developed key functionalities using **PHP**, **JavaScript**, **HTML**, and **AJAX**, such as event addition and team joining to view collective events.
 - Executed core event management logic, encompassing the addition, deletion, and modification of events.
 - Crafted a **MySQL** database structure to securely store user data and event details.
- Music Style Classification Using ResNet** 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.

ORGANIZATION:

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- Washington University Chinese Groundbreakers (WUCG.com)** 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.

HONORS AND AWARDS

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- Antoinette Frances Dames Award April 2024
 - Distinction Rank (Top5%) in 2021 AMC 12A Jan 2020
 - 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