# Dongheng Lin

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## Education

**University of Illinois at Urbana Champaign** — *Illinois, United States*

MEng Computer Engineering — *Aug. 2023 – Dec. 2024 (expected)*

- **Selected Coursework:** ECE 428, Distributed Systems, ECE 438, Communication Network, etc.

**University of Liverpool & Xi'an Jiaotong-Liverpool University** — *Liverpool, United Kingdom*

BSc Information and Computing Science, WES GPA: 3.91/4.0, Ranked: 6/295 — *Sep. 2019 – Jun. 2023*

- **Honours:**
  - Graduated with a First-Class distinction degree.
  - 2022-2023 University Academic Excellence Award — *Scholarship Fund for top 5% students*
- **Qualifications:**
  - GRE: 323/340 — *Verbal: 157, Quantitative: 166*
  - IELTS Bandscore 8 — *Listening 8, Reading 8.5, Speaking 8, Writing 7*

## Skills

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|---|---|
| **Programming** | Java, C++, JavaScript, HTML, CSS, MySQL, Python, C#, LaTeX, Golang |
| **Miscellaneous** | Linux, Shell (Bash/Zsh), Android Studio, Unity, Git, Jupyter, Django, PyTorch, SpringBoot, OpenGL, Vue.js |
| **Soft Skills** | Time Management, Teamwork, Problem-solving, Documentation, Engaging Presentation, Scrum Framework |

## Publication

**Novel Conditional Metadata Embedding Data Preprocessing Method**

- Juntuo Wang[1], Qiaochu Zhao[1], **Dongheng Lin**[1], Erick Purwanto[1], Ka Lok Man[2], "Novel Conditional Metadata Embedding Data Preprocessing Method", *2022 International Conference on Cyber-Enabled Distributed Computing and Knowledge Discovery (CyberC)*, Suzhou, China, 2022, pp. 303-311, doi: 10.1109/CyberC55534.2022.00057. Available at: https://ieeexplore.ieee.org/document/10090205/

## Research & Work Experiences

**Salient-based Backdoor Attack to DNN Model**

Project Lead — *Jun. 2023 - Now*

- Designed an algorithm uses Salience Metric to evaluate sample feature significance towards backdoor learning process.
- It is a more data-efficient backdoor attack algorithm to DNN models achieved the same attack success rate with only 38.44% of poisoned samples.
- The work have been submitted to USENIX Security 2024.

**StyleDiffuser: Cartoon-style Image Creation Algorithm with StyleGAN and Diffusion**

Xi'an Jiaotong-Liverpool University (XJTLU) Final Year Research Project — *Sep. 2022 - Sep. 2023*

- Used the Generative Adversarial Network as a generator for latent vectors for Stable Diffusion Model, thereby casting stronger supervision on the image creation
- Scrapped the training data by programming Python web-scrapper and cropped the sample image based on YOLOv5 object detection

**Novel Convolutional Embeddings for Domain Adaptation in Medical Segmentation**

Research Assistant — *Jun. 2022 - Oct. 2022*

- Devised a novel model that takes metadata embedding as additional input of the Medical Semantic Segmentation.
- Implemented Vahadane based color normalization together with the model to resolve the inherent inconsistency of diverse samples in medical image processing problem. The model have shown a significant 26% mIOU improvement over the established baseline.

**Wensi Haihui Information Technology Co., Ltd. (Pactera)**

Back-end Intern (Full-time) — *Jun. 2021 - Sep. 2021*

- Worked as an Individual Developer in the team, Programmed front-end and back-end routing logic via Java based on Rest Controller.
- Implemented several features of administrator dashboard modules of a civil water management system.

## University Projects

**Distributed Learning Cluster System (Golang, gRPC, ProtoBuf)**

Distributed System Project — *Aug. 2023 - Now*

- Developed a Fair-Time Inference and Fault Tolerant distributed Learning Cluster System that works on several virtual machines.
- It uses a gossip-style membership list management, and implemented a versioned DFS system, which uses a GFS-style replication and management structure to support the distributed file storage. Partial codes and demo are available at: *ece428_mp*

**Android University Library Seat Manager App (Java, Android Development)**

Mobile Computing Group Project — *Oct. 2022 - Nov. 2022*

- Developed an Android app for voluntary student community. It tracks and updates the status of seats in school library in real-time in a fluent manner.
- Constructed several delicate and responsive layouts for users to interact with, applied OkHttp API to connect front-end and the Springboot based back-end server. This project is archived at: *CAN301: Lib Scout*

### XJTLU Bonding Forum Program (SpringBoot, Vue.js, Axios, MyBatis)

Software Engineering Group Project *Apr. 2022 - Jun. 2022*

- Developed a fully functional web-forum with expected user base of 10000+ university students based on SpringBoot and Vue.js.
- Worked mainly as a front-end developer, designed consistent pages, built complex routing logics, bound and managed data transmission between Springboot and Vue frameworks. The project is available at: *XJTLUbonding: University Web-Forum*

### Large, Efficient, Flexible and Trusty (LEFT) File Sharing System(Python, Socket Programming)

Computer Networking Project *Nov. 2021 - Jan. 2022*

- Implemented an Application-Layer Protocol that locally maintaining the file transfer history to realize state-based P2P file sharing system.
- The concurrent system is able to resume transmission after interruptions and system accidents, and reached nearly full utilization of LAN bandwidth.
- The project realized efficient transfer of big files (up to 10GB) in 5 seconds among VMs. The code is availble at: *python_peer_file_sharing*

## Languages

**English** Professional proficiency
**Chinese** Native proficiency
**Japanese** Bilingual proficiency