

# Dongheng Lin

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## Education

### University of Illinois at Urbana Champaign

MENG COMPUTER ENGINEERING

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

Illinois, United States

Aug. 2023 – Dec. 2024 (expected)

### University of Liverpool & Xi'an Jiaotong-Liverpool University

BSC INFORMATION AND COMPUTING SCIENCE, WES GPA: 3.91/4.0, RANKED: 6/295

• **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 Band Score 8 — *Listening 8, Reading 8.5, Speaking 8, Writing 7*

Liverpool, United Kingdom

Sep. 2019 – Jun. 2023

## Skills

**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, ProtoBuf

**Soft Skills** Time Management, Teamwork, Problem-solving, Documentation, Engaging Presentation, Scrum Framework

## Publication

### Novel Conditional Metadata Embedding Data Preprocessing Method

- Juntuo Wang<sup>1</sup>, Qiaochu Zhao<sup>1</sup>, **Dongheng Lin**<sup>1</sup>, Erick Purwanto<sup>1</sup>, Ka Lok Man<sup>2</sup>, “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 Saliency 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-scraper 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

### MapleJuice, an Efficient Hadoop Counterpart on Small Clusters (Golang, gRPC, ProtoBuf)

DISTRIBUTED SYSTEM PROJECT

Aug. 2023 - Now

- The distributed system is built upon a self-implemented file system similar to GFS with corresponding NameNode and DataNode.
- We also implemented an efficient Gossip-style failure detection protocol to maintain all the node status using UDP packets, a Bully-algorithm based re-election ensures new leader will be available in case of any failures on master nodes.
- The task scheduling mechanism is similar to MapReduce, ensures the parallelism among nodes. We tested the system against Hadoop within a cluster with 10 VMs, The MapleJuice is generally 25% faster than Hadoop when dealing with small clusters. Partial codes and demo are available at: [ece428\\_mp](https://github.com/donghenglin/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 project realized efficient transfer of big files (up to 10GB) in 5 seconds among VMs. The code is available at: [python\\_peer\\_file\\_sharing](#)

## Languages

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