MINGHAO LI (CS PHD APPLICANT)

111 Dryden Road Apt. 8M, Ithaca, NY
ml922@cornell.edu

EDUCATION

Cornell University
Bachelor of Science, Computer Science **May 2021 (Expected)**
GPA 4.187/4.3

COURSEWORK

Practicum in Operating Systems (A+), Operating Systems (A), Computer Networks (A+), Embedded Systems (A+), Introduction to Analysis of Algorithms (A), Digital Logic and Computer Organization (A)

RESEARCH INTERESTS

Security and Privacy, Systems and Networking, Artificial Intelligence

AWARDS & HONORS

- Cornell University College of Engineering Undergraduate Research Funds **2020**
- Cornell University College of Engineering Dean's Honor List **2017 – 2020**

ACCEPTED PUBLICATIONS

Wu, H., Tian, X., **Li, M.**, Liu, Y., Ananthanarayanan, G., Xu, F. & Zhong, S.
PECAM: Privacy-Enhanced Video Streaming & Analytics via Securely-Recoverable Transformation
Conditionally accepted at International Conference on Mobile Computing and Networking (MobiCom'21)

PUBLICATIONS UNDER REVIEW

Duan, Y., Zhang, M., Zhao, X., Li, S., **Li, M.**, Xu, F. & Shi, E.
Towards Transparency of Decentralized Applications via Automated UI-Logic Discrepancy Discovery
Submitted to International Conference on Software Engineering (ICSE'21)

Wu, H., Tian, X., Gong, Y., Su X., **Li, M.** & Xu, F.
DAPter: Preventing User Data Abuse in Deep Learning Inference Services
Submitted to The Web Conference (TheWebConf'21)

RESEARCH & RELATED EXPERIENCE

Research Assistant (Advisors: Elaine Shi, Robbert Van Renesse) **May 2019 – Present**
Computer Science Department, Cornell University, Ithaca, NY

- Currently investigating security and privacy in Artificial Intelligence. Also working on smart contracts (computer programs that operate on blockchains) analysis facilitated by static and dynamic information and Machine Learning.
- Funded by the College of Engineering Undergraduate Research Funds Summer 2020 to work on the privacy-enhanced video streaming and analytics system PECAM. PECAM makes recoverable video transformation that eliminates visual details while maintaining enough information for the analytics tasks. Also accomplished a research project on recovering the business logic of smart contracts from

function model graphs using neural networks. Concluded that the technique was promising but would not outperform existing methods much by relying on static information only. The conclusion led to our current idea of incorporating dynamic information into smart contract analysis.

- Worked on the DApps (decentralized applications, which are applications that run on decentralized networks such as blockchains) security tool DAPPSCOPE, which automatically discovers the discrepancy between the UI of a DApp and its contract code. Defined the high-level specifications used by DAPPSCOPE to check against a DApp's business model graphs. Researched the top 100 DApps on *Dapp.com Ranking* to ensure the real-life coverage of DAPPSCOPE. Collected 22 DApps for evaluation. Examined the evaluation results and recorded 17 novel safety issues found by the tool.
- Researched on constructing graphs from Ethereum data and applying node classification algorithms to the graphs. Evaluated the algorithms' performances by checking whether they computed potentially malicious nodes as similar.

BookHub **2019**

Course Project

- Developed BookHub, which is an application that generates book recommendations based on users' favorite books, preferred genres, and Goodreads reviews.
- Designed and implemented information retrieval and book recommendation algorithms. In charge of the front-end development. Collected relevant information of over 10,000 books from Goodreads and computed the similarity between books.
- The project is available at https://cu-bookhub.herokuapp.com/.

Weather Station **2019**

Course Project

- Built a mini weather station which gets and displays the real-time temperature and humidity of the environment using a DHT11 temperature-humidity sensor, an Adafruit 931 OLED display, and an FRDM-K64F board.
- Designed and implemented hardware communication from scratch. Designed the wiring.
- The demo video is available at https://youtu.be/rXCpg2w4B9Q.

Research Engineer Intern **June – Aug 2018**

Baidu, Inc., Beijing

- Read and discussed Machine Learning papers with the mentor. Solved Machine Learning problems such as predicting the possibility of survival of individuals in a disaster and small-scale facial recognition by applying the algorithms in the papers. Wrote presentations about Machine Learning.

TEACHING EXPERIENCE

Course Consultant – Operating Systems **Fall 2020**

Computer Science Department, Cornell University, Ithaca, NY

- Hold weekly office hours to help students comprehend course materials and complete homework. Develop homework and handouts. Supervise study groups. Grade homework and exams.

Course Consultant – Discrete Structures **Fall 2018**

Computer Science Department, Cornell University, Ithaca, NY

- Held weekly office hours to help students comprehend the materials and develop sound proofs. Graded homework and exams.

OUTREACH ACTIVITIES

Instructor **Jan – May 2019**

Code-4-Kids, Cornell University

- Taught second and third graders basic computational concepts using Scratch. Helped students develop their projects.

Logistics Chair **Aug 2018 – May 2019**

Amber Dance Troupe, Cornell University

- In charge of the management and the purchase of costumes and props.
- Participated in organizing the annual showcase that attracted more than one thousand viewers.

LANGUAGES

- Chinese: Native language.
- English: Speak fluently and read/write with high proficiency.

HOBBIES & INTERESTS

- Exercising: Do sit-ups/curl-ups and push-ups almost every day for more than 6 years. Jog outside whenever my schedule and the weather permit.
- Going to the movies: Have been a huge fan of movies for 15 years.
- Drawing: Attended weekly lessons for 6 years. Draw in my leisure time.
- Broadway: Go to a Broadway show almost every time I travel to New York City.
- Cleaning: A bit obsessed with a clean and tidy environment.
- Disney World: Make and plan annual/biannual trips to Disney World.