# Chai-Wen Hsieh

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## EDUCATION

- **University of Minnesota - Twin Cities** — Minneapolis, MN
  *PhD student in Computer Science - Center for Research of Intelligent Storage* — *Aug. 2018 – Jun. 2023 (expected)*

- **National Chiao Tung University** — HsinChu, Taiwan
  *Master of Science in Computer Science Cryptanalysis Lab* — *Sep. 2010 – Jun. 2012*
  *Bachelor of Engineering in Electrical and Electronics & Computer Science* — *Sep. 2006 – Jun. 2010*

## SELECTED RESEARCH PROJECTS

- **Distributed Data Deduplication in IoT-Edge-Cloud Environment (ongoing)**: Design a distributed data deduplication system on edge servers for IoT data backup workload to cloud datacenter, aiming for early deduplication to reduce network traffic.
- **Zoned Namespace SSD (ongoing)**: Integrate zone concept into NVME SSD simulator.
- **Data Deduplication on DNA Storage**: Design chunk allocation scheme on long-term DNA storage.
- **Deep Neural Network Hyperparameter Optimization**: Developed a genetic algorithm to automatically tune hyperparameters for Deep Neural Network training.
- **Distributed Deep Neural Network Training**: Deployed Horovod framework to train distributed deep neural network with cifar-100 image dataset on 4 NVidia 1080 graphic cards.
- **Public-Key Searchable Encryption with Conjunctive Queries**: Designed a public-key cryptosystem that enables keyword search over conjunctive queries. (Master's thesis.)

## WORK EXPERIENCE

- **Hewlett Packard Enterprise Company - Nimble Storage** — San Jose, CA
  *Intern* — *May. 2021 - Aug. 21*
  - **Sequential Update Optimizations on Index Tree**: Decreasing the index update write amplification factor.

- **Industrial Technology Research Institute** — Hsinchu, Taiwan
  *Researcher Engineer* — *Oct. 2017 - May. 2018*
  - **Studied genetic algorithm on hyperparameter tuning for Deep Neural Network**: Applied hyperparameter optimization in deep learning training using genetic algorithm. Improved training time by 5%.

- **VIA Technologies, Inc.** — Taipei, Taiwan
  *Senior Software Engineer* — *Oct. 2012 - Oct. 2017*
  - **Cryptography Project**: Extracted OpenSSL crypto algorithms into a standalone library for CPU validation.
  - **Smart Home embbeded system**: Led a 5-member team to developed a integrated intercom system.

- **Cloud Computing Centre, Industrial Technology Research Institute** — HsinChu, Taiwan
  *Fulltime Internship* — *Jun. 2011 - Aug. 2011*
  - **Security-Enhanced Linux**: Developed log monitor system to alert potential infiltration of cloud OS in python.

- **National Chiao Tung University** — HsinChu, Taiwan
  *Research and Teaching Assistant* — *Sep. 2010 - Jun. 2012*
  - **Research Assistant - Elliptic curve cryptography**: Explored clliptic curve pairings cryptosystems.
  - **Teaching Assistant - Introduction to Cryptography**: Was fully responsible for projects and grading.

## PROGRAMMING SKILLS

- **Languages**: : C/C++ (advanced), Java (advanced), Python (intermediate)
- **Tools**: : Git, OpenSSL, vim, VScode, Android, Matlab, TensorFlow, Horovod

## VOLUNTEER EXPERIENCE

- **Contributor**: : contributed to StackOverflow community in Cryptography, OpenSSL, Big Number.
- **Lecturer**: : gave a lecture at Girls Who Code camp at University of Minnesota.
- **Lifeguard**: : joined Red Cross Taiwan to secure water safety at rivers around New Taipei City.