

CHENG-HSIANG CHIU

<https://cheng-hsiang-chiu.github.io>

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EDUCATION

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|---|------------------------|
| University of Utah , Salt Lake City, USA <i>Ph.D. student in Electrical and Computer Engineering</i> | August. 2020 - Present |
| École Polytechnique Fédérale de Lausanne , Lausanne, Switzerland <i>Master of Science in Computer Science</i> | Sep. 2013 - Feb. 2016 |
| National Chiao Tung University , Hsinchu City, Taiwan <i>Master of Science in Communication Engineering</i> | Sep. 2005 - Aug. 2007 |
| National Chung Cheng University , Chiayi City, Taiwan <i>Bachelor of Science in Electrical Engineering</i> | Sep. 2001 - Jun. 2005 |

ONGOING RESEARCH

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|---|---------------------|
| Pipeflow Developing a pipeline scheduling framework on top of Taskflow. | Sep. 2021 - Present |
| syclFlow Leveraging a task graph parallelism in SYCL runtime. | Nov. 2020 - Present |
| Taskflow/ High Performance Computing Working on GPU and parallel programming for certain functions in Taskflow. | Nov. 2020 - Present |

PAST RESEARCH

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| Energy efficient in-situ computing Implemented an energy efficient framework for the purpose of Arctic animal classification. | Feb. 2019 - Dec. 2019 |
| Power data analytics and visualization Performed data cleansing and developed visualization framework of power data in Tromsø. | May 2019 - Aug. 2019 |
| Component analysis of sands from Nigeria Developed classification techniques to obtain the components of sands and make suggestions if targeted sands are feasible elements for bricks for constructions in Nigeria. | Jan. 2018 - Dec. 2018 |
| Estimation of nationality through sports in Twitter Analyzed twitter in UAE and estimated the proportion of nationalities based on sports preferences. | Jan. 2018 - Jun. 2018 |
| Protection against Data Profiling by Adversarial Cloud Applications Designed and developed protection mechanisms for protecting users' data on personal cloud-storage providers against data analysis by 3rd Party Apps. | Sep. 2015 - Jan. 2016 |
| Bootstrap recommender systems with the crowdsourcing Proposed an explicit technique to alleviate the impact caused by cold start in recommender systems by taking advantages of crowdsourcing platform. | Feb. 2014 - Jan. 2015 |

Random Walk

Feb. 2014 - Jun. 2014

Used Python to implement a web crawler to gather public events and activities in Europe which are used as references for recommending traveling routes to tourists.

High Value Cargoes' Networks

Feb. 2014 - Jun. 2014

Developed a framework for historians to add newly-found data and visualize the routes of high value cargoes during the period of the Venice Atlas.

WORK EXPERIENCE

Intel, Texas, USA

May. 2022 - Aug. 2022

Software Intern

Working on oneAPI and SYCL.

Cadence, Texas, USA

May. 2021 - Aug. 2021

Software Intern

Accelerated the execution time of the buffer insertion implementation by 16%.

The Arctic University of Norway, Tromsø, Norway

Feb. 2019 - Dec. 2019

Doctoral Researcher

Implemented an energy efficient framework which is used to classify Arctic wild animals in-situ for the purpose of investigating in the impact of global warming over animals living in Arctic tundra.

Khalifa University, Abu Dhabi, United Arab Emirates

Jan. 2018 - Nov. 2018

Assistance Researcher

Automated and parallelized python-meep for materials modeling at the nanoscale, process measured data of self-grown graphen, develop data visualization frameworks and apply autoencoder technique to speed up simulations.

CERN, Genève, Switzerland

Mar. 2015 - Aug. 2015

Software Developer

Developed softwares to discover devices on the network, perform consistency checking with the installation databases, and monitor the status of the data acquisition network.

National Chiao Tung University, Hsinchu, Taiwan

Jan. 2009 - Jun. 2013

Research Assistant

- Constructed a data center for storing brain images in a distant health care project.
- Designed an load balancing algorithm to streaming videos.
- Constructed wireless sensor networks to monitor structural health, such as bridges.
- Coordinated and built surveillance systems in a campus and gadgets to guide blind students.
- Constructed a multimedia streaming system and deployed it in a vision-based intelligent environment.

SKILLS

Languages

Mandarin (native), English (fluent)

Computer Languages

C/C++, Python, Javascript, HTML, SQL

Unit Test

doctest

Profiler

gprof, perf

Programming Model

Taskflow, SYCL, oneTBB (pipeline), CUDA

Semester Project Report

- Cheng-Hsiang Chiu, "Bootstrapping recommender systems with the crowdsourcing II," École Polytechnique Fédérale de Lausanne, 2015.
- Cheng-Hsiang Chiu, "Bootstrapping recommender systems with the crowdsourcing," École Polytechnique Fédérale de Lausanne, 2014.

Master Thesis

- Cheng-Hsiang Chiu, "Protection against Data Profiling by Adversarial Cloud Applications," Master Thesis, Department of Computer Science, École Polytechnique Fédérale de Lausanne, 2016.
- Cheng-Hsiang Chiu, "Process Control in Streaming Server," Master Thesis, Department of Communication Engineering, National Chiao Tung University, 2007.

Journal Papers

- Yu-Cheng Chiou, Tuza Adeyemi Olukan, Mariam Ali Almahri, Harry Apostoleris, Cheng-Hsiang Chiu, Chia-Yun Lai, Jin-You Lu, Sergio Santos, Ibraheem Almansouri, and Matteo Chiesa, "Direct Measurement of the Magnitude of van der Waals interaction of Single and Multilayer Graphene," *ACS LANGMUIR*, 2018.

Conference Papers

- Cheng-Hsiang Chiu and Tsung-Wei Huang, "Composing Pipeline Parallelism using Taskflow Control Graph," *ACM High-Performance Parallel and Distributed Computing (HPDC)*, 2022.
- Cheng-Hsiang Chiu and Tsung-Wei Huang, "Efficient Timing Propagation with Simultaneous Structural and Pipeline Parallelisms," *ACM/IEEE Design Automation Conference (DAC)*, 2022.
- Cheng-Hsiang Chiu, Tsung-Wei Huang, Zizheng Guo, and Yibo Lin, "Pipeflow: An Efficient Task-Parallel Pipeline Programming Framework using Modern C++," <https://arxiv.org/abs/2202.00717>.
- Cheng-Hsiang Chiu, Dian-Lun Lin, and Tsung-Wei Huang, "An Experimental Study of SYCL Task Graph Parallelism for Large-Scale Machine Learning Workloads," *International European Conference on Parallel and Distributed Computing (Euro-Par)*, 2021.
- Der-Cherng Liaw, Cheng-Hsiang Chiu, Chia-Wei Yeh, Chia-Ming Chang, and Hsiao-Jen Hsieh, "A Server Load Balancing Design for Peer-To-Peer Network," *International Conference on Computers, Communications, Control and Automation*, 2011.
- Der-Cherng Liaw, Chia-Wei Yeh, Cheng-Hsiang Chiu, Chia-Ming Chang, and Hsiao-Jen Hsieh, "A Load Balancing Scheme for Web Server Design," *International Conference on System Science and Engineering*, 2011.
- Der-Cherng Liaw, Yi-Hung Hsieh, Jing-Hong Lai, and Cheng-Hsiang Chiu, "A Network Topology Design for Structural Health Monitoring," *Asian Control Conference*, 2011.
- Der-Cherng Liaw, Jing-Hong Lai, Cheng-Hsiang Chiu, and Jia-Hong Liao, "A Wireless Sensor Network Platform for Indoor Surveillance System," *International Conference on System Science and Engineering*, 2011.
- Cheng-Hsiang Chiu, Pang-Chan Hung, Jen-Hui Chuang, and Shing-Lu Huang, "Object Tracking under Sensing Lighting Equipments," *IEEE Conference on Industrial Electronics and Applications*, 2010.
- Yi-Yuan Chen, Yuan-Yao Tu, Cheng-Hsiang Chiu, and Yong-Sheng Chen, "An Embedded System for Vehicle Surrounding Monitoring," *IEEE Conference on Power Electronics and Intelligent Transportation System*, 2009.