

Ching (Jason) Chang

Crafting AI for the 22nd century

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Education

National Yang Ming Chiao Tung University

Hsinchu, Taiwan

Doctor of Philosophy, Computer Science (Advisor: Prof. Wen-Chih Peng)

Sep. 2021 – Expected Mar. 2026

- Research Topics: Time-Series Analysis, Large Foundation Models, Causal Discovery, Representation Learning
- GPA: 4.25/4.3, 3 publications, 4 scholarships, 1 competition award, 3 academic services

University of California, Los Angeles

Los Angeles, USA

Visiting Researcher in Scalable Analytics Institute (Advisor: Prof. Wei Wang)

Expected Mar. 2025 – Expected Mar. 2026

- Research Topics: Time-Series Analysis, Large Foundation Models, Natural Language Processing

National Chiao Tung University

Hsinchu, Taiwan

Master of Science, Computer Science and Engineering (Advisor: Prof. Wen-Chih Peng)

Sep. 2016 – Sep. 2018

- Research Topics: Time-Series Analysis, Motif Discovery, Root Cause Analysis
- GPA: 3.56/4.0, 1 publication, 2 industry-academia collaboration projects

National Chiao Tung University

Hsinchu, Taiwan

Bachelor of Science, Electrical and Computer Engineering

Sep. 2012 – Jun. 2016

- Research Topics: Game Script Automation
- GPA: 3.06/4.0, 2 projects

Work Experience

Research Scientist | GoEdge.ai

Hsinchu, Taiwan

Time-Series Analysis · Large Foundation Models · Causal Discovery

Jan. 2021 – Present

- Designed a multivariate time-series analysis platform for manufacturing data
- Developed a forecasting module using large language models to enhance predictive accuracy
- Created a segmentation module with prompting to leverage label information during inference

Machine Learning Engineer | TSMC

Hsinchu, Taiwan

Root Cause Analysis

Jul. 2019 – Dec. 2020

- Used ensemble models to analyze sensor data of wafers and found root causes to increase yield of manufacturing wafers
- Developed the core kernel function of defect mining platform
- Integrated and processed different data sources and designed analysis algorithm for heterogeneous data

Machine Learning Engineer (Intern) | EPISTAR

Hsinchu, Taiwan

Root Cause Analysis

Apr. 2018 – Sep. 2018

- Analyzed machine sensor data, incorporating the diversity of states/stages in the manufacturing process.
- Evaluated correlations at various time-lags separately to enhance understanding of machine sensor data relationships.

Software Learning Engineer (Intern) | MediaTek

Hsinchu, Taiwan

Multimedia Firmware

Jul. 2016 – Aug. 2016

- Maintained camera firmware: updated, debugged, and added tests to enhance reliability and code coverage.

Selected Projects

Neural Granger Causal Discovery for Root Cause Analysis in Microservices [paper] [code]

Sep. 2022 – Sep. 2023

- Used a self-supervised framework with contrastive learning for root cause analysis in microservices
- Used Granger causal discovery to construct causal graph between multivariate time-series
- Applied GrootRank to identify root causes of trigger points

Detecting Machine Causal Anomalies [paper] [code]

Apr. 2018 – Sep. 2018

- Used machine learning techniques to find the cause of anomalies
- Created profile (correlation network) for machine and then determined whether there are causal
- Used parallelization to reduce computing time

PM2.5 Monitoring System [code]

Oct. 2016 – Dec. 2017

- Created an interactive website that can self-monitor PM2.5 sensors in real time
- Displayed the basic readings of each sensor and used color coding to display the indicator level
- Created profiles (average, extremum, motif) for each sensor to perform subsequent analysis more easily (e.g., path detection and change point detection)

Earning Currency in League of Legends [code]

Sep. 2015 – Feb. 2017

- Implemented the script to earn game currency by automatically playing against bots
- Automated all operations within the game (including pairing systems, determining the position of enemies and towers, returning to the base when blood volume is too low, etc.)
- Used locks to avoid having multiple accounts entering the same game at the same time
- Automatically modified MAC address

Rotating Runestones for Tower of Saviors [code]

Sep. 2014 – Jan. 2015

- Used breadth-first search to plan best rotation path
- Supported runestones to rotate diagonally, and could set the rotation time, minimum number of combos, maximum number of steps
- Used linked lists to store rotation records of runestones

Publications

Ching Chang, Wei-Yao Wang, Wen-Chih Peng, Tien-Fu Chen, "LLM4TS: Aligning Pre-Trained LLMs as Data-Efficient Time-Series Forecasters", under review [preprint].

Ching Chang, Chiao-Tung Chan, Wei-Yao Wang, Wen-Chih Peng, Tien-Fu Chen, "TimeDRL: Disentangled Representation Learning for Multivariate Time-Series", ICDE 2024 [paper].

Zheng-Ming Lin, **Ching Chang**, Wei-Yao Wang, Kuang-Da Wang, Wen-Chih Peng, "Root Cause Analysis In Microservice Using Neural Granger Causal Discovery", AAAI 2024 [paper].

Ching Chang, Wen-Chih Peng, "Detecting and Ranking Causal Anomalies in End-to-End Complex System" [preprint].

Competitions

Feb. 2023 **4th Place in License Plate Recognition and Parking Management**, TSMC IT CareerHack 2023, [website], [code] Taipei, Taiwan

Awards

May. 2024 **International Conference Scholarship**, National Science and Technology Council Taipei, Taiwan

Feb. 2024 **AAAI Student Scholarship**, 38th AAAI Conference on Artificial Intelligence Vancouver, Canada

Feb. 2022 **Xin Miao Key Technology Doctoral Scholarship**, Xin Miao Education Foundation Taipei, Taiwan

Sep. 2021 **Industry Academia Cooperative PhD Project Scholarship**, Ministry of Education Republic of China (Taiwan) Taipei, Taiwan

Academic Services

Reviewer KDD'24

External Reviewer ICDE'24

Student Volunteer AAAI'24

Technical Skills

Programming Languages (in order of familiarity):

Python (PyTorch, TensorFlow), C++, Java

Language:

English: C1 (IELTS: 7.5, TOEIC: 875)

Mandarin Chinese: Native