

CHIA-CHENG (JERRY) YEN

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RESEARCH INTERESTS

- Deep Reinforcement Learning (DRL), Traffic Signal Control (TSC), Cyber-security, WSNs

EDUCATION

PhD Candidate in Computer Science

Expected 06/2022

University of California, Davis

Current GPA: 3.9/4.0

Master of Science in Computer Science

07/2014

National Tsing Hua University, Hsinchu, Taiwan

Overall GPA: 4.27/4.3 (50% Academic Average and 50% Thesis)

Bachelor of Science in Computer Science and Information Engineering

06/2012

Fu Jen Catholic University, Taipei, Taiwan

Overall GPA: 3.96/4.0 (Major GPA: 4.0/4.0)

Best Ranked 1st, Average Ranked 2nd in class

RESEARCH EXPERIENCES

Network and Architecture Lab (Advisor: Professor Dipak Ghosal)

09/2017-present

University of California, Davis

- AI enabled fuel-aware optimization for multi-model autonomous vehicles
Train a platooning model by DRL for reducing fuel consumption
- Cyber-attacks to delay packets in 5G Networks
Analyze the impact of ghost bearers on normal UEs
- Security vulnerability on backpressure-based TSC schemes [1][5]
Analyze the impact of misinformation on modern TSC systems
Avoid misinformation attacks using the proposed algorithms
- DRL-based TSC for multi-intersection control [4]
Increase learning ability of DRL-agents with learnable image features
Enhance performance of DRL-agents using a novel reward function
Achieve 3x speed-up during training using the proposed 2DSARSA
- Two-level TSC architecture for multi-intersection control
Propose a traffic light control system with a higher layer and lower layer
DRL model at the higher layer controls TSC controllers by weights based on flow dynamics

Visual Communication Lab (Advisor: Professor Jia-Shung Wang)

09/2012-07/2014

National Tsing Hua University, Hsinchu, Taiwan

- Delivery of videos distributed over ultra-dense networks (UDN) [2][6][8]
Deployed distributed storage using LT codes for popular videos
Evaluated distributed delivery for popular videos over UDN
- Interpolation-based clustering algorithm for gene expression data [3]
Proposed an unsupervised framework for classifying time-series data
Achieved higher classification accuracy than other methods
- Data compression in WSNs [7]
Compressed data based on available transmission rate without high distortion
Achieved better performance in compression for heterogeneous sensor data

PUBLICATIONS

Journal Papers

- [1] Chia-Cheng Yen, Dipak Ghosal, Michael Zhang, and Chen-Nee Chuah, "Security Vulnerabilities and Protection Algorithms for Backpressure-Based Traffic Signal Control at An Isolated Intersection," *IEEE Transactions on Intelligent Transportation Systems*, 2021.
- [2] Yu-Tai Lin, Chia-Cheng Yen, and Jia-Shung Wang, "Video Popularity Prediction: An Autoencoder Approach with Clustering," *IEEE Access*, vol. 8, pp. 129285-129299, 2020.
- [3] Tai-Yu Chiu, Ting-Chieh Hsu, Chia-Cheng Yen, and Jia-Shung Wang, "Interpolation based consensus clustering for gene expression time series," *BMC Bioinformatics*, 2015;16:117.

Conference Papers

- [4] **Chia-Cheng Yen**, Dipak Ghosal, Michael Zhang, and Chen-Nee Chuah, "A Deep On-Policy Learning Agent for Traffic Signal Control of Multiple Intersections," *IEEE 23rd International Conference on Intelligent Transportation Systems*, Sep. 2020.
Nominated for the best student paper award.
- [5] **Chia-Cheng Yen**, Dipak Ghosal, Michael Zhang, Chen-Nee Chuah, and Hao Chen, "Falsified Data Attack on Backpressure-based Traffic Signal Control Algorithms," *IEEE Vehicular Networking Conference (VNC)*, Dec. 2018.
- [6] Yi-Ting Chen, **Chia-Cheng Yen**, Yu-Tai Lin, and Jia-Shung Wang, "Cooperative Caching Plan of Popular Videos for Mobile Users by Grouping Preferences," *IEEE 16th International Conference on Pervasive Intelligence and Computing (PiCom)*, Aug. 2018.
- [7] Chu-Ming Wang, **Chia-Cheng Yen**, Wan-Yane Yang, and Jia-Shung Wang, "Tree-Structure Linear Approximation for Data Compression over WSNs," *IEEE 12th International Conference on Distributed Computing in Sensor Systems (DCOSS)*, May 2016.
- [8] **Chia-Cheng Yen** and Jia-Shung Wang, "Distributed Delivery of Popular Videos over Ultra-Dense Networks," *IEEE Symposium on Computers and Communication (ISCC)*, Jul. 2015.
- [9] Hsien-Tzu Chiu, **Chia-Cheng Yen**, and Jia-Shung Wang, "A Framework of Temporal Data Retrieval for Unreliable WSNs Using Distributed Fountain Codes," *IEEE 9th International Conference on Mobile Ad-hoc and Sensor Networks (MSN)*, Dec. 2013.

WORK & TEACHING EXPERIENCES

Data Scientist Intern, Global Artificial Intelligence Accelerator (GAIA) Ericsson, Santa Clara, CA, USA <ul style="list-style-type: none">Deal with data analysis and machine learningDesign and improve models for RCA	06/2021-09/2021
Teaching Assistant, Department of Computer Science University of California, Davis, CA, USA <ul style="list-style-type: none">ECS 10, ECS 36B, ECS 50, ECS 122A, ECS 154A, ECS 252Hold office hours, lead discussions, and grade assignments for undergraduate students	03/2018-present
Graduate Student Researcher, Network and Architecture Lab University of California, Davis, CA, USA <ul style="list-style-type: none">Research topics including Reinforcement Learning, Traffic Signal Control, and Security	09/2017-present
Research Assistant, Advanced Network Technologies and Services Lab Institute of Information Science, Academia Sinica, Taiwan <ul style="list-style-type: none">Research topics including Wireless Networks and Machine Learning	04/2017-08/2017
Research Assistant, Visual Communication Lab National Tsing Hua University, Hsinchu, Taiwan <ul style="list-style-type: none">Research topics including Networks, Clustering, Stereo Matching, and Data Compression	09/2012-07/2014

AWARDS

NSF Travel Grant Award, 2018 VNC	12/2018
Academic Excellence Award, FJU	09/2008-06/2012
Second Best Project Award, FJU	11/2011

SELECTED TERM PROJECTS

- Online Ticketing System, Department of Computer Science and Information Engineering, FJCU**
 - Utilized Oracle to build up an online ticketing system for railway
 - Supported multiple users for simultaneous booking
- Multimedia Sharing System, Department of Computer Science and Information Engineering, FJCU**
 - Shared movies or music with friends through MSN
 - Utilized peer-to-peer communication and adjusted transmission rate dynamically
 - Applied distributed streaming mechanism and circular buffer technique
- Stereo Matching, Visual Communication Lab**
 - Implemented Horizontal and Vertical Consideration on Cost Initialization as well as Domain Transform on Cost Aggregation
 - Improved disparity estimation method

PROGRAMMING LANGUAGES

- Proficient with:** C/C++, Python, Java, Matlab
- Familiar with:** HTML, Assembly