

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.
- [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*, 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	06/2021-09/2021
<ul style="list-style-type: none">Deal with data analysis and machine learning	
Teaching Assistant, Department of Computer Science University of California, Davis, CA, USA	03/2018-present
<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	
Graduate Student Researcher, Network and Architecture Lab University of California, Davis, CA, USA	09/2017-present
<ul style="list-style-type: none">Research topics including Reinforcement Learning, Traffic Signal Control, and Security	
Research Assistant, Advanced Network Technologies and Services Lab Institute of Information Science, Academia Sinica, Taiwan	04/2017-08/2017
<ul style="list-style-type: none">Research topics including Wireless Networks and Machine Learning	
Research Assistant, Visual Communication Lab National Tsing Hua University, Hsinchu, Taiwan	09/2012-07/2014
<ul style="list-style-type: none">Research topics including Networks, Clustering, Stereo Matching, and Data Compression	

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 <ul style="list-style-type: none">Utilized Oracle to build up an online ticketing system for railwaySupported multiple users for simultaneous booking
Multimedia Sharing System, Department of Computer Science and Information Engineering, FJCU <ul style="list-style-type: none">Shared movies or music with friends through MSNUtilized peer-to-peer communication and adjusted transmission rate dynamicallyApplied distributed streaming mechanism and circular buffer technique
Stereo Matching, Visual Communication Lab <ul style="list-style-type: none">Implemented Horizontal and Vertical Consideration on Cost Initialization as well as Domain Transform on Cost AggregationImproved disparity estimation method

PROGRAMMING LANGUAGES

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