

CHIA-CHENG (JERRY) YEN

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RESEARCH INTERESTS

- Deep Reinforcement Learning, Traffic Signal Control, Cyber-security, WSNs

EDUCATION

PhD Candidate in Computer Science

University of California, Davis

Current GPA: 3.9/4.0

Expected 06/2021

Master of Science in Computer Science

National Tsing Hua University, Hsinchu, Taiwan

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

07/2014

Bachelor of Science in Computer Science and Information Engineering

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

06/2012

RESEARCH EXPERIENCES

Network and Architecture Lab (Advisor: Professor Dipak Ghosal)

University of California, Davis

09/2017-present

- Security vulnerability on backpressure-based TSC schemes [1][6]
Discover potential threats to modern TSC systems
Avoid 100% of security attacks using the proposed algorithms
- Deep reinforcement learning (DRL) for multi-intersection control [5]
Increase learning ability of DRL-agents with learnable image features
Enhance performance of DRL-agents using a proposed reward function
Achieve 3x speed-up during training using the proposed 2DSARSA

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

National Tsing Hua University, Hsinchu, Taiwan

09/2012-07/2014

- Delivery of videos distributed over ultra-dense networks (UDN) [7][9]
Deployed distributed storage using LT codes for popular videos
Evaluated distributed delivery for hot videos over UDN
- Interpolation-based clustering algorithm for gene expression data [4]
Proposed an unsupervised framework for classifying time-series data
Achieved higher classification accuracy than other methods
- Data compression in WSNs [2][8]
Proposed tree-structured linear approximation for compression data
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," *IEEE Transactions on Intelligent Transportation Systems*, 2019, **Under Review**.
- [2] Chia-Cheng Yen, Chu-Ming Wang, Wan-Yane Yang, and Jia-Shung Wang, "Homogeneous and Heterogeneous IoT Data Compression using Tree-Structured Linear Approximation Approach," *ACM Transaction on Sensor Network*, 2019, **Under Review**.
- [3] Yu-Tai Lin, Chia-Cheng Yen, and Jia-Shung Wang, "Video Popularity Prediction: An Autoencoder Approach with Clustering," *IEEE Access*, 2020, **Accepted**.
- [4] 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

- [5] Chia-Cheng Yen, Dipak Ghosal, Michael Zhang, and Chen-Nee Chuah, "A Deep On-policy Learning Traffic Signal Control Using Traffic Flow Maps for Multiple Intersections," *IEEE 23rd International Conference on Intelligent Transportation Systems*, Sep. 2020.
- [6] 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.

- [7] Yi-Ting Chen, **Chia-Cheng Yen**, Yu-Tai Lin, and Jia-Shung Wang, "Cooperative Caching Plan of Popular Videos for Mobile Users by Grouping Preference," *IEEE 16th International Conference on Pervasive Intelligence and Computing (PiCom)*, Aug. 2018.
- [8] 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.
- [9] **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.
- [10] 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

Teaching Assistant, Department of Computer Science University of California, Davis, CA, USA	03/2018-present
<ul style="list-style-type: none"> ECS 10, ECS 50, ECS 122A, ECS 154A Hold 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 railway Supported 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 MSN Utilized peer-to-peer communication and adjusted transmission rate dynamically Applied 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 Aggregation Improved disparity estimation method

PROGRAMMING LANGUAGES

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