Chang-Wei Yueh

Taipei, Taiwan

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RESEARCH INTERESTS

Theory of **machine learning, control, and communication systems**,
especially for online decision-making and optimization

EDUCATION

National Taiwan University (NTU)   **09 2019 - 01 2024 (expected)**
B.S. in Electrical Engineering and Mathematics   *Taipei, Taiwan*
GPA - **4.0/4.3 (3.85/4.0)**

Selected Corsework:

- **EE related:** Data Structures, Algorithms, Signals and Systems, Communication System Lab, Control Systems, Machine Learning

- **Math related:** Intro. to Mathematical Analysis, Intro. to Computational Mathematics, Intro. to Ordinary/Partial Differential Equations, Linear Algebra, Intro. to Probability Theory, Convex Optimization, Statistics Theory, Discrete Mathematics

RESEARCH EXPERIENCES

Dept. of EE, National Taiwan University   **04 2022 - 10 2022**
Undergraduate Researcher (advisor: Prof. Pei-Yuan Wu)   *Taipei, Taiwan*
Topic: Sample complexity of kernel-based Q-learning

- Collaborated with researchers in MediaTek Research
- Proposed a new sample process with the access of a generative model
- Derived a near-optimal sample complexity upper bound with possibly infinite state-action space

Institute of Information Science, Academia Sinica   **01 2023 - Present**
Research Assistant (advisor: Dr. Wen-Liang Hwang)   *Taipei, Taiwan*
Topic: Directional proximal point method for convex optimization

- Proposed a novel efficient proximal-based method for non-smooth convex optimization
- Reduce the original minimization at each iteration to an one-dimensional search problem
- Speed up 30% compared to proximal point method while maintaining the same convergence error

Dept. of ESE, Washington University in St. Louis   **06 2023 - 08 2023**
Summer Student Intern (advisor: Prof. Jr-Shin Li)   *St. Louis, MO*
Topic: Reinforcement learning with ensemble control problems

- Adapted Q-learning algorithm to fit in control systems
- Tested the possibility of solving traditional control problems by data-driven approaches
- Achieved a control by a model-free procedure

PUBLICATIONS

Conference Papers

[1] Sing-Yuan Yeh, Fu-Chieh Chang, **Chang-Wei Yueh**, Pei-Yuan Wu, Alberto Bernacchia, and Sattar Vakili. Sample complexity of kernel-based q-learning. In Proceedings of The 26th International Conference on Artificial Intelligence and Statistics. PMLR, 2023

Preprints

[1] Wen-Liang Hwang and **Chang-Wei Yueh**. Directional proximal point method for convex optimization, 2023

PROJECTS

Prediction & Optimization   08 2021 - 12 2021

- Developed autoregression models for prediction and implement optimization methods such as gradient descent and Newton method

Cold-Start Problem for Recommendation Systems   01 2023 - 05 2023

- Applied kernel-based multi-armed bandit algorithms to recommendation systems to improve cold-start performance

TECHNICAL SKILLS

Programming Languages: Python, C, C++, MATLAB

Toolkits: NumPy, Pandas, Scikit-Learn, PyTorch, Git, CVX

LEADERSHIP/EXTRACURRICULAR

Director, NTU Blue Sound Harmonica Club   07 2020 - 06 2021

Director of Marketing Department, NTUEE Student Association   07 2021 - 06 2022