

Wei-Cheng Lee

weicheng.frank.lee@gmail.com · website · OpenReview
Ph.D. student in Computer Science, RL / optimization theory

RESEARCH INTERESTS

I develop practical optimization algorithms with strong theoretical guarantees, with a focus on online learning, bandits, and reinforcement learning. I am also interested in statistical learning theory, fundamental limits in stochastic optimization, and AI for math.

EDUCATION

King Abdullah University of Science and Technology (KAUST) Dec. 2025 – Present
Ph.D. Student in Computer Science Thuwal, Saudi Arabia

- Advisor: Francesco Orabona.
- Research focus: practical optimization algorithms with theoretical guarantees, online learning, bandits, reinforcement learning, statistical learning theory, and fundamental limits in stochastic optimization.

King Abdullah University of Science and Technology (KAUST) Aug. 2024 – Dec. 2025
M.Sc. in Computer Science Thuwal, Saudi Arabia

- Continued into the KAUST Computer Science Ph.D. program.
- Selected coursework: online learning, high-performance computing, numerical methods for stochastic differential equations, computing systems and concurrency.

National Taiwan University Sep. 2012 – Jan. 2018
B.Sc. in Computer Science, Minor in Mathematics Taipei, Taiwan

- Selected coursework: algorithm design and analysis, real analysis, abstract algebra, linear algebra, probability theory, numerical methods.

PUBLICATIONS

A Single Stepsize Suffices for Unprojected Linear TD(0): Simultaneous Robust and Fast Rates via Polyak–Ruppert Averaging COLT 2026

Wei-Cheng Lee, Francesco Orabona.

New Lower Bounds for Stochastic Non-Convex Optimization through Divergence Decomposition COLT 2025

El Mehdi Saad, Wei-Cheng Lee, Francesco Orabona.

MixLasso: Generalized Mixed Regression via Convex Atomic-Norm Regularization NeurIPS 2018

Ian E.H. Yen, Wei-Cheng Lee, Kai Zhong, Sung-En Chang, Pradeep Ravikumar, Shou-De Lin.

Latent Feature Lasso ICML 2017

Ian E.H. Yen, Wei-Cheng Lee, Sung-En Chang, Arun S. Suggala, Shou-De Lin, Pradeep Ravikumar.

A Best-of-Both-Worlds Proof for Tsallis-INF without Fenchel Conjugates arXiv

Wei-Cheng Lee, Francesco Orabona.

A Robust $\tilde{O}(1/\sqrt{T})$ Rate for Unprojected TD Learning with Linear Function Approximation arXiv

Wei-Cheng Lee, Francesco Orabona.

RESEARCH EXPERIENCE

Graduate Research, King Abdullah University of Science and Technology (KAUST) Aug. 2024 – Present
M.Sc./Ph.D. Student in Computer Science Thuwal, Saudi Arabia

- Proved finite-time high-probability guarantees for unprojected linear TD(0) under Markovian sampling, showing that a single stepsize schedule yields bounded iterates and both robust curvature-free and fast curvature-dependent rates via Polyak–Ruppert averaging.
- Established query-complexity lower bounds for first-order stochastic non-convex optimization under structural conditions such as quasar-convexity, quadratic growth, and restricted secant inequalities, using divergence decomposition to reduce optimization to hard function-identification problems.
- Developed a simplified primal analysis for Tsallis-INF in multi-armed bandits that proves best-of-both-worlds guarantees via OCO tools instead of Fenchel-conjugate machinery.

Institute of Information Science, Academia Sinica Feb. 2022 – Mar. 2024
Research Assistant Taipei, Taiwan

- Proved regret guarantees for online reinforcement learning in infinite-horizon average-reward MDPs with full-information feedback, developing a new entropic-linear-program analysis for Hedge-style behavior across stochastic and adversarial regimes.

Graduate Research, National Taiwan University Feb. 2018 – Jun. 2021
M.Sc. Student Taipei, Taiwan

- Derived algorithms for log-loss function classes, with emphasis on online portfolio selection.

ENGINEERING EXPERIENCE

Saudi Aramco, Research & Development Center

Jun. 2025 – Jul. 2025

Graduate Intern

Dhahran, Saudi Arabia

- Prototyped a Pyomo-based solver for gas-oil separation network optimization, formulating the problem as a mixed-integer nonlinear program and integrating JAX-accelerated derivative computations with finite-difference validation.

Graduate Institute of Biomedical Electronics and Bioinformatics, NTU

Aug. 2021 – Jan. 2022

Research Assistant

Taipei, Taiwan

- Contributed to a collaborative NTU-Far Eastern Memorial Hospital project on ICD-10 coding support, applying BERT-based language models to classify clinical case descriptions for Taiwan National Health Insurance workflows.

TEACHING

Reinforcement Learning, KAUST

Spring 2026, Spring 2025

Teaching Assistant

Optimization Algorithms, National Taiwan University

Fall 2019, Fall 2018

Teaching Assistant

Probability, National Taiwan University

Spring 2018, Spring 2015

Teaching Assistant

HONORS

Presidential Award, National Taiwan University

Spring 2014, Fall 2012

Awarded to the top 5% of students each semester

TECHNICAL STACK

Programming: Python, JAX, PyTorch, C/C++, MATLAB, Julia, Go, JavaScript.