William Chang

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◇ Most updated version of my resume here [PDF]

Education

◇ **University of California, Los Angeles**   2023- 2027
PhD, Applied Mathematics

◇ **University of Southern California**   2018 - 2022
Bachelors of Arts, Mathematics

Machine Learning Papers

◇ Please see most updated paper list on my Personal Website

◇ **1. Multiplayer Lipschitz bandits with information asymmetry**
William Chang, Terry Lu
Under Preparation

◇ **2. LinUCB in Multiplayer Information Asymmetric Contextual Bandits** [PDF]
William Chang, Terry Lu
Under Preparation

◇ **3. Curvature on Graphs**
Fariba Ariaei, **William Chang**

◇ **4. Mixing on Generalized Associahedra**
William Chang, Colin Defant, Daniel Frishberg
Under Review at International Symposium on Algorithms and Computation, 2023

◇ **5. No-Regret Online Reinforcement Learning with Adversarial Losses and Transitions** [PDF]
Tiancheng Jin, Junyan Liu, Chloé Rouyer, **William Chang** Chen-Yu Wei, Haipeng Luo
Neural Information Processing Systems, 2023

◇ **6. Finite-Time Regret Bound of Multi-Agent Thompson Sampling**
Tianyuan Jin, Haolun Hsu, **William Chang**, Pan Xu
Association for the Advancement of Artificial Intelligence, 2023

◇ **7. Understanding Domain Adaptation in the Lens of Causality** [PDF]
William Chang, Haohan Wang
Under review at Causal Learning and Reasoning, 2024

◇ **8. Optimal Cooperative Multiplayer Learning Bandits with Noisy Rewards** [PDF]
William Chang, Terry Lu
Under Review at IEEE Conference on Decision and Control, 2023

◇ **9. Mixup to the Random Extreme and Its Performances in Robust Image Classification** [PDF]
Jackie Chen, Qianjing Chen, **William Chang**, Haohan Wang
Transactions on Machine Learning Research, 2023

◇ **10. Bode Integral Limitation For Irrational Systems** [PDF]
William Chang, Fariba Ariaei, Edmond Jonckheere
International Federation of Automatic Control, 2023

◇ **11. Approximation Capabilities of Neural Networks using Morphological Perceptrons and Generalizations** [PDF]
William Chang, Hassan Hamad, Keith Chugg
Asilomar conference on signals, systems, and computers, 2022

Machine Learning Papers (continued)

◇ **12. Online Learning for Cooperative Multi-Player Multi-Armed Bandits** [PDF]
William Chang, Mehdi Jafarnia-Jahromi, Rahul Jain
IEEE Conference on Decision and Control, 2022

Math Papers

◇ Please see most updated paper list on my Personal Website

◇ **13. Nearly Tight Expansion Bounds on Generalized Associahedra**
William Chang, Colin Defant, Daniel Frishberg
Under Preparation

◇ **14. Closure of Certain Matrix Varieties and Applications** [PDF]
William Chang, Robert Guralnick
European Journal of Mathematics

◇ **15. Finite-time self-similar rupture in a generalized elastohydrodynamic lubrication model** [PDF]
William Chang, Hangjie Ji
Under Review at Applied Mathematics Letters, 2023

◇ **16. Stochastic Couplings and Bijections from the Symmetric Group to itself** [PDF]
William Chang
Mathematical Journal of Okayama University, 2023

◇ **17. Compatibility in Ozsvath-Szabo's bordered HFK via higher representations, 2023** [PDF]
William Chang, Andrew Manion
The Pacific Journal of Mathematics, 2023

Awards/Honors/Fellowships

◇ **NSF EAGER project REU Fellowship** October 2021 - March 2022   **Professor Mentor:** Rahul Jain
Working on generalizations of the Multi-agent bandits with information asymmetry.

◇ **USC CURVE Fellowship** August 2021 - May 2022   **Professor Mentor:** Assad Oberai
Working with the stability of Physics Informed Neural Networks to solve the weak formulation problem of a partial differential equation.

◇ **USC Provost Undergraduate Research Fellowship** August 2021 - May 2022   **Professor Mentor:** Robert Guralnick
Analyzing the similarity classes of the Zariski closure of the set of diagonalizable matrices with the dimension of the eigenspaces corresponding to a partition.

◇ **USC CURVE Fellowship** January 2021 - August 2021   **Professor Mentor:** Rahul Jain
Developed decentralized online learning for the Multiplayer Multi-Arm Stochastic Bandit Problem.

◇ **USC Provost Undergraduate Research Fellowship** August 2020 - May 2021   **Professor Mentor:** Greta Panova
Writing a survey about the e-positivity conjecture of chromatic polynomials using algebraic combinatorics.

◇ **2020 William Lowell Putnam Mathematics competition** top 500

◇ **William Lowell Putnam Mathematics competition** USC representative 2018 – 2021

◇ **American Invitational Mathematics Examination** 3-time qualifier 2016–2018

Employment History

◇ **Northrop Grumman Internship** May 2022 - August 2022
I worked in the Communications Systems and Mission Payload department of their Space Systems Engineering directorate. Worked with analysis of slant ranges, channel losses, and sitpad value combinations.

◇ **Baruch College Discrete Mathematics REU** Jun 2021 - August 2021   **Professor Mentor:** Fan Wei
Derived asymptotic bounds for the number of cliques and maximal cliques in K_t-minor free graphs.

◇ **UCLA Applied Mathematics REU** June 2020 - August 2021   **Professor Mentor:** Hangjie Ji
Used partial differential equations to study the pleural fluid thickness in the lungs governed by the thin film equations.

Employment History (continued)

◇ **USC Math Center Tutor** September 2019 - December 2020
Helped students in Linear Algebra, Calculus, Business Mathematics, Probability Theory, Number Theory, Analysis.

◇ **Joint Educational Project** January 2019 - March 2019
Taught 4th grade mathematics for 8 weeks at Saint Francis Elementary School, Los Angeles.

Talks and Conferences

◇ **Conferences Reviewed:** [1]

2024 ICLR, NeurIPS

2023 IFAC, CDC, ICLR, NeurIPS

◇ **2022 Asilomar conference on signals, systems, and computers** [Website]
Approximation Capabilities of Neural Networks using Morphological Perceptions and Generalizations

◇ **2022 IEEE Conference on Decision and Control** [Website]
Online learning for Cooperative Multi-Player Multi-Armed Bandits

◇ **2022 AMS-PME Joint Mathematics Meeting Undergraduate Poster Session** [Website]
Asymptotical bounds on maximal cliques in K_t-minor free graphs

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[1] IFAC = International Federation in Automatic Control
CDC = IEEE Conference on Decision and Control
ICLR = International Conference in Learning Representations
NeurIPS = Neural Information Processing systems