Alan Chung

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EDUCATION

Harvard University   Sep 2022 - Present
PhD Candidate, Department of Statistics
Fields of Research: Probability Theory, Machine Learning Theory

Princeton University, BA Mathematics   Sep 2018 - May 2022
Graduated with High Honors: Department of Mathematics. GPA: 3.96
Thesis: Weak Solutions of the Fokker-Planck Equation Through Particle Systems
   Interacting Through Their Ranks

PUBLICATIONS

When is Partially Observable Reinforcement Learning Not Scary?   2022
*Qinghua Liu, **Alan Chung**, Csaba Szepesvári, Chi Jin.*
Conference on Learning Theory (COLT). arxiv.org/abs/2204.08967

RESEARCH EXPERIENCE

Theory of Graph Neural Networks in the Graphon Model   2022 - Present
with Professor Morgane Austern of Harvard University
- We analyze theoretically how the graph embeddings produced by Graph Neural Networks (GNNs) perform in downstream edge prediction tasks, in the Graphon random graph model. We consider popular empirical GNNs constructions, propose improvements on these methods, and provide theoretical gaurantees for learning rates.

Weak Solutions of the Fokker-Planck Equation Through Particle Systems   2021 - 2022
with Professor Mykhaylo Shkolnikov of Princeton University
- We studied the limiting behavior of the empirical measure of a particle system in which the particles interact through their ranks. We showed that in the limit of infinitely many particular, this empirical measure converges to the weak solution of a corresponding Fokker-Planck equation.

Learning POMDPs in the Overcomplete Setting   2020 - 2022
with Professor Chi Jin of Princeton University
- We derived an algorithm to learn Partially Observable MDPs in the overcomplete setting (i.e., when the observation space is smaller than the state space). This regime is particularly challenging because the smaller observation space limits the amount of information that one can extract by viewing one observation, and hence existing methods for learning POMDPs cannot extend to this case.

WORK EXPERIENCE

Citadel Securities, Quantitative Research Intern   Jun 2021 - Aug 2021
Investigated the relationship between the liquid/illiquid hours in the futures market.

Teaching Assistant (Princeton University)
COS324 Grader, COS302 TA

AWARDS & ACHIEVEMENTS

US Mathematics Olympiad Qualifier
US Physics Olympiad Honorable Mention
US Computing Olympiad, Gold Division

SKILLS

Programming: Java, Python, C++
Languages: English (Native), Mandrain (Proficient), Spanish (Proficient)