Hong Kiat, Tan

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Education

University of California, Los Angeles

- **Ph.D.** Candidate, Mathematics. Aug 2021 - Jun 26/Dec 26/Jun 27
- Advisor: Andrea L. Bertozzi. (GPA: 3.98/4.00)
- **Masters of Arts** in Mathematics. Aug 2021 - Jun 2022
- Relevant Coursework: Statistical Learning, Mathematical Statistics, Optimization, Numerical Analysis.

National University of Singapore

- **Bachelor of Science (Honours)** in Applied Mathematics with Highest Distinction. Aug 2017 - May 2021
- Second Major in Physics and Minor in Statistics. (GPA: 4.97/5.00)
- *Ho Family Prize* − Top graduating student in Applied Mathematics, with 28 A+'s in Math/Physics/Statistics courses.
- *Tan Siak Kew Gold Medal* − Top student in the Faculty of Science during my junior year.
- Relevant Coursework: Probability, Statistical Simulations, Regression Analysis, Mathematics of Machine Learning.

Work Experiences

Graduate Research Assistant, UCLA 2022 - Present

- Coded a continuum traffic network model from scratch in Python using object-oriented programming (OOP), incorporating data to investigate its efficiency.
- Utilized differential topology and functional analysis to analyze PDE models and relevant numerical schemes motivated by experiments in fluid dynamics.

Graduate Teaching Assistant, UCLA 2021 - Present

- Served as a TA with an average teaching feedback score of 8.6/9.0 over 9 quarters which includes the following classes:
  - Algorithms,
  - Introduction to Probability,
  - Partial Differential Equations (PDEs),
  - Ordinary Differential Equations (ODEs),
  - Math of Finance for Math/Econs,
  - Mathematical Analysis,
  - Graduate Applied PDEs,
  - Calculus of Several Variables (Honors).

Undergraduate Research Assistant, NUS 2020 - 2021

- Invented a new numerical scheme incorporating discriminating statistical techniques for quantum field theory simulations.

Undergraduate Research Assistant, UNC - Chapel Hill 2019

- Performed data analysis on astrophysical thermonuclear reaction rates using hierarchical models in Bayesian statistics.

Undergraduate Teaching Assistant, NUS 2019 - 2021

- Served as a TA for discrete structures and programming methodology in Python for 5 semesters.
- Listed on the honor list of student tutors for 2020 and 2021, with average teaching feedback score of 4.8/5.0.

Publications

- *Weak Cosmic Censorship Conjecture for the Spherically Symmetric Einstein-Maxwell-Charged Scalar Field System.*
  X. An, **H.K. Tan**. || arXiv preprint arXiv:2402.16250.
  Topics: Analysis of Partial Differential Equations (PDEs), General Relativity.
- *Regularization of Complex Langevin Method.*
  Z. Cai, Y. Kuang, **H.K. Tan**. || Physical Review D 105 (1), 014508.
  Topics: Numerical Analysis, Statistics, Quantum Mechanics.
- *Hierarchical Bayesian Thermonuclear Rate for the 7Be (n, p) 7Li Big Bang Nucleosynthesis Reaction.*
  R.S. de Souza, **H.K. Tan**, A. Coc, C. Iliadis. || The Astrophysical Journal 894 (2), 134.
  Topics: Bayesian Statistics, Astrophysics.

Technical Skills

- *Programming Languages*: Python (Proficient), R (Proficient), LaTeX (Proficient), Wolfram.
- *Languages*: English & Mandarin Chinese (Native/Bilingual), Japanese (Elementary).