Bofan Chen

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Education

Master in Mathematical Statistics Aug. 2023 - Jun. 2024
Department of Pure Mathematics and Mathematical Statistics, University of Cambridge *Cambridge, United Kingdom*

- Selected Courses: Infinite-dimensional Spectral Computations, Topics in Convex Optimisation, Numerical solution of differential equations, Modern Statistical Methods, Topics in Statistical Theory, Functional data analysis, Advanced probability, Functional Analysis, Analysis of Partial Differential Equations

Bachelor of Economics in Finance Jun. 2019 - Jun. 2023
School of Economics, Peking University *Beijing, China*

- Overall GPA: 3.79/4.00
- Selected Courses: Mathematical Analysis I/II/III (93,87,92), Functions of Real Variables (P), Linear Algebra and Geometry (88), Advanced Algebra (86), Probability and Mathematical Statistics (98), Mathematical Introduction to Machine Learning (93), Mathematical Methods in Finance (100), Data Structure and Algorithm(B) (92)

Bachelor of Engineering in Robotics Engineering (Dual Degree) Jun. 2021 - Jun. 2023
College of Engineering, Peking University *Beijing, China*

- Major GPA: 3.79/4.00
- Selected Courses: Advanced Dynamics(98), Theoretical Mechanics (P), Aerodynamic Foundation (93), Mathematics in Engineering (86), Signals and Systems (89), Swarm Intelligence (98), Robot Perception and Control (P), Analog Electronic Technology (89), Digital Circuit Technology (95), Robotics Experiments I/II/III (92.5,P,92)

Experience

Modelling Human Interaction Patterns by Temporal Networks Jun. 2022 - Present
Research Project Advised by Prof. Aming Li *Beijing, China*

- A first-authored paper *Temporal clustering coefficient uncovers the hidden pattern in temporal network* on *Physical Review E* is under review
- Proposed the temporal clustering coefficient in temporal networks to quantify the clustering phenomenon in network by considering temporality
- Found the differences of nodes' clustering properties between static networks and temporal networks
- Discovered interaction patterns in human networks by applying temporal clustering coefficient to eight human datasets

Comparison of Asset Pricing Models Dec. 2022 - May 2023
Research Project Advised by Prof. Xi Wang *Beijing, China*

- Compared different types of asset pricing models by using Bayesian statistics method
- Implemented the Markov chain Monte Carlo (MCMC) method in Python to calculate the posterior probability of each model
- Derived the analytical solution of the posterior probability of each model for Jeffery prior
- Selected the most efficient factors and models in Chinese stock market based on our method

Design of Ground-Air Cooperative Delivery System Nov. 2021 - Apr. 2022
Research Project Advised by Prof. Xuefeng Wang *Beijing, China*

- Aimed to incorporate unmanned vehicles and drones for realizing unmanned express
- Programmed a pure pursuit controller with ROS in Python that enabled the unmanned vehicle to track the precomputed waypoints
- Implemented serial communication for the differential GPS in ROS to achieve centimeter-level localization performance, which helped the drone to realize relocalization
- Designed the lifting platform on the unmanned vehicle to land drones and pass package from the unmanned vehicle to the drone

Flintstone Robotics Co., Ltd. Jul. 2021 - Feb. 2022
Internship advised by Nan Yang *Shanghai, China*

- Literature review of some traditional motion detection algorithms such as background subtraction, temporal difference, optical flow for estimating manipulator posture
- Modified the source code of GMAPPING in ROS for application on non-ROS systems
- Matched RGB image information from camera and the pointclouds from LiDAR in order to fuse visual information into traditional LiDAR-based SLAM methods
- Programmed to match the objects between different frames by feature point recognition methods including SIFT and ORB
- Used principal component analysis to compress pointclouds from LiDAR

Course Projects

A Review of Universal Approximation Theorem of Deep Neural Networks Nov. 2022 - Dec. 2022
- Wrote a literature review of the papar "A Universal Approximation Theorem of Deep Neural Networks for Expressing Probability Distributions"
- Summarized the proof techniques in the paper including optimal transport maps and the property of Reproducing kernel Hilbert space (RKHS)
- Discussed the limitation in the paper and potential research directions inspired by the paper

A Review of Bayesian Persuasion and Information Design May 2022 - Jun. 2022
- Wrote an extended literature review of three key papers on Bayesian persuasion and information design
- Summarized the techniques in the derivation of Bayesian Nash equilibrium and the economic intuition behind them
- Compared the relations between models concerning Bayesian persuasion with a single receiver, Bayesian persuasion with multiple receivers and information design

A Review and Research of the Evolutionary Game Theory on Network Oct. 2021 - Jan. 2022
- Wrote a literature review of three key papars on *Nature* about the evolutionary game theory on network
- Derived the fixation probability of public goods game on the finite regular network under imitation (IM) updating process
- Compared the fixation probability between the public goods game and the two-sided matching game in the finite network

Awards

Scholarship
- Shandong Greenland Spring Scholarship Dec. 2021
- Third Class Scholarship of Peking University Jan. 2021

Award
- Peking University Learning Excellence Award Dec. 2020, Dec. 2021

Prize
- First Prize in Beijing Mathematical Modeling Competition Nov. 2021
- Second Prize in National Mathematical Modeling Competition Nov. 2021
- Honorable Mention in Mathematical Contest in Modeling May 2021
- First Prize in Chinese Mathematics Competition Dec. 2020

Leadership

OneWho (A student organization in Peking University) Nov. 2021 - Jun. 2023

A Member of Team Founders *Peking University*
- Founded a team of students from different departments to apply our knowledge into engineering practice
- Collaborated with a variety of engineers from industry
- Set up a course for drone design that was applied by more than 100 students from various departments every semester
- Mentored 24 students for mechanical design, circuit design, and controller programming

Skills and Hobbies

Language Ability: Chinese (Native), English (IELTS 7.0)

Computer Programming Skills: Python, MATLAB, C, C++, R

Computer Tools: LaTeX, EndNote, Github, Linux, Mathematica, SolidWorks, Altium Designer

Hobbies: Martial Arts, Table Tennis, Gourd Silk, Guitar