BOFAN CHEN

University of Cambridge, Cambridge, United Kingdom

📞 +86 186-5816-3995 ✉ cbfcbf.byron@gmail.com

EDUCATION

Master of Advanced Study in Mathematics   Aug. 2023 - Jun. 2024

Department of Pure Mathematics and Mathematical Statistics, University of Cambridge   *Cambridge, United Kingdom*

- Courses: Topics in Convex Optimization, Numerical Solution of Differential Equations, Topics in Statistical Theory, Information Theory, Advanced Probability, Stochastic Calculus and Applications, Functional Data Analysis

Bachelor of Economics in Finance   Jun. 2019 - Jun. 2023

School of Economics, Peking University   *Beijing, China*

- Overall GPA: 3.8/4.0
- 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: 3.8/4.0
- 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)

PUBLICATIONS

B. Chen, G. Hou, and A. Li, *Temporal local clustering coefficient uncovers the hidden pattern in temporal networks*, Phys. Rev. E **109**, 064302 (2024). DOI: 10.1103/PhysRevE.109.064302

- Proposed the local temporal clustering coefficient in temporal networks to quantify the clustering phenomenon in network by considering temporality
- Discovered that the temporal local clustering coefficient can serve as an efficient identifier to distinguish different core-driven patterns of temporal networks
- Found that the temporal local clustering coefficient can sensitively identify noise in temporal networks, enabling a more accurate reflection of the connections among nodes' neighbors
- Analyzed the underlying relationship between temporal and static clustering coefficient that reveals essential characteristics of different interaction patterns for various empirical datasets

EXPERIENCE

Meta-learning for Time Series Data   Nov. 2023 - May 2024

Research Project Advised by Prof. Mihaela van der Schaar   *Cambridge, United Kingdom*

- Proposed MetaINR method for learning the implicit neural representation (INR) of time series from sparse and irregular observations
- Employed the SIREN-based network architecture to robustly recover complete samples based on a few observation points, preserving fine details in each sample
- Incorporated meta-learning into the functional data analysis (FDA) framework, efficiently estimating mean function, covariance operator, and functional principal components without any prior assumptions
- Conducted experiments on both synthetic and real medical data, demonstrating that MetaINR significantly outperforms baseline methods in terms of estimation accuracy and robustness

Comparison of Asset Pricing Models   Dec. 2022 - May 2023

Undergraduate Thesis 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 potential model
- Derived the analytical solution of each potential model's posterior probability using power-law priors (including Jeffery prior and uniform prior) and analyzed the result's robustness among these priors

- Applied to the data from Chinese stock market and selected the most efficient asset pricing factors and models

Design of Ground-Air Cooperative Delivery System
Nov. 2021 - Apr. 2022

Engineering Project Advised by Prof. Xuefeng Wang
Beijing, China

- Aimed to incorporate unmanned vehicles and drones for realizing unmanned express
- Programmed a pure pursuit controller that enable the unmanned vehicle to track the precomputed waypoints
- Implemented serial communication for the differential GPS in Robot Operating System (ROS) to achieve centimeter-level relocalization performance
- Designed the lifting platform on the unmanned vehicle by SolidWorks 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 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 in order to realize faster communication

COURSE PROJECTS

Design of Legged Robot
Mar. 2023 - Jun. 2023

- Designed the structure of a quadruped robot using SolidWorks and prototyped it with 3D printing technology
- Controlled motor servos using a Raspberry Pi via TTL and RS485 communication serial
- Implemented a PID controller to achieve the pre-designed fundamental gait of the quadruped robot

AWARDS

- Peking University Learning Excellence Award   Dec. 2020, Dec. 2021
- First Prize in Beijing Mathematical Modeling Competition   Nov. 2021
- Third Class Scholarship of Peking University   Jan. 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 multidisciplinary student team with the goal of applying our knowledge to engineering practice, fostering interdisciplinary collaboration, and promoting innovation
- Set up a course *Making Drone from Zero*, which was applied by more than 100 students every semester
- Mentored 24 students for mechanical design, circuit design, and controller programming

SKILLS

Language Ability: Chinese (Native), English (IELTS 7.0)
Programming Languages: Python, MATLAB, C, C++, R, Verilog
Computer Tools: Git, ROS, SolidWorks, Altium Designer, Vivado, LaTeX