Dongxu Li

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Personal Projects: https://dongxulee.github.io/portfolio/

734-660-8790

About Me

- **Technologies**: Python/(PANDAS, numpy, Jax.numpy), C++, Matlab, Latex(Lyx), Git, Vim, Bash(basic), Ocaml
- **Mathematics Background**: Fundamental Calculus, Linear Algebra, Numerical Method, Advanced Optimization, Applied Statistics, Dynamic Programming(Reinforcement Learning)
- **Finance Background**: Fixed Income Product, Derivative Pricing Theory and Portfolio Theory

Experience

- **J.P. Morgan** New York City, NY
  Market Risk Quantitative Research Intern *June 2022-August 2022*
  - **Goal**: Enhance the core portfolio default simulation engine, reduce the model implied default rate under extreme market condition.
  - **Method**: Modeled the asset returns using mixture models: mixed gaussian return with symmetric gaussian jumps and mixed gaussian return with asymmetric exponential jumps. Calibrated the asset return models based on internal empirical data and conducted detailed analysis on the simulated portfolio default rate under different asset return models while under different market stress levels.
  - **Results**: Shifted the simulated portfolio default rate distribution, obtained lower simulated default rate conditioning on higher quantiles of market returns and higher simulated default rate conditioning on lower quantiles of market returns.
- **PGIM Quantitative Solutions** Newark, NJ
  Quantitative Research Intern (target on private asset modeling) *June 2021-August 2021*
  - **Goal**: Investigate the return and risk of private assets without the cash flow level data.
  - **Detailed Modeling**: Linked the private asset returns with the existing public asset returns in the Capital Market Assumptions(CMAs) framework, and generated 10-year long-term performance forecasts on Private assets, including Mezzanine Debt, Buyout, and Venture Capital.
  - **Results**: Presented the results in 3 company-level research meetings. The investment council approved the modeling approach and used it to complete the CMAs framework and generate quarterly published Capital Market Assumptions Reports.
- **Stevens Institute of Technology** Hoboken, NJ
  Research Assistant, Teaching Assistant and Lecturer *Aug 2018 - Present*
  - **Research Assistant - Research Area**: Adaptive Agent-Based Modeling of Economic Systems: Model the life cycle of American households using finite time horizon Markov Decision Process. Explore the population's consumption, investment, retirement, and adaptive behavior and wealth accumulation pattern. Write highly efficient Python, C++ code to solve MDP.
  - **Teaching Assistant - Stochastic Calculus for Finance II: continuous model**: Materials cover: Intro to probability models and definition of sigma-algebra, martingales, Markov property, stochastic(Ito) integrals, and stochastic differential equations. General option pricing, hedging framework, and interest rate models.
  - **Lab Course Lecturer: FE 522 C++ programming in Finance**: Materials cover: Fundamental concepts, syntax, data structure, Object-Oriented Programming philosophy, Monte Carlo simulation with applications on option pricing, and portfolio optimization.

Education

- **Stevens Institute of Technology** Hoboken, NJ
  PhD candidate in Financial Engineering; Advisor: Steve Yang, Victor Xi Luo; GPA: 4.00 *Aug. 2018 – Present*
  - **Provost Doctoral Fellowship**: Top one percent in academic and professional pursuits
  - **Paper presented at WEA Conference, Fed, SEC**: Endogenous Stock Market Participation and Wealth Accumulation: A Life-Cycle Model Perspective
  - **WorldQuant International Quant Championship**: Stage 1 rank: 4/3000 US Region (2019), Stage 2 rank: 15/200 US Region (2019), Gold Level Certificate Score: 19250, rank 218/13931, Research Consultant Job Offer
- **University of Michigan** Ann Arbor, MI
  Master of Science in Quantitative Finance; Advisor: Johannes Muhle-Karbe; GPA: 3.92 *Aug. 2016 – Dec. 2017*
- **Dalian University of Technology** Dalian, China
  Bachelor of Science in Information And Computational Science; GPA: 3.88 *Sep. 2012 – July. 2016*