Yuheng Lan

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RESEARCH INTEREST

Use mathematics and computer science as tools and finance as objects to carry out theoretical and practical research at the intersection of these fields.

EDUCATION

Shandong University **Qingdao, China**
Master of Financial Mathematics and Financial Engineering *Sep. 2020 - Present*

- **GPA:** 3.8/4.0
- **Honors:** Freshman scholarship, Academic Scholarship, Merit Student of Shandong University
- **Financial Mathematics Coursework:** Advanced Probability Theory, Stochastic Process, BSDE
- **Pure Mathematics Coursework:** Differential Geometry, PDE of Second Order, Sobolev Space

Dalian University of Technology **Dalian, China**
Bachelor of Information and Computing Science *Sep. 2016 - Jun. 2020*

- **GPA:** 84.9/100
- **Selected Honors:** First class scholarship in 2016 (Top 5%), Lingshui second class scholarship (Top 5%), Merit Student of Dalian University of Technology (Top 5%).
- **Basic Mathematics Coursework:** Mathematical Analysis; Higher Algebra, ODE, PDE, Complex Function Theory, Real Variable Function Theory, Functional Analysis, Probability Theory and Mathematical Statistics, Topological Basis
- **Computational Mathematics Coursework:** Numerical Algebra, Numerical Approximation and Computational Geometry, Numerical Solution of Differential Equation, Optimization Method
- **Computer Science and Data Science Coursework:** C++ Language and Data Structure, Machine Learning and Data Mining, Mathematical Software and Experiment, Programming Fundamentals

RESEARCH AND LEARNING EXPERIENCE

Shandong University **Qingdao, China**
Optimization of portfolio based on momentum effect and inflation *Jun. 2022 - Present*
Research Assistant, **Advisor:** *Prof. Hanwu Li*

- Researched the optimal consumption investment portfolio problem based on the momentum factor and inflation, and considered several analytical and numerical methods.

Boundary Extensions For Mappings Between Metric Spaces *Sep. 2020 - Jun. 2022*
Research Assistant, **Advisor:** *Prof. Changyu Guo*

- Generalized the corresponding results of existence and uniqueness to φ-length John in metric spaces.

Dalian University of Technology **Dalian, China**
High-dimensional Data Analysis Based On PICASSO *Sep. 2019 - Jun. 2020*
Research Assistant, **Advisor:** *Associate Prof. Min Xu*

- Achieved a classification recognition rate is 83%, and a recognition rate of facial expressions such as happiness and surprise as high as 99% by applying the PICASSO algorithm to the JAFFE facial expression database and classifying using sparse logistic regression.

Research and Application of Deep Learning *Sep. 2017 - Jun. 2019*
Research Assistant, **Advisor:** *Prof. Chao Zhang*

- Researched the basic models of deep learning (RNN, LSTM, BT-RNN, wavenet, p-wavenet, clarinet) and compared the main advantages and disadvantages of common speech noise reduction models.

RELATED PROJECTS

Fundamentals of Computer Science in C++ *Sep. 2017 - Dec 2017*

- Implemented fundamental **data structures** and their corresponding problems (binary tree, greedy algorithms).
- Simulated two replacement algorithms (LRU and FIFO) as well as two disk arm scheduling algorithms (SSTF and SCAN).

Mathematical Modeling Basics in C++ *Mar. 2018 - May 2018*

- Learned the core mathematical modeling implementations by writing over 1000 lines of code in C++.
- Implemented several mathematical models (ns traffic flow, cellular automata, Monte Carlo method and penna algorithm).
- Implemented numerous graph theory algorithms (judging connectivity, calculating degrees, determining the type of graph, generating random graphs, finding Hamiltonian paths, minimum spanning trees, and finding shortest paths).

Mathematical Modeling Basics in MATLAB *Jun. 2018 - Jul. 2018*

- Researched the basic principles of medical image recognition models using MATLAB.
- Implemented a basic recognition model to recognize digits from 0 to 9 from an image.
- Achieved a recognition rate as high as 99% and recognized a combination of multiple strings of numbers.

Computational Mathematics Basics in MATLAB *Sep. 2018 - Dec. 2018*

- Drew **numerical approximation** images of Bezier curves and surfaces.
- Implemented multiple algorithms in **numerical algebra** (Jacobi iteration method), **optimization** (Steepest Descent and Newton in 1D/2D methods) and **numerical solution of differential equations** (5-point difference method on rectangular networks).

RESEARCH PUBLICATIONS

"Boundary Extensions For Mappings Between Metric Spaces", with L. Cao and L. Fang(work in progress).

EXTRACURRICULAR ACTIVITIES

MCM/ICM Mathematical Contest in Modeling 2017
Honorable Mention *Feb. 2017*

- Constructed a model using queuing theory and Monte Carlo methods to solve the airport safe passage placement problem.

CUMCM China Undergraduate Mathematical Contest in Modeling 2017
Provincial first place *Sep. 2017*

- Constructed a mathematical model using Iradon transformation and Filter functions to programmatically locate the center position of a CT image reconstruction.

SKILLS & INTERESTS

Programming skills: C++, MATLAB, LaTeX, Python (numpy, pandas, matplotlib), R (dplyr, ggplot2)
Languages: Mandarin (native), English (IELTS 6.5)
Interests: Swimming, reading books, watching movies