ZHIYUAN YAO

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PROFILE

I am a student of Mathematics from China with a strong interest in finance. I am currently completing a Master of Science in Financial Engineering and seek to continue my studies on a Ph.D program at Columbia.

· Competent and skilled programmer in Python, C++, R, SQL, Matlab.

· Excellent ability in Windows and Linux.

· Extensive experience translating theoretical knowledge onto practical, real-world projects.

· Wide-ranging research experience; proven ability to work within teams to cooperatively achieve goals.

EDUCATION

Expected 05/2019 **STEVENS INSTITUTE OF TECHNOLOGY**, HOBOKEN, NJ
Master of Science in Financial Engineering;
GPA: 4.0/4.0

08/2013 – 06/2017 **NANKAI UNIVERSITY**, TIANJIN, CHINA
Bachelor of Science in Mathematics and Applied Mathematics;
GPA: 82/100; Rank: 35/88

EXPERIENCE

09/2017 - Present RESEARCH ASSISTANT & INSTRUCTOR **HANLON FINANCIAL SYSTEM LAB** , HOBOKEN, NJ
  · Research on deep reinforcement learning (RL).
  · Developing ROS-based distributed simulation system for RL.
  · Implementing RL algorithms (PPO, Q-Plan, etc.)
  · Controlling robotic agents across internet by RL models.
  · Instructor for *FE520 Introduction to Python for Financial Applications*

05/2018 - Present GRADUATE RESEARCHER **STEVENS INSTITUTE OF TECHNOLOGY & CLEARPOOL GROUP** , HOBOKEN, NJ
  · Research on darkpool liquidity detection.
  · Re-sampling data from imbalanced data.
  · Selecting features from categorical and continuous data (Target encoding, Mutual information).
  · Using ensemble machine learning techniques (Stacking, Boosting) to predict liquidity.
  · Evaluating liquidity signals generated by last order in different venues.

06/2016 - 11/2017 INTERN AND QUANTITATIVE RESEARCH CONSULTANT **WORLDQUANT LLC** , BEIJING, CHINA
  · Research on technical alpha strategies for stocks with top liquidity in U.S. stock market.
  · Developing alpha strategies based on fundamental analysis and analytical data.
  · Applying machine learning algorithms to alpha strategy development on web based strategy back-testing system.

SELECTED PROJECTS

09/2017 - Present **ROBOTICS APPLICATIONS PLATFORM INTEGRATED DEVELOPMENT**
  · Create an intelligent system which can control both simulated and physical robot.
  · Allow user to control agents across internet and to stream camera input from agent to control side.
  · It is compatible with ROS interface and is a perfect simulation system for testing reinforcement learning algorithms on vanilla and partial-observed locomotion tasks.
  · Some main-stream RL algorithms have been implemented and tested on our system.

09/2018 - Present	**10-K FORM FRAUD DETECTION BY TEXT ANALYSIS AND DEEP LEARNING**
	· Evaluate the probability that a company may fraud on its 10-k form by analyzing 10-k text description.
	· Give a list of words/phrases that implies fraud statement.
	· Mark paragraphs that are highly likely to be fraud by attention model.
03/2018 - Present	**DARK POOL LIQUIDITY DETECTION**: [PDF]
	· Used re-sampling technique to generate eective data from highly unbalanced data.
	· Selected features from categorical and continuous data (Target encoding, Mutual information).
	· Used ensemble machine learning techniques (Stacking, Boosting) to predict liquidity.
	· Evaluated liquidity signals generated by last order in dierent venues.
	· Used reinforcement learning approach to detect transition pattern of liquidity.
11/2016 - 05/2017	**QUANTITATIVE INVESTMENT WITH MACHINE LEARNING**: [PDF in Chinese]
	· Created Multi-factors Stock Selection Model based on Random Forest.
	· Selected features from P&V, fundamental, analytical fields by RankIC and t-test.
	· Dynamically trained model and forecasting in Chinese stock market.
10/2016 - 01/2017	**APPLICATION AND MODIFICATION OF BP NEURAL NETWORKS**
	· Solved divergence and convergence in local minima issues of multi hidden layers neural network by adding momentum and penalty to loss function.
	· Selected learning rate automatically to speed up training process by optimization techniques like Armijo rule.
01/2017	**INTERDISCIPLINARY CONTEST IN MODELING**: [PDF]
	· Analyzed the long and unpredictable security checking time problem in U.S. airport with both Queuing Model ($M/E_k/1$) and Monte-Carlo simulation.
	· Gave practical suggestions about dynamic operation strategy on airport security checking.
02/2016 - 05/2016	**ASSESSMENT ON PSEUDO-RANDOM NUMBER GENERATORS**: [PDF in Chinese]
	· Implemented and statistically analyzed the performance and randomness of major families of uniform-distributed generators.
02/2016	**WATER SUPPLY ABILITY ASSESSMENT MODEL**: [PDF]
	· Selected features by TOPSIS method to find factors that aect water supply ability from thousands of factors.
	· Predicted the change of such ability by Grey Prediction.
09/2015	**IDENTIFICATION OF GEOGRAPHICAL LOCATION FROM SUN SHADOW**
	· Identified a location by a sequence data of shadow using a hybrid model of sun altitude model and solid geometry.
	· Found the global and local optimal parameters by gradient descent.

AWARDS

08/2017	**MASTER'S FELLOWSHIP AWARD**, STEVENS INSTITUTE OF TECHNOLOGY
05/2017	**MERIT STUDENT& STUDENT CADRE AWARD**, NANKAI UNIVERSITY
04/2017	**MERITORIOUS WINNER**, INTERDISCIPLINARY CONTEST IN MODELING, COMAP
05/2016	**GOLD MEDAL**, WORLDQUANT CHALLENGE, WORLDQUANT LLC
04/2016	**HONORABLE MENTION**, INTERDISCIPLINARY CONTEST IN MODELING, COMAP
10/2015	**1ST PRIZE**, CHINA UNDERGRADUATE MATHEMATICAL CONTEST IN MODELING, AWARDED BY CSIAM
12/2014	**OUTSTANDING CHAIRMAN**, STUDENT UNION, NANKAI UNIVERSITY
05/2014	**EXCELLENT TEENAGER IN SPORT**, TIANJIN MUNICIPAL EDUCATION COMMISSION
11/2013	**3RD-CLASS UNIVERSITY SCHOLARSHIP**, NANKAI UNIVERSITY