BIN LUO

☎ (+852) 94916991 | ✉ binluo@link.cuhk.edu.hk | ⊕ robinbinluo.github.io
Room 120, Ho Sin-Hang Engineering Building, The Chinese University of Hong Kong, Hong Kong

EDUCATION

The Chinese University of Hong Kong (CUHK)   Aug. 2023 – June 2027(Expected)

*Ph.D. Student in Computer Science and Engineering, **GPA: 3.75/4.00***

Advanced Networking and System Research Laboratory (ANSRLab)

Supervised by Choh-Ming Li Chair Prof. John C.S. Lui (IEEE Fellow, ACM Fellow)

Sun Yat-sen University (SYSU)   Sept. 2019 - June 2023

*Bachelor of Science, Mathematics and Applied Mathematics, **GPA: 91/100***

- ***Mathematics Coursework**: Functional Analysis, Mathematical Analysis, Mathematical Statistics, Stochastic Processes, Numerical Analysis, Differential Geometry, Probability Theory, Algebra, Topology, Partial Differential Equations*
- ***Computer Science Coursework**: Mathematical Experiments & Mathematical Software, Digital Image Processing, Data Structure & Algorithms, Advanced Language Programming, Application of MATLAB*

PATENTS

XIAO Yao, **LUO Bin**, CHEN Yuhuan, WEI Pengxu, LIN Liang. 2022. Robust Unsupervised Domain Adaptation Image Classification Model Based on Adversarial Distillation. CN115019106A, field June 27, 2022, and issued September 6, 2022.

RESEARCH EXPERIENCE

Adversarial Robustness in Unsupervised Domain Adaptation   July 2021 – Sept. 2022

Research Assistant, Human Cyber Physical Intelligence Integration Lab, Supervisor: Prof. Liang Lin

- Trained a robust image classification model that can resist adversarial attacks in the unlabeled target domain when source domain data is inaccessible.
- Used t-SNE to analyze the differences of feature distribution of images between the robust source domain model and the non-robust source domain model.
- Defined a robust classification error on the target domain; observed a tight upper bound of the robust classification error and proposed optimization goals for robust (source-free) unsupervised domain adaptation according to the upper bound.
- Proposed and improved novel robust learning frameworks according to the optimization goals and conducted a theoretical analysis of margin disparity discrepancy based on the domain adaptation.
- Attained current state-of-the art performances on the model with both clean accuracy and adversarial robustness in the adversarial robustness of unsupervised domain adaptation.

Exploring Optimal Decisions of College Students' Consumption   Mar. 2021 - Dec. 2021

Team Leader, National College Students Innovation and Entrepreneurship Training Program

- Designed and distributed 347 questionnaires to collect the daily consumption habits of college students and their self-happiness evaluation, utilizing the concept of "utility" in economics as an indicator to measure objective happiness.
- Performed regression analysis on the questionnaire data with STATA and obtained an explicit form of the utility function via parameter estimation.
- Applied TOPSIS evaluation model based on the entropy weight method and obtained an optimal solution of the consumption ratio that maximizes happiness with minimal risk of overspending with MATLAB, taking overspending consumption and utility function as the two indicators.

- Adopted Spearman's coefficient of correlation with SPSS to evaluate overspending risk and influencing factors, and provided suggestions for college students to adjust their consumption structure.
- Investigated how to allocate money for four aspects in the daily consumption to maximize the sense of happiness of students while reducing the risk of overspending in view of the prevalence of consumerism and excessive consumption of college students.

ACADEMIC COMPETITION EXPERIENCE

PwC's STEM Challenge   May 2021 - June 2021
Team Member
- Annotated and classified customers' complaints of a company's products or services using machine learning techniques.
- Performed correlation analysis on the features of the dataset, selected four important indicators with strong correlation (namely complaint-related products and their sub-products, complaint items and their sub-items) and established dictionaries for them.
- Calculated the frequency of each term in the dictionaries with the TF-IDF algorithm to label the annotation of keywords, and then utilized SoftMax regression with Python for text classification.
- Won third place in the competition out of more than 100 teams.

Mathematical Contest in Modeling (MCM)   Feb. 2021
Team Leader
- Studied the growth characteristics and influencing factors of fungi, simulated the decomposition process of ground litter and wood fibers, and analyzed the survival and importance of fungi in different ecological environments.
- Modeled the population competition relationship of three pre-determined categories of co-existing fungi using K-means clustering based on the fungal hyphae elongation index with differential equations to obtain the total decomposition rate in order to study the decomposition process of ground litter and wood fibers.
- Built a system of linear equations by analyzing hyphae extension rate and temperature data to investigate the sensitivity of fungi to changes in temperature; solved the equations with particle swarm algorithm and obtained the growth of different species of fungi at three temperatures.

HONORS & AWARDS

SYSU Outstanding Undergraduate Thesis Award (Top 11 of 170)	2021
Meritorious Winner, Mathematical Contest in Modeling (Top 7% in the world)	2021
SYSU Outstanding Student Second Class Scholarship (Top 10 of 84)	2019 - 2020
SYSU Outstanding Student First Class Scholarship (Top 5 of 84)	2020 - 2021
Excellent Student Cadre of School of Mathematics, SYSU	2019 - 2021
Outstanding Volunteers of School of Mathematics, SYSU	2019 - 2021

EXTRACURRICULAR ACTIVITIES

Student Union of School of Mathematics, SYSU   Sept. 2020 - June 2021
Member of the Presidium
- Coordinated three departments with 30 cadre and officers and organized recruitment, training, and meetings.
- Organized seven large-scale activities with 2,000+ participants and promoted the college's academic events.

TEACHING ASSISTANT

CUHK CSCI2040: Introduction to Python	Fall 2023
CUHK CSCI2040: Introduction to Python	Spring 2024

SKILLS

Programming: C, Python, MATLAB, LaTeX

Frameworks: PyTorch, Qiskit

Languages: Mandarin (Native), English (Fluent), Cantonese (Native)