Zicheng Xie

Email: zichengxie51@gmail.com
GitHub: github.com/Zicheng2333

Education

Southern University of Science and Technology (SUSTech) *Sep. 2022 - Present*
*B.S. in **Data Science and Big Data Technology**, GPA: 3.91/4.0 Rank: 3/48*
Core Courses: Mathematical Analysis (A), Linear Algebra (A-), Regression Analysis (A-), Discrete Math (A+), Probability Theory (A), Mathematical Statistics (A-), Stochastic Process (Graduate Level, A), Data Structure and Algorithm (A+), Machine Learning (A), Distributed Storage and Parallel Computing (A), Advanced Natural Language Processing (Graduate Level, A+).

Nanyang Technological University (NTU) *Jan. 2025 - Present*
*Exchange Student in **Mathematical and Computer Sciences***
Ongoing Courses: Real Analysis II, Basic Optimization, Financial Econometrics.

Experience

Research Intern @ Department of Statistics and Data Science, National University of Singapore (NUS) *Jan. 2025 – Present*

Supervisor: Assist. Prof. Doudou Zhou
• Exploring contrastive learning and Retrieval-Augmented Generation (RAG) techniques to enhance the representation of electronic health record (EHR) data.
• Improving downstream predictive tasks, including in-hospital mortality prediction and readmission risk assessment, through representation learning.

Research Intern @ Machine Learning Lab, SUSTech. *Jul. 2023 - Jul. 2024*
Supervisor: Assist Prof. Hongxin Wei
• Conducting thorough literature reviews on machine learning privacy, focusing on membership inference attacks (MIA) on deep networks.
• Explored an attack method based on layer-wise Hessian analysis and investigate neural network pruning as a potential strategy to mitigate privacy risks.

Peer Mentor @ Shuren College, SUSTech *2023 fall, 2024 fall*
• Delivered lectures and conducted consulting sessions on College Physics, covering topics including dynamics, rotational motion, collisions, gravitation, oscillations, and thermodynamics, to first-year students to support their understanding of the curriculum.

Projects & Talks

AI-Driven Training Evaluation System for Long-Distance Runners [Project Page] *Nov. 2024 - Present*
Supervisor: Assist Prof. Peng Yang
• Developing an AI-powered system using wearable data to predict performance, assess training loads, and optimize plans, enabling data-driven, personalized training strategies to enhance athletic performance and reduce injury risks.
• Supported by *Special Funds for the Cultivation of Guangdong College Students' Scientific and Technological Innovation.* pdjh2025c12601.

Uncertainty-Aware 3D Object Detection [Project Report] *Oct. 2024 - Jan. 2025*
Supervisor: Prof. Qi Hao
• Designed and implemented an uncertainty-aware 3D object detection framework combining Mixture Density Networks (MDNs) and Monte Carlo Dropout for robust detection in autonomous driving scenar-

ios.

• Proposed and developed an uncertainty-based sample weighting strategy to improve model training, focusing on challenging samples with higher predictive uncertainty.

Distributed Computing for Stock Market Fund Flow Analysis [**Project Page**] *Oct. 2024 - Dec. 2024*

Supervisor: Assist Prof. Peng Yang

• Developed a distributed system using Hadoop MapReduce to process Shenzhen Stock Exchange Level-2 data for capital flow analysis.

• Implemented time-window aggregation and active trade identification algorithms to optimize large-scale data filtering, parsing, and parallel processing.

UWB-IMU Based Motion Capture and Rehabilitation Application *Nov. 2022 - Jul. 2023*

Supervisor: Assoc Prof. Mingming Zhang

• Designed an innovative remote rehabilitation assessment and training platform based on UWB-IMU fusion motion capture technology for rehabilitation.

• Supported by *Special Funds for the Cultivation of Guangdong College Students' Scientific and Technological Innovation.* pdjh2023c11305.

Talks @ Machine Learning Theory Seminar *Jul. 2024 - Sep. 2024*

Organized by Assist Prof. Hongxin Wei and Dr. Hao Zeng

• My talks include Generalization Bounds via Uniform Convergence, Rademacher Complexity Bounds and Implicit Regularization Effect.

Skills

Programming Languages: Python (Pytorch), Java, R.

Software & Tools: Texmacs, Latex, Git, Hadoop, Yarn, Linux Shell Script, Markdown.

Languages: Mandarin Chinese, English (CET4: 616/710, IELTS: 7.5/9).

Awards & Honors

The Chinese Mathematics Competitions *Third Prize - 2024*

National College Students Biomedical Engineering Innovation Design Competition *Second Prize - 2023*

National Encouragement Scholarship *2024*

Outstanding student scholarship (First Class, top 5%) at SUSTech *2023*