

# Zheng Xinran

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## EDUCATION

- **Tsinghua University; Master of Electronic Information** 2020.09 - Now  
GPA: 3.93/4.00; Rank: 1/82; Key Courses: Machine Learning, Big data Analysis, Cryptography
- **SiChuan University; Bachelor of Electronic Information Engineering** 2016.09 - 2020.07  
GPA: 3.75/4.00; Rank: 1/79; Key Courses: Calculus, Probability theory, Data Structure and Algorithm

## PROJECTS

- **18th National Postgraduate Mathematical Modelling Competition | National First Prize** 2021.10
  - Solved the UWB indoor precise localization problem under NLOS. Used classification models, extended Kalman filter and Chan algorithm to achieve TOA localization and trajectory reconstruction. **The positioning error is less than 5cm**
  - **The percentage of first prize is 1.164%, ranking 5/2705 among the winners of this topic**
- **Financial loan default prediction (Ali 'Tianchi' competition)** 2021.01
  - Performed outlier handling, feature derivation, binning, validity testing, and feature encoding based on the original 47 features of personal credit. Fused XGBoost, LightGBM and Catboost to predict the default probability
  - **The final AUC reached 0.7460, ranking Top 1%**
- **High frequency trading prediction model based on machine learning** 2021.12
  - Used tick-level commodity futures data for the past two months as the basic data to construct high-frequency factors based on price data, orders and trading. Predicted price movements for the next 20 ticks using LightGBM

## RESEARCH

- **Dynamic Trust Evaluation and Decentralized Trust Management Model of Internet of things** 2021
  - Designed a decentralized IoT trust management model using a anomaly detection algorithm to improve the robustness in insecure environments and realize trust evaluation based on fuzzy logic. Provide a detailed mathematical representation of trust model.
  - Applied an invention patent: *A Robust Distributed Dynamic Trust Management Model for IoT*
  - Completed an academic paper to be submitted to: *IEEE Internet of things journal*
- **A Mutual Authentication Scheme Based on device interaction for the in the IoT** 2021
  - Introduced the interaction behavior between devices into the authentication field, converted absolute authentication into a fuzzy problem, realize the autonomous authentication in large-scale devices of distributed networks
  - Applied an invention patent: *An Interaction-based Mutual Device Authentication Scheme.*
  - Completed an academic paper to be submitted to: *IEEE Internet of things journal*
- **Identity Authentication and Access Control Scheme of Internet of Things** 2022
  - Explored a trust-based dynamic fuzzy authentication and access control model, comprehensively evaluated the trust relationship between device nodes based on the context, behavior information, identity information and other elements to achieve real-time network security situational awareness, continuous identity authentication, and fine-grained access control

## INTERSHIP

- **Alibaba Ant Financial Services Group Co. | Financial Risk Control Algorithm Intern** 2021.07-2021.09
  - Optimized Alipay Sesame Credit Behavior scorecard model to improve the accuracy with extreme label imbalance. Conducted a complete process of feature engineering, validity analysis and model design for billion consumption data
  - The efficiency of new features is greater than 70%. **KS increased by 17.9%, AUC increased by 7.1%**
- **uSmart Securities Limited | Quantitative Investment Intern** 2021.04-2021.07
  - Analysed multi-factor stock picking strategies based on daily ticker data, researched the rotation correlation and volume and price indicators between A-share industry sectors and designed multiple sector volume and price factors. Conducted single-factor backtesting and validity testing based on the BackTrader
- **China Merchants Bank (CMB) | TMT Industry Researcher** 2021.01-2021.04
  - Conducted research on the market development in the field of E/E architecture and intelligence of new energy vehicles. Independently produced 1 industry in-depth report been published on the CMB Research Public Account

## HONORS AND AWARDS

- **National First Prize in the National Postgraduate Mathematical Modelling Competition, Top 0.1%** 2021.11
- **Second Prize Scholarship, Tsinghua University** 2021.10
- **Outstanding graduate, SCU** 2020.07
- **National Second Prize in National Undergraduate Electronic Design Contest, Top 5%** 2019.10
- **First Prize in Provincial Student Smart Car Competition, Electromagnetic tracing category, Top 5%** 2019.08

## LEADERSHIP AND VOLUNTEERING

- **Initiator of Tsinghua SIGS Big Data and Artificial Intelligence Society** 2021.11 - Now
  - Responsible for planning and preparing lectures and competitions on data science and AI. Since now, the association has successfully held an international data science competition with UNSW and the association members has reached more than 150
- **Peking University HSBC Business School Quantitative Trading Association** 2021.03 - 2022.03
  - Participated in and completed the weekly internal training and academic sharing on RL basics, asset allocation models, etc.
  - Completed the Kaggle Volatility Forecast and High Frequency Trading project