

# Wenxing Xu

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## EDUCATION BACKGROUND

### Xi'an Jiaotong-Liverpool University

Suzhou, China

MRes Computer Science

2023 – 2025

- Core Modules: Core Modules: Data Mining and Big Data Analytics, Machine Learning.

### Xi'an Jiaotong-Liverpool University

Suzhou, China

Data Science and Big Data Technology with Contemporary Entrepreneurialism (Upper Second Class)

2018 – 2023

- Core Modules: Data Mining, Big Data Security and Analytics, Applied Linear Statistical Models, High performance computing, Data Visualization, Computer Architecture and Operating Systems, Pattern Recognition, Database Development and Design, Programming with C++/R, Artificial Intelligence and Data Analysis, Corporate entrepreneurship, Cutting-edge Practice in Innovation and Entrepreneurship.

## INTERNSHIP EXPERIENCES

### Bosch

Suzhou, China

Internship, Engineering Driving Basic Software Department (XC-DX/EDB)

08/2023 – 02/2024

- Project Review:** To implement CAN message mapping automation among different vehicles, I have completed the development and testing of automation scripts under the guidance of my mentor, equipped with hardware of PCAN flash and gateway tools. The implementation of this tool has been well recognized in the chery2ca and gen6 projects, greatly simplifying the workflow and increasing efficiency.
- Development Framework:** Firstly, to ensure the quality and readability of the data, design the script to check and clean the mapping logic. Secondly, use can-tools library to read the message information in dbc, including name, id, description, cycle time and etc. Finally categorize the sent messages according to cycle time and generate c language scripts in batch.
- Testing Framework:** After integrating the gateway hardware and scripting software, I use CASE to simulate the transmitting and receiving signals, and then generate test reports. During the development of the project, I have solved several challenges: preset physical values do not match the signal definition; negative values tolerant error reporting; multiple results duplicate definitions; mapping logic complex processing.

### Golaxy Data Technology

Beijing, China

Internship(Remote), Semantic Analysis Department

06/2022 – 08/2022

- Text Mining:** Investigated hot issues and special public sentiment information based on domain regulations, sentiment analysis and semantic understanding methods to provide technical and platform support for Internet risk warning, emergency response and public sentiment guidance.
- Semantic Analysis:** Relational attribute extraction, event extraction, sentiment analysis and viewpoint analysis. The experiment consisted of two phases: 1. news information collection and pre-processing 2. feature extraction and sentiment classification. Using PCA and SVM, convolutional neural networks were employed to analyze business sentiment in news texts to provide realistic economic value to companies, and accuracy could reach over 80%.
- Technical Support:** Participated in decision making and testing of models, integrated various domain terms, detected and analyzed major events and made recommendations for corporate public decisions based on reliable analysis of models.

## RESEARCH PROJECTS

### Optimized YOLOv5 Model for Complex Fire Video Detection

China

Final Year Project(FYP)

10/2022–06/2023

- Experimental objective:** This research project addressed the challenges associated with smoke fires, small target detection difficulties, and missed/false detections by proposing and evaluating an enhanced fire smoke detection model for YOLOv5s. The key contributions and findings can be summarized as follows: Data Enhancement, Attention Mechanism Integration and Loss Function Optimization.
- Key Innovations:** The dataset is enhanced using the Mosaic-9 technique to improve the representation of small targets and enrich the contextual information of detected objects. The integration of an attention mechanism enhances the feature information within the network, enabling the model to prioritize accurate target predictions. Additionally, replacing the loss function improves the model's convergence, resulting in enhanced performance.
- Experimental Results:** Ablation experiments were conducted to assess the impact of introducing different modules on the classification accuracy of the YOLOv5s model. Experimental results demonstrated that the proposed improvements significantly enhanced the model's target detection capabilities.

### National University Students Intelligent Car Race

Xi'an, China

Participant

07/2021–09/2021

- In a complex smart restaurant environment, the team successfully optimized algorithms for navigation and target detection, enabling smart vehicles to accurately and swiftly identify people and observe menus. We calculated the optimal path and made flexible adjustments to the local path during navigation. Through our persistent efforts, the team achieved the remarkable feat of winning the third prize.
- In the competition, the team employed gmapping technology in the smart restaurant project, utilizing LIDAR scan data to map the restaurant's venue and scene, thus providing the smart car with precise map information. To enhance the local navigation algorithm, we replaced the original DWA algorithm with the more efficient TEB (Time-Elastic Band) algorithm. This change allowed the two-wheeled differential cart to effectively navigate dynamic obstacles and optimize the path towards the destination.
- Throughout the project implementation, the team not only gained extensive knowledge of the practical ROS (Robot Operating System), but also developed proficiency in the Linux system. We further acquired expertise in various map construction techniques, GPS fuzzy positioning, mapping, and code performance optimization.

## SKILLS

**Programming Langue & Software:** MS Office, Python, Linux, ROS, Spark, Matlab, R, Latex