

# XIANG LEI

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## EDUCATIONAL BACKGROUND

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**Tongji University**, Shanghai, CHINA

09/2020 - 07/2025

Bachelor of Engineering in Software Engineering (GPA: 90.47/100)

Core Courses: Computer Vision (5/5), High-Level Language Programming (5/5), Algorithm (5/5), Data Structures (5/5), Principles of Database and Applications (5/5), Big Data and Artificial Intelligence (5/5)

## PUBLICATION

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### Progressive Representation Learning for Real-Time UAV Tracking

Changhong Fu<sup>†</sup>, **Xiang Lei**, Haobo Zuo, Liangliang Yao, Guangze Zheng, and Jia Pan

Submitted to the 2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS 2024**)

## RESEARCH EXPERIENCE

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**Vision4Robotics Group**, Shanghai CHINA

04/2023 - Present

Research intern, Advisor: Prof. Changhong Fu

- Focus on intelligent visual perception for edge devices like UAVs, specifically tracking and segmentation
- Involve in research about segment anything model (SAM), responsible for reproducing and organizing relevant paper codes including SAM, FastSAM, and MobileSAM, and evaluating these on about 20 datasets

**Tongji-MIT City Science Lab**, Shanghai CHINA

10/2023 - 03/2024

Research intern, Advisor: Prof. Yang Liu

- Involve in research about developing an auxiliary urban decision-making platform integrating real-time street view generation and planning interaction capabilities based on CityScope

**Tongji University RoboMaster Team**, Shanghai CHINA

04/2022 - 03/2023

- Our project "Multi-Agent Interactive Road Damage Detection Car" is recognized as "National College Student Innovation and Entrepreneurship Training Program"

## PROJECT EXPERIENCE

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### Development of a Simple Interactive App Between a Mobile Device and a ROS Host (Course

Project of "Computer Vision") 🌐 code

09/2023 - 01/2024

Team leader, Advisor: Prof. Lin Zhang

- Developed an IOS-based mobile application for interaction with the ROS host; implemented 2D/3D map construction, **remote control** of the ROS host program via mobile phone, aborting ROS applications, and switching between 2D and 3D maps
- **Achieved real-time construction** of underground parking lot maps using RPLIDAR A1M8 LIDAR, enabling real-time map viewing on multiple devices such as cell phones, pads, and computers
- Prof. Zhang highly praises our project and acknowledges us as **the best team in the course**. We are very grateful for his acknowledgment

**Intelligent Material Handling Robot Development** 🌐 code

04/2023 - 08/2023

Head of the Vision Sector

- Collected datasets, performed data cleaning for the overall construction and integration of the intelligent handling robot system, and developed object detection models based on YOLOv8 specifically for detecting fresh-keeping boxes and soda cans

- Utilized CUDA technology to accelerate the models, deployed them on NVIDIA Jetson Nano to achieve real-time object detection at over 30 frames per second, and transmitted information about the position and type of objects with the STM32 microcontroller through USART
- Won the National Second Prize at the National College Mechanical Innovation Competition (2023)

## **Sense-Air Digital Twin and Intelligent Operation and Maintenance Platform for Air**

**Compressor System**  code

03/2023 - 09/2023

Minister of the Technical Sector

- Utilized digital twin technology to model the entire compressed air station for efficient operation
- Completed a patent “Adversarial Training-based Adaptive Transfer Learning for Air Compressor Station”
- Won the Shanghai Gold Award at the 9th “Internet+” Innovation and Entrepreneurship Competition for College Students (2023) and National First Prize at the 18th “The Challenge Cup” National College Students Extracurricular Academic Science and Technology Works Competition

## **PROFESSIONAL KNOWLEDGE**

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- Proficient in Python and frameworks like PyTorch and ONNX.
- Proficient in Git version control, managing GitHub repositories for over ten teams.
- Proficient in hardware and software development and deployment of embedded devices such as NVIDIA Jetson series, Raspberry Pi, x3 Pi, etc.
- Programming Languages: Python C/C++ html css JS Shell Java C#
- Platforms: macOS Linux

## **HONORS AND AWARDS**

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*2022-2023 Outstanding Undergraduate Students at Tongji University (5%)*

*2022-2023 Tongji University Second-Class Undergraduate Scholarship*

*2021-2022 Outstanding Undergraduate Students at Tongji University (5%)*

*2021-2022 Tongji University First-Class Undergraduate Scholarship*

*The 9th “Internet+” Innovation and Entrepreneurship Competition*

Shanghai Gold Prize

*The 18th “Challenge” Cup Black Technology Challenge Track*

National First Prize

*The 8th Mechanical Engineering Innovation and Creativity Competition*

National Second Prize

*The 16th Energy Conservation and Emission Reduction Social Practice Competition*

National Third Prize

*2022 Shanghai Computer Application Ability Competition*

Provincial Third Prize

*2022 RoboMaster University Championship*

National Third Prize

## **CERTIFICATES**

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*Shanghai Higher Education Information Technology Proficiency Examination C*

Level 2 Excellent

*Shanghai Higher Education Information Technology Proficiency Examination Python*

Level 3 Excellent