

# Bi XuanMing

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## Education Experience

**Institution:** South China Agriculture University (2020.9-2024.6)

**Major:** Software Engineering **Degree:** Bachelor Degree in Engineering

**Cumulative GPA/Grades:** 3.88/5.0; 89.67/100.0



## Skills and Knowledge

**English Proficiency:** CET-4 568, CET-6 556, IELTS 7.0

**Proficient Skills:** Java, C++, Spring architecture, operation of database, Eclipse, Spring Tool Suite, IntelliJ, and other integrated development environments. Office tools and Adobe tools.

**Self-Taught Skills:** Python, Android, Sql, assembly language, machine learning and computer vision.

**Other Skills:** Casting processes, practical experience in laser engraving, virtual simulation technology, milling machine operation, 3D scanning and printing procedures, injection molding processes, and drone assembly.



## Academic research experience

### **Automated Localization and Quantitative Analysis of Dynamic Points in Professional Model Pose Performances (2023.6 - Present)**

*Project Leader*

*Main Aspects: Machine learning, Computer vision, dynamic value analysis, dataset construction.*

**Introduction:** This study addresses pose assessment challenges for professional models by constructing a high-quality dataset, proposing an accurate key point localization model, and implementing automated dynamic value analysis. The research provides comprehensive and reliable data analysis methods for the field of model posing. The project has been written up as a paper and is currently planning for submission to a journal.

**Personal Contributions:** Assuming responsibility for guiding the entire research direction, organizing and coordinating the data set construction work, and actively participating in model development and optimization to ensure that the research project meets high-quality standards.

### **Cross-Domain Facial Expression Recognition through Reliable Global-Local Representation Learning and Dynamic Label Weighting (2023.4 - Present)**

*Project participant*

*Main Aspects: Machine learning, Computer vision, global features, local features, category distribution matching.*

**Introduction:** This research tackles the domain transfer challenge in cross-domain facial expression recognition (CD-FER). It introduces a pseudo-complementary label learning (PCLL) module and label reweighting (LR) module. By integrating global and local features, and utilizing credibility thresholds and label weights matching, effective domain-invariant feature learning and category distribution matching are achieved. This study has been written up as a paper and submitted to a journal, and it is currently under review.

**Personal Contributions:** contributed to the research on cross-domain facial expression recognition (CD-FER), Specifically involved in label learning (PCLL) module

### **Enhancing Medication Adherence through Integrated Medication Management System (2022.10 - 2023.2)**

*Project participant*

*Main Aspects: Machine learning, Computer vision, Android*

**Introduction:** This project introduces a comprehensive medication management system designed to enhance medication adherence and healthcare within the household environment. The system comprises a medication station located within the home for medication management, a portable medication box designed as a smartphone case for use outside the home, and a wearable device for monitoring health status and providing timely feedback. These three components complement and interact with each other to provide comprehensive support for medication management and healthcare. The project is planning to apply for a patent.

**Personal Contributions:** Developing a companion mobile app for the portable medication box, we ported the YOLOv5s model to Android to achieve precise detection of medications within the medication box.

### **Intelligent Resource Allocation Scheme for Cloud-Edge-End Framework in Multi-source Data Streams (2022.7 - 2023.5)**

*Project participant*

*Main Aspects: Multi-source data streams, edge computing, cloud-edge-end computing architecture, multi-source environment, proximal policy optimization (PPO), convex optimization.*

**Introduction:** This project addresses intelligent resource allocation in a cloud-edge-end framework for handling diverse data streams generated by IoT devices. It explores an architecture where cloud servers and computing access points collaborate to process data streams, adapting to dynamic network conditions. This project has been written up as a paper and published in the EURASIP Journal on Advances in Signal Processing.

**Personal Contributions:** Focused on algorithm research, contributed to implementing the "ECC-PPO" scheme (Edge-Cloud Collaboration with Proximal Policy Optimization).

### **Key Point Localization and Automatic Measurement Analysis of Soybean Leaf Veins for Fine Phenotypic Analysis System (2021.11 - 2022.11)**

*Project leader*

*Main Aspects: Machine learning, Computer vision*

**Introduction:** This project centers on creating a diverse soybean leaf image dataset by cropping scanned data. Unlike previous research that solely focused on intact leaves, we aim to include damaged and diseased samples, expanding the scope of analysis. The final outcome of this project has been applied for software copyright.

**Personal contributions:** Led project coordination, including core framework development and model training.



## **Competition Experiences**

**Competition Experience 4 (2023.9):** Participated in "Contemporary Undergraduate Mathematical Contest in Modeling 2023" and the competition results are currently under review.

**Competition Experience 3 (2023.8):** Participated in the 4<sup>th</sup> "HuaShu Cup" National College Student Mathematical Modeling Competition in 2023 and won achieving a national second prize.

**Competition Experience 2 (2023.5):** Participated in the 15<sup>th</sup> "CSEE Cup" National College Student Mathematical Modeling Competition in 2023 and gained achieving a national second prize.

**Competition Experience 1 (2022.12):** Participated in the 2021 College Student Innovation and Entrepreneurship Competition, successfully completed the project, and received the Outstanding Project Award.



## **Academic Achievements**

### **Published Papers:**

《Intelligent Resource Allocation Scheme for Cloud-Edge-End Framework in Multi-source Data Streams》

**Obtained Software Copyrights:**

《Key Point Localization and Automatic Measurement Analysis of Soybean Leaf Veins for Fine Phenotypic Analysis System》

**Achieved Competition Awards:**

“4<sup>th</sup> "HuaShu Cup" Mathematical Modeling Competition”

“15<sup>th</sup> "CSEE Cup" National College Student Mathematical Modeling Competition”

“2021 College Student Innovation and Entrepreneurship Competition”

**Completed Papers for Submission:**

《Automated Localization and Quantitative Analysis of Dynamic Points in Professional Model Pose Performances》

**Papers Submitted for Review:**

《Cross-Domain Facial Expression Recognition through Reliable Global-Local Representation Learning and Dynamic Label Weighting》

**Generated Results for Pending Patent Applications:**

《Enhancing Medication Adherence through Integrated Medication Management System》

**Completed Competitions for Pending Award Reviews:**

“Contemporary Undergraduate Mathematical Contest in Modeling 2023”

**Internship Experiences****Neusoft (Guangzhou) Co., Ltd. (2023.6 - 2023.9)**

*Back-end development intern (Project Team Leader)*

**Main Responsibilities:** Organized and coordinated the team to develop a Spark-based big data analytics platform for an e-commerce company. This platform supports complex analysis of user behaviors, including website visits, shopping activities, and ad clicks. It provides valuable support for the company's decision-making, product design, and strategic enhancements.

**ReliableSense (Suzhou) Computer Technology Co., Ltd. (2023.4 - Present)**

*Back-end development intern*

**Main Responsibilities:** Responsible for the backend development of an indoor positioning system. Designed and implemented the data receiving module to accurately collect device data, developed parsing algorithms to format raw data for analysis, assisted in data processing, filtering, and feature extraction, optimized platform communication for efficient data transmission. Assisted in enhancing the functionality of the frontend pages for an improved user experience.

**Interests, Hobbies, and Extracurricular Activities****Redbird Intelligence Challenge Camp (2023.6)**

Selected to participate in the Redbird online Intelligence Challenge Camp organized by The Hong Kong University of Science and Technology (Guangzhou), And obtained excellent camper certificate

**Directing and Filming Anti-Smuggling Microfilm Competition (2022.10)**

Participated in a college competition and received a third-place award for directing and filming an anti-smuggling microfilm.

**Vice President of College Alumni Association (2021.9 - 2022.6)**

Assisted in organizing and planning recruitment events and alumni homecoming activities for the college alumni association.

**Volunteer Services (2021.7 - 2022.9)**

Participated in various volunteer activities such as community street garbage classification and traffic guidance, accumulating over 200 hours of service.

**Participation in School Symphony Orchestra (2020.9 - Present)**

Served as a cellist in the school symphony orchestra and holds an eighth-level certificate in cello performance.

**CISV Summer Camp (2017.6 - 2017.9)**

Attended the CISV study program organized by UNESCO in Canada, engaging in cross-cultural learning activities.