YUHANG JIANG

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EDUCATION

EIT Manufacturing Master & Doctoral School Sep 2023 - Mar 2026
Data Science and AI for a Competitive Manufacturing Master

Università di Trento Sep 2023 - Mar 2026
Master of Science - MSc, Computer Science Master

University of Applied Sciences and Arts of Southern Switzerland Sep 2023 - Mar 2026
Master of Science - MSc, Engineering Master

Anhui University (211 Project) Sep 2019 - Jun 2023
Intelligent Science and Technology
- **GPA:** 3.16/5.00 (Average Score: 84.34/100)
- **Awards:**
  Second Prize for Outstanding Academic Performance (12/2022)
  First Prize Scholarship of Academic science and technology (12/2021)
- **Courses:** Machine Learning, Pattern Recognition, Big Data Analysis, Numerical Analysis, Natural Language Processing.

WORK EXPERIENCE

Fondazione Bruno Kessler - FBK Mar 2025 - present
Research Intern Trentino-Alto Adige, Italy
- Currently conducting research on embodied navigation, focusing on the integration of multimodal large language models (MLLMs), active visual perception, and uncertainty-aware semantic verification.

Chengdu Jiaoda Guangmang Technology Co., Ltd. Jul 2022 - Sep 2022
Algorithm Intern Chengdu, Sichuan, China
- Researched the newest machine learning algorithms and industrial anomaly detection algorithm.
- Applied GAN models to reconstruct images to identify anomalies and evaluate the performance.
- Used the object detection neural network model to detect abnormal parts in high-speed rail supports.
- Assisted colleagues in developing a set of character recognition patents for LCD meters.

COMPETITIONS

Kaggle March Machine Learning Mania 2025 - Silver Medal (64th / 1,727) Apr 2025
Solo

Kaggle BirdCLEF 2024 Competition - Bronze Medal (70th / 974) Jun 2024
Solo

Kaggle BirdCLEF+ 2025 Competition - Bronze Medal (199th / 2,025) Jun 2025
Solo

Mathematical Contest In Modeling (MCM), Finalist winner (top 1%) Apr 2021
Leader
- Designed a set of algorithms to assess the degree of hunger around the world and optimize the food supply chain.
- Responsible for modeling, programming and part of paper writing.
- The youngest winner in the history of Anhui University and the first winner of School of Internet.

iCAN Innovation Contest 2021 (Anhui) - Second prize Oct 2021
Team member
- Developed a set of hardware system capable of intelligently monitoring and warning the abnormal behavior of the elderly.
- Responsible for some STM32 development and project plan writing.

PUBLICATIONS

"CL-RAG: A Closed-Loop Multimodal Retrieval-Augmented Generation Architecture for Robust Human-Robot Control Interaction"
WRC SARA 2025 (oral)
Bowen Zhang, **Yuhang Jiang**, Lingxiang Hu, Dun Li, Qianqian Hu*

"Improved lightweight identification of agricultural diseases based on MobileNetV3"
CAIBDA 2022 (oral)
Yuhang Jiang*, Wenping Tong

Software Copyright of Intelligent contract software for agricultural insurance compensation
2022SR1568111.
*Note: * indicates the corresponding author.*

RESEARCH EXPERIENCE

KDEN-NSGA-II Scheduler for Flexible Job-Shop Scheduling Jun 2025

- Developed a multi-objective FJSP solver based on enhanced NSGA-II, optimizing makespan, load balance, and idle time across machines.
- Designed a hybrid initialization strategy combining heuristic, chaotic, and random generators for population diversity.
- Integrated adaptive crossover mechanisms with KNN-based density selection, enabling dynamic operator scheduling and diversity-aware evolutionary search.
- Built a modular benchmarking framework supporting multiple baseline algorithms, including standard NSGA-II, NSGA-III, SPEA2, and multi-objective ACO.

High Performance Computing for Grey Wolf Optimizer (GWO) Optimization Jan 2025

- Designed and implemented the HGT-GWO algorithm, incorporating global historical best positions and individual trend guidance, significantly improving convergence speed and outperforming traditional GWO on three benchmark functions.
- Proposed a novel master-worker island parallelization scheme, enabling independent subpopulation operations and reducing communication overhead through controlled synchronization intervals.
- Conducted experimental validation of the HGT-GWO algorithm using Python, demonstrating superior performance over GWO on 15 test functions.
- Developed a fully parallelized implementation utilizing C, MPI, and OpenMP, tailored for UNITN's HPC cluster.

Augmented Reality-Driven Robotic Arm Control for Industrial Automation Sep 2024

- Conducted a comprehensive literature review on XR technologies in Industry 5.0, highlighting human-centric design, worker safety, and data privacy issues.
- Developed and tested a system that combines YOLOv8 and FastSAM models to achieve accurate image segmentation and fingertip coordinate mapping.
- Designed an AR-based interface using Microsoft HoloLens 2 for real-time gesture recognition, allowing intuitive robotic arm control.
- Achieved highly efficient performance in industrial environments, mitigating challenges such as hand occlusion.
- Demonstrated scalability through multi-mode operation, enabling both gesture-based and interface-based controls.

Research on Semantic Segmentation Method of High-Resolution Remote Sensing Images... May 2023
Outstanding Undergraduate Graduation Project

- Conducted comprehensive research on efficient and accurate image segmentation algorithms for complex remote sensing images.
- Developed an encoder-decoder model with residual-weighted attention to enhance feature extraction.
- Conducted experiments on ISPRS Potsdam and Vaihingen datasets, achieving F1-scores of 90.23% and 87.37%.
- Demonstrated proficiency in convolutional neural networks, Transformer models, and attention mechanisms.

Music Generation Toolkit (based on Pytorch) Dec 2022

- A collection of excellent music generation models in recent years.
- The music data format includes compound word and REMI.
- The model is mainly transformer, including transformer XL, Vanilla Transformer, etc.

Visualization Platform for COVID-19 Focus Segmentation Oct 2022

- Offline inference, real-time display of segmentation results, and support NII file export.
- Used UNet and BiSeNetV2 to segment COVID-19 lesion.
- Used PyQt5 to visualize the nii image format.

SKILLS LIST

- **Programming:** Python, C/C++, Matlab, R, Java, C#.
- **Toolkits:** Pytorch, Tensorflow, Paddle Paddle, Sklearn, MPI, OpenMP etc.
- **Deep Learning Architectures:** CNN, RNN, Transformer, Mamba.
- **Algorithms:** Computer Vision, Natural Language Processing, ARIMA, Reinforcement Learning, Evolutionary Algorithms.
- **Applications:** Image Classification, Image Segmentation, Object Tracking, Industrial Anomaly Detection, Time Series Data Analysis.
- **Other Skills:** Unity, Quality Management, Lean Manufacturing, Circular Economy, Sustainable Management, etc.

LANGUAGE

- **English:** Fluent, TOEFL 102
- **Chinese:** Native Speaker