Peihao Xiang

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Education Background

Tianjin University of Commerce Boustead College *Tianjin, China*
Major: Computer Science and Technology 09/2015-06/2019
Degree: Bachelor of Engineering

Florida International University *Miami, FL, US*
Major: Computer Engineering 08/2021-12/2022
Degree: Master of Science

Florida International University *Miami, FL, US*
Major: Electrical and Computer Engineering 01/2023- Present
Degree: Doctor of Philosophy

Research Interests

- Computer Vision
- Multimodal Learning
- Affective Computing
- Embedded AI Edge System

Work Experience

China Automotive Technology & Research Center Co. Ltd (CATARC)
Title: Network Engineer (Intern) | Date: September 2018 - March 2019
- Responsible for network maintenance and H3C switch processing configuration.
- Research driverless technology and Intelligent network vehicle simulation experiment.
- Embedded chip algorithm programming to optimize the optimal path.

Tianxinyi Intelligent Network Technology (Tianjin) Co. Ltd
Title: Algorithm Engineer | Date: July 2020 – April 2021
- Responsible for STM43F107 vehicle network video surveillance system.
- Research based on Computer Vision port container number recognition system.
- Responsible for the spreader monitoring system solution.

Nanjing Micro Nano Technology Research Institute Co. Ltd
Title: Algorithm Engineer (Intern) | Date: May 2021 – August 2021
- Responsible for 3D visual-haptic human-computer interaction fusion algorithm.
- Research image process technology and Deep Learning algorithm.
- Development of embedded system upper computer software based on ARM chip.

Florida International University, Human Cyber-Physical Systems Laboratory
Title: Graduate Research Assistant | Date: January 2023 – Present
- Research and implement wearable exoskeleton robotic arms.
- Research AI-Agent feedback system in Parent-Child Interaction Therapy (PCIT).
- Research AI-Powered wearable multimodal multi-task dynamic emotion analyzer.

Publications

[1] MTCAE-DFER: Multi-Task Cascaded Autoencoder for Dynamic Facial Expression Recognition
Peihao Xiang, Kaida Wu, Chaohao Lin, Ou Bai
Submitted to 2025 IEEE International Conference on Automatic Face and Gesture Recognition (FG 2025)

[2] Intent Detection for Upper-Limb Assistive Exoskeletons Based on On-device Sensor
Kaida Wu, **Peihao Xiang**, Chaohao Lin, Lixuan Chen, Ou Bai
Submitted to 2025 IEEE International Conference on Robotics and Automation

[3] Emotion Styles Hide in Deep Speaker Embeddings: Disentangle Deep Speaker Embeddings for Speaker Clustering
Chaohao Lin, Xu Zheng, Kaida Wu, **Peihao Xiang**, Ou Bai
Submitted to 2025 IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2025)

[4] MultiMAE-DER: Multimodal Masked Autoencoder for Dynamic Emotion Recognition
Peihao Xiang, Chaohao Lin, Kaida Wu, Ou Bai
Published in 2024 14th International Conference on Pattern Recognition Systems

[5] Assessment of a Modular Upper-Limb Exoskeleton with Powered Assistance
Kaida Wu, **Peihao Xiang**, Rodrigo Ramon, Aparna Aravelli, Leonel Lagos, Ou Bai
Published in 2023 2nd International Conference on Automation, Robotics and Computer Engineering (ICARCE)

Patents

[1] Visual-Tactile Feedback System
Yuan Wang, **Peihao Xiang**, Lei Huang
Patent Number: CN 216052966 U

[2] Industrial Synchronous Pulse Fiber Optic Transceiver Server
Yalei Yin, **Peihao Xiang**, Haipeng Liang
Patent Number: CN 214507078 U

Research Projects

Design and Implementation of ARM Intelligent Vehicle Control System

- Based on the incremental PID control algorithm and graph theory algorithm, the ARM intelligent car control system is designed and implemented.

Design and Development of Container Terminal Box Identification System

- Based on image processing algorithm and Deep Learning algorithm, the container number recognition system is designed and implemented.

Design and Implementation of Vehicle Video Processing Software

- Based on STM32 series development chip, the webpage programming software is designed and implemented to calculate and process the vehicle video stream.

Design and Development of 3D Visual-Haptic Human-Computer Interaction System

- Based on 3D image visual processing technology and multi-dimensional spatial coordinate fusion algorithm, a new human-computer interaction system with 3D

visual-haptic is designed.

Design of Admittance Control Algorithm for Exoskeleton Manipulator

- Based on the impedance-admittance control theory, the force sensor is used as the input source for analysis, and a control algorithm for the exoskeleton robotic arm is designed.

Design and Development of AI Embedded System for Multimodal Emotion Analysis

- Use deep learning technology to perform emotional analysis on multiple modalities such as video, audio, and text to develop AI embedded systems.

Leadership Activities

Student Union 09/2015-06/2018

- Organize various activities as a member of the Learning Department.
- Guide various activities as head of the Department of Public Information.
- Dealing with internal affairs as Vice President of Student Union.

Project Leader of MicroMouse Competition of Tianjin 11/2017-12/2017

- Design the optimal path through graph theory algorithm to complete programming.

China Undergraduate Mathematical Contest in Modeling 09/2017

- Responsible for problem analysis and solution.

National Undergraduate Electronics Design Contest 07/2017-08/2017

- Design of Visible Light Indoor Positioning Device as project leader.

Internet Innovation and Entrepreneurship Competition 05/2016-05/2017

- Design the application software of College Students' part-time service as project leader.

Awards and Honors

- Excellent Thesis at School Level 2019
- Excellent Student of Tianjin 2018
- 2nd prize of the 1st College Student Innovation and Entrepreneurship Competition 2017
- Excellent award of National Program Design Race for College Student 2017
- 2nd prize of undergraduate group in The 4th "Discovery Cup" National Undergraduate Internet Software Design Competition 2016