Jin Li

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GitHub: https://github.com/happyjin

EDUCATION

- **The Hong Kong Polytechnic University, Hong Kong, PhD** *2022-2025*
  - THE World University Rankings 2022: 65th
- **Ruprecht-Karls-Universität Heidelberg, Germany, MSc in Mathematics** *2015-2019*
  - THE World University Rankings 2022: 42th QS 2022: No.2 in Germany
- **Ocean University of China, China, B.Eng. in Computer Science** *2010-2014*
  - 3.8/4.0 GPA Ranking 1 of 68 students in all classes

WORKING EXPERIENCE

- **Doctoral Researcher, The Hong Kong Polytechnic University, Hong Kong** *Sep. 2022-present*
  - Research on machine learning related field such as speech processing, computer vision
- **Research Assistant, The Hong Kong Polytechnic University, Hong Kong** *Mar. 2022-Spe. 2022*
  - Research on speech technology such as automatic speech processing, voice biometric, speech emotion recognition
- **Assistant Researcher, Chinese Academy of Science, SIAT, Shenzhen** *May. 2019-Mar.2022*
  - Research on automatic speech recognition, speech emotion recognition,

speaker recognition, voice biometrics, and music generation

- Research on computer vision tasks such as video action detection and classification

➢ **Chief AI Expert, Jinan Xintongda Electric Technology Co., Ltd., China**

Nov. 2019-Sep. 2022

- Develop data collection and design an AI model architecture for the business scenario
- Implement and improve key algorithm for the AI model
- Apply the model in the commercial deployment for the customers

➢ **Co-founder and CTO, Shenzhen Seasons Technology Limited (Startup), Shenzhen, China** *Apr. 2021-Dec. 2021*

- Design the key part of the system that consists of Internet of Things (IoT) devices to collect data and artificial intelligent modules
- Design core artificial intelligent algorithm which can calculate the period when user need to water and fertilization for the plant through the assistant APP
- Writing the Business Plan (BP) of key technologies part

➢ **Assistant Researcher, AI Lab, Ruprecht-Karls-Universität Heidelberg, Germany** *Feb. 2017-Mar.2019*

- Research on applied mathematics such as linear optimization, non-linear optimization
- Implement machine learning algorithm and make application on computer vision such as object tracking

PUBLICATIONS

- **Jin Li**, Xurong Xie, Nan Yan, Lan Wang. A Multi-level Acoustic Feature

Framework for Transformer Based End-to-End Speech Recognition

Accepted by *Interspeech 2023* (**top conference** for speech processing)

- **Jin Li**, Nan Yan, Lan Wang. Unsupervised Cross-lingual speech emotion recognition using pseudo multilabel

  Accepted by *ASRU 2021* ***(oral)*** (**top conference** for speech processing)

- **Jin Li**, Nan Yan, Lan Wang. FDN: Finite Difference Network with Hierarchical Convolutional Features for Text-independent Speaker verification

  Submitted to *ICASSP 2023* (**top conference** for speech processing)

- **Jin Li**, Haibin Liu, Nan Yan, Lan Wang. Enhanced Memory Network: The novel network structure for Symbolic Music Generation

  Submitted to *ICASSP 2023* (**top conference** for speech processing)

- Jiatian Qian, Duan Wang, **Jin Li**, Yanni Chen, Jian Zu, Lan Wang, Nan Yan. The Recognition of Children with Autism Spectrum Disorder by Combining Power Spectrum and Connectivity Features of EEG Signals in Emotion Recognition Tasks

  Submitted to *ICASSP 2023* (**top conference** for signal processing)

- **Jin Li**, Shuai Li, Jiaming Wang, Kai Wang. Fuzzy Recognition of Vehicle's License Plate in the Intelligent Residential District of The Internet of Things, *China Science and Technology Information,* 2013, 13:89. (in Chinese)

PATENTS

- **Speaker Recognition Method Based on Speech Speed Enhancement Operator** (No.: CN202111262103.1, **the first inventor**) *2021*

RESEARCH & PROJECTS

- **Topic: Speech related key technology research, Hong Kong**

  Mar. 2020-present

- Propose a novel algorithm for speaker recognition
- The performance of my proposed new algorithm outperforms the state-of-the-art performances
- Prepare to write a paper and submit to ICASSP 2023

- **Topic: Hazard Detection of High Voltage Transmission Lines, China**

  Nov. 2019-present

- Develop a plan for data collection and AI model
- Implement the key machine learning algorithm for the Hazard Detection
- In the commercial deployment, the model accuracy is improved and the false alarm rate as well as false negative rate is decreased

- **Topic: Speech technology for robust AI model, Hong Kong**

  Apr. 2022-present

- Propose a novel curriculum learning method for the model training process
- The model accuracy with my innovation algorithm outperforms current research works

- **Topic: Forensic speaker recognition for the Ministry of Public Security (China), SIAT** *Apr. 2021-Mar. 2022*

- Propose a novel plug-and-play module to incorporate the prosodic features into the model with raw wave input
- The result outperforms current state-of-the-art research works

- **Topic: Symbolic music generation, SIAT** *Apr. 2021-Oct. 2021*

- Propose a novel architecture for symbolic music generation

- The result outperforms current state-of-the-art works on the Nottingham music dataset

➢ **Topic: Multiscale spectrograms and multistream model for ASR, SIAT**

Sep. 2020-Apr. 2021

- Proposed multistream architecture with different scale features
- A novel fusion design that aggregates two-stream features
- Outperformed SOTA models on HKUST telephone speech dataset

➢ **Topic: Unsupervised cross-lingual speech emotion recognition, SIAT**

Sep. 2020-Apr. 2021

- Proposed a novel framework with pseudo-labels in the target domain
- An external memory design with a memory update mechanism
- Vastly exceed the baseline model with 17.77% improvement

➢ **Topic: Spatial-temporal action recognition, SIAT** *May 2019-Sep. 2020*

- Proposed novel hierarchical attention for spatial-temporal action recognition model
- Performance improvements compared with the baseline model

➢ **Topic: Robust single object tracking via a fully convolutional siamese network. Image Analysis and Learning Lab, HCI, Heidelberg University**

Dec. 2018-Mar. 2019

- Proposed an ensemble method to overcome the drawback of fully convolutional siamese network
- Enhanced feature representation by combining the advantage of Conv-GRU unit with ground truth feature
- The code is publicly available on my GitHub *own_siamtracker* repository

➢ **Topic: Deep reinforcement learning for object tracking in videos. Image Analysis and Learning Lab, HCI, Heidelberg University**

May. 2018-Jun. 2018

- Re-implement YOLO and extract feature from FC1 as input into RNN
- Utilize the advantage of RNN to memorize the location of the object and predict the location of the object in the next time frame
- Model the tracking process by deep reinforcement learning method
- The code is publicly available on my GitHub *ReinforcementLearningTracker-pytorch* repository

➢ **Topic: Object tracking for the general dataset. Image Analysis and Learning Lab, HCI, Heidelberg University** *Feb 2018-May. 2018*

- Literature study for object detection problem
- Re-implement “fully-convolutional siamese network for object tracking” paper and analyze the advantages and disadvantages
- Re-implement “Recurrent Filter Learning for Visual Tracking” paper and analysis the advantages and disadvantages

➢ **Topic: Object tracking for mice. Image Analysis and Learning Lab, HCI, Heidelberg University** *Nov. 2017-Feb. 2018*

- Build the novel model using U-Net for biological dataset tracking problems especially for mice tracking
- Implement and apply U-Net for mice tracking
- Compute and utilize vector fields as an input feature for U-Net
- Train the U-Net then predict vector field in order to solve object overlapping problem
- The code is publicly available on my GitHub *mice* repository

➢ **Topic: Hyperparameter tuning using Gaussian Process. Image Analysis and Learning Lab, HCI, Heidelberg University** *Jul. 2017-Sep. 2017*

- Implement Gaussian Process step-by-step
- Solve nonlinear regression problem using Gaussian Process
- Binary and multi-class classification tasks using Gaussian Process
- Implement Bayesian optimization under different acquisition functions in the multi-dimensional case
- Tune hyperparameters of a prediction model using Bayesian optimization in high dimension
- The code is publicly available on my GitHub *Gaussian_process* repository

➢ **Topic: Semi-supervised learning for art galleries. Computer Vision Lab, HCI, Heidelberg University** *Feb. 2017-May 2017*

- Similarity matric learning by deep learning method for duplicates detection
- Combine a few art galleries of the Internet and get rid of duplicates among them using pre-trained AlexNet

➢ **Topic: Web-Based Convolutional Neural Networks for Cell Classification Biomedical Computer Vision Group, Heidelberg University** *WS2016/2017*

- To classify cells, whether normal or phenotype
- Web-based implementation and implement CNN using JavaScript

LEADERSHIP, COMMUNICATION & INTERPERSONAL SKILLS

➢ **Vice President, Heidelberg University Chapter of SIAM, Germany** *2017-2018*

- Organized colloquium in applied mathematics to help student realize current mainstream topics in applied mathematics

- Organized both academic and industrial talks on mathematical related topics to carry students to the frontier of research and industrial applications
- Be invited as a representative of the chapter of SIAM to share my successful experiences on activity organization during both SIAM annual meetings and European SIAM annual meetings

➢ **Class President, Ocean University of China, China** *2010-2014*

- Coordinated the work of the class committee and host class meetings
- Organized the class trip and class party
- Lead well-learned students to help the ill-learned ones
- My class receives lots of honors under my leadership such as *Outstanding Class* and *Outstanding Youth League Branch*

➢ **General Secretary, Student Union of School of Information Engineering, Ocean University of China, China** *Sep. 2012-Sep. 2013*

- Directed daily work of Student Union and coordinating relationship of other departments
- Cultivated, supervised, and checked the leaders of Student Union

➢ **Student Research Training Program of Ocean University of China, China (Undergraduate Thesis, grade: Honor)** *2013-2014*

- Topic: Recognition of Vehicle's License Plate Based on Neural Networks
- As the prime principal and the project supported by the chairman foundation (Grant No. 2013CX006)
- Published a research paper in *CHINA SCIENCE AND TECHNOLOGY INFORMATION* in July 2013

COMPETITIONS

- **The ACM/ICPC of Shandong Province** ***Jun. 2012***
- **The Freescale Cup Intelligent Car Racing** ***Jun. 2012***
- **China Undergraduate Mathematical Contest in Modeling** ***Sep, 2011***

HONORS & AWARDS

- **SIAM Student Travel Grant Award (1/100)** ***2017, 2018***
- **European SIAM Student Travel Grant Award** ***2017***
- **Outstanding Bachelor Thesis (1/1000)** ***2014***
- **Chairman Fund 2013 of Qingdao Institute of Technology (1/1000)** ***2013***
- **National Scholarship, Ministry of Education of People's Republic of China (1/1000, Student's highest honor at University)** ***2012***
- **Outstanding Class (5/100)** ***2012***
- **Outstanding Youth League Branch (5/100)** ***2012***
- **Professional Practice and Diathesis Developing Scholarships (2/100)**

  2011
- **Excellent morality and Social Practice Scholarship (2/100)** ***2012***
- **Outstanding Student Cadre (3/100)** ***2011, 2012***
- **The Second-class Scholarship (2/100)** ***2011***
- **Professional Practice and Diathesis Developing Scholarship (2/100)** ***2011***
- **Outstanding League Cadre (3/100)** ***2011***

- **The Third Prize in the Marketing Management Competition** ***2010***

LANGUAGES

- **English (Professional Proficiency)**
- **Chinese (Native)**
- **German (Elementary Proficiency)**

INTERESTS

- **A big fan of marathons, hiking, bouldering, and swimming**