Chencheng(Charlotte) Qi

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EDUCATION

University of Florida — Florida, United States

- **Master of Engineering** in Electronic Computer Engineering — Sep 2023-May 2025
- **Overall GPA**: 3.7/4

Hebei University of Technology — Tianjin, China

- **Master of Engineering** in Electronic Information — Sep 2020-Jun 2023
- **Overall GPA**: 89.6/100
- **Publications & Patents**:
  - M. Zhao, Z. Wang, **C. Qi**, et al. Face Video Heart Rate Detection Based on FastICA and ICEEMDAN. *Chinese Journal of Biomedical Engineering*. DOI: 10. 3969 /j. ISSN. 0258-8021. 2022. 04. 014 (published)
  - **C. Qi**, M. Zhao, A Mask Occlusion Face Expression Recognition Method Based on Deep Learning. Patent 202310045293.4
  - M. Zhao, Z. Wang, C. Qi, The invention relates to a non-contact heart rate measurement method and system based on face video. Patent 202310045293.4
  - C. Qi, M. Zhao, Z. Wang. Facial expression recognition with mask occlusion. Electronic Measurement Technology. (Submitted)

Heilongjiang University — Harbin, China

- **Bachelor of Engineering** in Electrical Engineering & Automation — Sep 2011-Jun 2015
- **Overall GPA**: 84.6/100

RESEARCH EXPERIENCES

Machine Learning Researcher, University of Florida — Dec 2023- May 2025

ASL Character Classification

- Designed and implemented efficient data pipelines in Python for American Sign Language dataset collection (43,200 images, 40GB), which increased data processing performance by 30%.
- Built real-time image prediction models in PyTorch by augmenting ResNet with attention mechanisms, which improved feature relevance handling and achieved 98.7% accuracy.

Medical Image Segmentation

- Developed a high-quality 3D brain MRI dataset (1,100 images, 19GB) by implementing noise/artifact removal, intensity normalization, resampling, and advanced data augmentation, enhancing diversity and robustness for segmentation models.
- Optimized the nnU-Net architecture in PyTorch by integrating Swin-UNet with attention mechanisms and cross-channel weighting, achieving a 1.7% accuracy improvement over standard benchmarks.

Machine Learning Researcher, Hebei University of Technology — Sep 2020-Jun 2023

Recognition of Facial Expression within a Mask

- Produced the dataset consisting of only real mask occlusion expressions at this stage by collecting from 150 people in the laboratory, which was divided into 7 types of expressions.
- Completed facial landmark detection with Dlib and augmented the Fer+, RaFD, and RAF-DB datasets with facial mask images, creating a 50GB dataset of over 70K occluded expression images through landmark detection and image reconstruction.
- Reproduced the facial expressions recognition based on ResNet, VGG19, Vision Transformer, etc.
- Developed a new model that enhances the attention mechanism of Swin Transformer, explicitly focusing on facial expression classification within a mask.

- Built an optimized GAN to repair facial expression images within a mask.
- Created a real-time facial expression detection system

Face Video Heart Rate Detection Based on FastICA and ICEEMDAN

- Implemented Heart Rate Detection through non-contact facial video.
- Proposed combined algorithm based on FastICA and ICEEMDAN.
- Selected IMF of suitable frequency band and used spectral analysis to calculate the heart rate.

Research Assistant, Tsinghua University Mar 2018-Apr 2019

Design & Implementation of Laboratory Detection Control System based on PLC

- Developed a Servo Control System based on PLC, as per the experiment table requirements.
- Confirmed controlling requirements of the device, developed PLC software, designed relevant industrial control configuration software, and debugged.
- Sorted out technical documents, including design instruction, electrical installation diagram, electrical components statement, and operation instruction, etc.

Undergraduate Researcher, Heilongjiang University Oct 2014-May 2015

Application of PVDF Piezoelectric Thin Film in Human Joint Posture Monitoring

- Proposed finger action perception algorithm based on PVDF sensor that contains signal preprocessing algorithm, finger action signal segment extraction algorithm, 4-layer BP neural network, etc.
- Implemented finger action recognition experiment through above algorithm combining PVDF sensor array.
- Proved that the above algorithm can detect finger action efficiently and implement semantic recognition.

PROFESSIONAL EXPERIENCE

Electrical Engineer, SINOHYDRO Bureau 3rd Co., Ltd. Jul 2015-Mar 2018

- Participated in designing both CEMS atmospheric smoke monitoring system and VOCS volatile organic compound detection system.
- Took responsible for debugging and maintaining the devices to keep their normal operation.
- Transferred real-time collected gas to analogue signal through analysis meter and stored these real-time data to SQL database so that the report form was generated and submitted to the environmental protection agency.

HONORS & AWARDS

- The 3rd Class Scholarship for AY 2021-2022 by Hebei University of Technology (Top 10%) 2022
- The 3rd Class Scholarship for AY 2013-2014 by Heilongjiang University (Top 5%) 2014
- The 3rd Class Scholarship for AY 2012-2013 by Heilongjiang University (Top 5%) 2013
- The 2rd Class Scholarship for AY 2011-2012 by Heilongjiang University (Top 5%) 2012

EXTRACURRICULAR ACTIVITY

Member of Publicity Department, College Student Union 2020-2022

- Took charge of organizing varieties of campus activities such as Campus Rainbow Running, Mid-Autumn Festival Gala, Academic Salon Lectures, etc.

Member & Minister of Publicity Dept., Student Union of Heilongjiang Univ. 2011-2013

- Organized and publicized varieties of campus activities such as the university celebration for 70th Anniversary, annual sports meetings, etc.
- Took the responsibilities of department management, including activities organization and task allocation, daily work coordination, and new member recruitment.

SKILLS & OTHER

- **AI/ML**: PyTorch, TensorFlow, Keras, scikit-learn, CUDA
- **Languages**: Python, Java, C, C++, SQL, MATLAB, Linux, AutoCAD
- **Standardized Tests**: TOEFL: 108 (R 30, L 30, S 22 W 26); GRE: V 160, Q 170, AW 4.5
- **Hobbies**: Painting, Photography, Hiking, etc.