Haowei Cheng

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Education

B.Eng. Lanzhou Institute of Technology (LZIT), China　　　　　　**Sept. 2017 – Jun. 2021**
- School of Computer Science & Artificial Intelligence
- Major: Software Engineering
- Average Score: 81.07/100　　Ranking: Top 5%

M.S. Japan Advanced Institute of Science and Technology (JAIST)　　**Oct. 2021 – Sept. 2023**
- School of Information Science
  Advisor: Prof. Masashi Unoki (*Unoki Laboratory*)
- Research Interests: Speech Signal Processing, Machine Learning
- Average Score: 82.16/100

Ph.D. Waseda University　　　　　　　　　　　　　　　　　　**Apr. 2024 – Mar. 2027**
- Graduate School of Fundamental Science and Engineering
  Department of Computer Science and Communications Engineering
  Advisor: Prof. Hironori Washizaki (*Washizaki Laboratory*)
- Research Interests: Reliable Software Engineering, Requirement Engineering, Machine learning, Generative AI
- Research Topic: Enhancing Reliability in Requirements Engineering of Software Systems through ML/Generative AI technologies (ML/GenAI for RE)

Professional Experience

Design of COVID-19 Visualization Platform in China　　　　　　**Feb. – Jun. 2021**
- Analyzed the National Health Commission and Baidu Inc's COVID-19 data
- Utilized Web Crawler to collected, cleaned, and adjusted the raw data (*Python Scrapy*)
- Design a reasonable database (*MySQL*) and visualize the data (*Flask, Echarts*)

Class Assistant Sign-in Management Project　　　　　　　　　　**Aug. – Dec. 2020**
- Analyzed the current situation of "Digital Classroom" for students at home and abroad
- Applied the theory of session to the management of user log-in and authorities
- Applied major technologies (*Spring Boot, Bootstrap*) to realize system function
- Tested and optimized the project

Operating Systems - File System Implementation　　　　　　　　**Nov. – Dec. 2021**
- Simulates a simple file system using *bitmaps* and other methods to allocate space appropriately
- HCnet-614/Operating-System-Assignment: JAIST-I233 (github.com)

Speech Recognition-Speaker Recognition　　　　　　　　　　　　**Jan. – Feb. 2022**
- Speech signal processing: add white noise (MFCC), design filters (IRR, FIR)
- Speaker recognition: training model (GMM), calculating match scores
- Accuracy rate: 96.21%

Machine Learning - Text Classification　　　　　　　　　　　　**Jan. – Feb. 2022**
- Converting text to vectors (Tfidf, word2vec)
- Using multilayer perceptron (MLP) training, the accuracy reaches 0.98 (200 iterations)
- Machine-Learning-Assignment/Coding Project at main · HCnet-614/Machine-Learning-Assignment (github.com)

Deep-fake Speech Detection　　　　　　　　　　　　　　　　　**Sept. 2022 – Aug. 2023**
- Analyzed the concept of Spectro-temporal Modulation (STM) representation in human auditory mechanism
- Applied the light convolutional neural network bidirectional long short-term memory (LCNN-BiLSTM) model that utilizes STM representations for efficient deep-fake speech detection.
- This work offers theoretical support for a fake speech detection system (EER of 42.10%)

Work Experience

- **Software Engineer Inter**　　　　　　　　　　　　　　　　　**June – July 2019**
  Company name: Xi'an Yunchuang Power Information Technology Co., Ltd
- **English Teaching Assistant**　　　　　　　　　　　　　　　　**Sept.2022 – Jun 2023**

Nomi International Exchange Association / 能美市国際交流協会

- ○ **Co-Chair**   **Apr. 2024 – Present**
  Waseda University, Mu Tau - IEEE Eta Kappa Nu (IEEE-HKN)
  Description: Waseda University Mu Tau chapter is the first IEEE Eta Kappa Nu chapter in Japan. The chapter was founded on July 22, 2018 during the IEEE COMPSAC 2018 in Tokyo. Our mission is to promote excellence in research and to serve the students of the Electrical Engineering community at Waseda with academic support and services.

Honors & Awards

- ○ Pioneering Research Program for a Waseda Open Innovation Ecosystem (*W-SPRING*)   **Mar. 2024**

  Issued by *Japan Science and Technology Agency (JST)*

  This program aims to lead the future of science, technology and innovation, and to promote the development of diverse career paths for widespread success of doctoral human resources.
- ○ *First Prize*, China's National Undergraduate Mathematical Contest in Modeling   **Nov. 2020**
- ○ *First Prize*, "Software Engineering Cup" Programming Competition   **Nov. 2018, Nov. 2020**
- ○ Title of Excellent Software Engineer Intern   **Aug. 2020**
   Xi'an Sentu Science and Technology Co., Ltd., Xi'an, China
- ○ National Encouragement Scholarship of China   **2018-2020**
- ○ The First Prize Scholarship of LZIT   **2018-2020**
- ○ Title of Outstanding Graduate   **Nov. 2019**
- ○ Title of Merit Student   **Nov.2018, Nov. 2020**
- ○ Title of Excellent Student Leader   **Nov.2019, Nov. 2020**

Publications

- ○ **Haowei Cheng**, Candy Olivia Mawalim, Kai Li, Lijun Wang, Masashi Unoki, Analysis of Spectro-Temporal Modulation Representation for Deep-Fake Speech Detection, *in Proc. Asia-Pacific Signal and Information Processing Association Annual Summit and Conference (APSIPA ASC 2023)*.

- ○ **Haowei Cheng**, Candy Olivia Mawalim, Kai Li, Masashi Unoki, Study on Deep-Fake Speech Detection Based on Spectro-Temporal Modulation Representation, *in Proc. Joint conference of Hokuriku chapters of Electrical and information Societies (JHES 2023)*.

Others

- ○ Languages: Chinese (Native), English (Fluent): CET-6, TOEIC-820, Japanese (Fluent): JLPT-N2
- ○ Technical field: C, Java, JavaScript, Python, MySQL, MATLAB, Pytorch, Transformer, Linux, Git
- ○ Interests: Piano, Volunteer Activities, Table Tennis, Skiing