China Unicom Software
Research Institute,
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Zijing Ma

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Education

Central South University **Changsha, China** **Sep 2020 – Jun 2023**
- MSc, Computer Science and Technology, GPA: 3.49/4
- Thesis: Research on Multiple Environments Reuse of Gesture Recognition Based on RFID
- Supervisor: Prof. Shigeng Zhang

South China Agricultural University **Guangzhou, China** **Sep 2016 – Jun 2020**
- BSc, Computer Science and Technology, GPA: 4.22/5, Ranking: 3/185
- Supervisor: Prof. Shuangjuan Li

Pubilications

- **Zijing Ma**, Shigeng Zhang et al., "RF-Siamese: Approaching Accurate RFID Gesture Recognition With One Sample," in IEEE Transactions on Mobile Computing, 2022. [PDF]
- Shigeng Zhang, **Zijing Ma** et al., "HearMe: Accurate and Real-time Lip Reading based on Commercial RFID Devices," in IEEE Transactions on Mobile Computing, 2022. [PDF]
- Shigeng Zhang, **Zijing Ma** et al., "Real-time and Accurate Gesture Recognition with Commercial RFID Devices," in IEEE Transactions on Mobile Computing, 2022. [PDF]
- **Zijing Ma**, Shuangjuan Li and Dong Huang, "Exact algorithms for barrier coverage with line-based deployed rotatable directional sensors," 2020 IEEE Wireless Communications and Networking Conference (WCNC), 2020, pp. 1-7. [PDF]

Research Experience

Accurate and Few-shot RFID Gesture Recognition **Apr 2021 – Oct 2022**
- Role: Collected and processed raw signals, implemented network model and analyzed results using PyTorch and Matlab.
- Project Description:
  - Researched how to achieve accurate gesture recognition using RFID with less training samples (*e.g.*, one sample for each gesture) so that the system can deploy to a new environment with lower training cost.
  - Proposed RF-Siamese, a novel approach that leveraged short-time Fourier transform and Siamese network to extract informative features from RFID signals. Achieved high recognition accuracy with only one sample per gesture.
- Achievements: The work RF-Siamese was accepted by **IEEE Transactions on Mobile Computing**.

Real-time RFID Gesture/Word Recognition **Oct 2020 – Dec 2021**
- Role: Collected and processed raw signals, implemented network model, and analyzed results using PyTorch and Matlab.
- Project Description:
  - Researched how to achieve real-time and accurate activity recognition systems using RFID.
  - Proposed ReActor and HearMe, two approaches that extracted features from both the time and frequency domains of RFID signals for gesture and word classification, respectively.
  - Employed the random forest algorithm for gesture and word classification, respectively.
- Achievements: The works ReActor and HearMe were both accepted by **IEEE Transactions on Mobile Computing**.

Algorithms for Barrier Coverage with Directional Sensors **Apr 2019 – Dec 2019**
- Role: Designed and simulated the algorithms.
- Project Description:
  - Researched how to form barrier coverage with directional sensors.
  - Proposed two algorithms to theoretically judge whether there exists a barrier and how to form a barrier.
- Achievements: The work was accepted by **WCNC 2020**.

Prizes and Awards

- China Postgraduate mathematical contest in modeling, National Second Prize
- National English Competition for College Students, National Second Prize
- Huawei Scholarship
- Central South University First Prize Scholarship
- National English Writing Competition, Second Prize

- South China Agricultural University Second Prize Scholarship

Working Experience

China Unicom Software Research Institute **Jul 2023 – Now**

Big Data Development Engineer

- Job Description:
  - Managed China Unicom's business data using the Hive database in the Hadoop cluster.
  - Designed features of business and applied the Random Forest algorithm to classify business into distinct debt collection difficulty levels, enabling the provision of tailored debt collection strategies.

Research interests

Mobile Computing, Internet of Things, Sensing Systems, Cybersecurity.

Technical Skills

- English Proficiency: TOEFL 101 (Reading 26, Listening 28, Speaking 23, Writing 24).
- Programming Language: C, Java, Python, Matlab.
- Familiar with deep neural networks. Able to design complex deep neural models using PyTorch.