Ruijia Fan

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Education

Peking University (PKU) *Beijing, China*
Third-Year Master Student in Computer Science. Advisor: Prof. **Hong Liu**. 2022.09 – 2025.07
Research Topics: Affective Computing, Audio Signal Processing and deep learning. **GPA: 3.61 / 4.0**

Hunan University (HNU) *Changsha, China*
Bachelor of Computer Science and Technology. 2018.09 – 2022.06
Bachelor Thesis: Multimodal emotion analysis in human-computer dialogue. **GPA: 3.75 / 4.0**

Publications

- **AttA-NET: Attention Aggregation Network for Audio-Visual Emotion Recognition**
  Ruijia Fan, Hong Liu, Yidi Li, Peini Guo, Guoquan Wang, Ti Wang.
  *IEEE International Conference on Acoustics, Speech and Signal Processing (**ICASSP**)*, 2024.
- **Memristive neural network circuit design based on locally competitive algorithm for sparse coding application**
  Qinghui Hong, Pingdan Xiao, **Ruijia Fan**, Sichun Du.
  Neurocomputing, 2024.
- **Augmented Skeleton Sequences with Hypergraph Network for Self-Supervised Group Activity Recognition.**
  Guoquan Wang, Mengyuan Liu, Hong Liu, Peini Guo, Ti Wang, **Ruijia Fan**.
  Pattern Recognition, 2024.

Submitted Papers

- **Identity-aware Dual-constraint Network for Cloth-Changing Person Re-identification.**
  Peini Guo, Mengyuan Liu, Hong Liu, **Ruijia Fan**, Guoquan Wang.
  Submitted to IEEE Transactions on Multimedia.

Projects Experience

Intelligent Supermarket Robot, Perception Team Leader 2023.07 – Present

- Goal: Empower the robotic system with the capability to discern the emotional states of customers and deliver tailored services accordingly.
- Main work: 1) Collect natural emotional data from robot interactions. Develop new multi-modal annotation methods and dataset for robot-human scenarios. 2) Use multi-modal wakeup instead of voice-only. Enhance robustness via multi-modal fusion. 3) Model user experience based on scenes and user info. Identify user intents using multi-modal features. 4) Develop end-to-end emotional speech synthesis pipeline with facial expressions.

Software Copyright

- **Audio-visual fusion emotion analysis software V1.0 for service-oriented robot scenarios.** Hong Liu, **Ruijia Fan**, Yidi Li.
  Software Copyright, Published Application Number: 2023SR0595811, 2023.

Work Experience

Huawei, *Shenzhen, China* 2023.07 – 2023.08

Research Intern in Digital Global Technology Service GTS. Topic: Large language model.

- Goal: Combining artificial intelligence and the development process to speed up from demand management to develop the speed of delivery.
- Demand Analysis and Identification: Utilize large language models to learn and analyze vast amounts of data, automatically extracting and recognizing user needs, thus reducing the time and cost of manual analysis.
- Smart Assistant and Documentation Generation: Large language models can serve as smart assistants, providing real-time code explanations, API documentation generation, and other supports for development teams, thereby improving development efficiency.
- Leveraging the LoRA low-rank matrix approximation technique, we efficiently fine-tuned a large language model using a P100 GPU, significantly reducing computational costs while maintaining exceptional task performance.

Nanjing Xuming Private Equity Fund Management Co. LTD, *Nanjing, China* 2024.02 – 2024.03

Research Intern in End-to-End Model Team. Topic: Time Series Volume-price Model.

- Goal: Solve sequence data prediction problems by using volume-price data, Level-2 data, and factor information.
- The proposed times series volume-price model outputs a set of factor combinations to guide stock selection in daily frequency trading.
- The Rank IC of the output factor combination reaches above 10 with merely 63 factors fed in the model.

Awards, Honors and Competition

- Outstanding Graduate Award, *Hunan Province* (**Top 1%**) 2022
- Outstanding Graduate Award, *Hunan University* (**Top 5%**) 2022
- Second Prize of Hunan Province University Student Computer Works Competition. 2021
- First Prize Scholarship, *Hunan University* (**Top 5%**) 2021
- Excellence in course Performance Award, *Hunan University* (**Top 1%**) 2021
- Merit Student Scholarship, *Hunan University* (**Top 5%**) 2019, 2020
- Second Prize of Competition Scholarship, *Hunan University* (**Top 10%**) 2019, 2020
- Excellent Student Cadres Award, *Hunan University* (**Top 1%**) 2019, 2020

Skills

- **Programming**: Python, Pytorch, C/C++, MATLAB, LaTeX.
- **Language**: Mandarin (Native), English (Fluent).

Open Source

Codes for my published papers are available on my GitHub:

- (ICASSP 2024) AttA-Net: https://github.com/NariFan2002/AttA-NET