JIERUI ZHANG

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EDUCATION

University of Electronic Science and Technology of China (UESTC)   *Sep. 2019 - Present*
"Internet+" Experimental Class for Interdisciplinary Talents
GPA: **90.71 (3.96/4.00)** | **Dual Degree**
B.Eng. Smart Grid Information Engineering,   School of Mechanical and Electrical Engineering
B.S.   Data Science and Big Data Technology, School of Mathematical Sciences

LANGUAGE TEST

- IELTS overall 7.5 (L: 8.0, R: 8.5, W: 6.0, S: 6.5)

RESEARCH INTERESTS

- AI at the Network Edge; MIMO Communications; Over-the-Air Computation
- Machine Learning; Data Science; Federated Learning
- Game Theory; Optimization
- Smart Grid; Green Energy

HONORS AND AWARDS

- **China National Scholarship** (with ranking of **1/137**), 2020
- **China National Scholarship** (with ranking of **1/135**), 2021
- **Scholarship of Gratitude to Chinese Modern and Contemporary Scientists** (**1** out of **271** and **12** out of about **15000**), 2022
- **National 1st Prize** at "Challenge Cup" National Undergraduate Extracurricular Academic Science and Technology Competition, Nov. 2021
- **National 2nd Prize** at China Undergraduate Mathematical Contest in Modeling, Nov. 2021
- **National Silver Medal** at China Collegiate Algorithm Design & Programming Challenge Contest, Mar. 2022
- **National 3rd Prize** at Lan Qiao Cup Competition, Jun. 2022
- **National 3rd Prize** at National University Student Social Practice and Science Contest on Energy Saving & Emission Reduction, Aug. 2022
- **Semifinal Winner Prize** at Zhongguancun Science Park Talent Maker Competition, Jul. 2021
- **Provincial Level A Certificate** for Comprehensive Quality, Jun. 2022
- **Provincial 1st Prize (Top 1%)** at Mathematics competition of Chinese College Students, Dec. 2020
- **Outstanding Graduate** both in Sichuan Province (**4%**) and at UESTC (**10%**), Nov. 2022
- **Nomination for The Most Outstanding Students Award of UESTC**, highest honour for UESTC undergraduates (**1** out of **271**, competing for **10** quotas out of **5000**), Nov. 2022

PUBLICATIONS

Journal Paper

[1] **J. Zhang**, H. Li, "The conditions where $(fg)^{'} = f^{'}g^{'}$ and $(f/g)^{'} = f^{'}/g^{'}$ hold", **Mathematics Field of UESTC**, vol. 10, pp. 17-19, Sep. 2019.

Conference Paper

[2] Z. Chen, **J. Zhang**, et al. "Research on Temporal and Spatial Distribution of Electric Vehicle (EV) Charging Load Based on Real Data & Simulation." **2021 IEEE 2nd China International Youth Conference on Electrical Engineering (CIYCEE). IEEE**, 2021.

SUBMITTED PAPER

Conference Paper

[1] **J. Zhang**, J. Chen, H. Deng, W. Hu, "A Novel Framework Based on Adaptive Multi-Task Learning for Bearing Fault Diagnosis", submitted to The 3rd International Conference on Power Engineering (ICPE 2022), Sanya, China. (**Accepted** but not published yet, and 95% papers accepted by ICPE 2022 will also be included to **Energy Reports (IF: 4.937)**)

RESEARCH PROJECTS

Temporal and Spatial Distribution of Electric Vehicle Charging Load   *Jan. 2021 - Nov. 2021*

- Use the K-Means clustering algorithm to analyze the original data of taxi trips in Chengdu, complete the knowledge discovery process, and obtain the travel patterns of residents through statistics.
- Combining the travel patterns of residents and the charging & consumption characteristic parameters of single electric vehicle, establish a Monte Carlo simulation model.
- Obtain the temporal-spatial distribution patterns of electric vehicle load based on transition matrix and Monte Carlo simulation, and complete the visualization.
- A paper is produced, which is accepted by **IEEE CIYCEE**.

Community Discovery in Big Data with Algorithm   *Apr. 2021 - Aug. 2021*

- International Exchange Program with **National University of Singapore**.
- Explore network science, examine the structure, hubs and motifs in social networks under big data.
- Use related graph algorithms to find possible communities in the graph, discover potential patterns.

A Novel Framework for Bearing Fault Diagnosis   *Mar. 2022 - Oct. 2022*

- Data augmentation is applied to solve the problems of data lack and weak generalization ability.
- A novel method to process time series, GAF-MTF (Gramian Angular Fields and Markov Transition Fields), which generates better 2-D image for robust CNN classification, is applied.
- Adaptive Multi-Task Learning (MTL) with an elaborately designed function is applied, which proves to be more efficient and powerful.
- A novel framework for bearing fault diagnosis is proposed. The accuracy in various datasets could be higher than 99%. A paper is produced, accepted by **ICPE 2022**.