DeFeng Zhou

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Education

Sun Yat-sen University, Guang dong, China Sept. 2021 – June. 2025

B.S. in College of Intelligent Systems Engineering
Supervisor: Prof.Shimin Gong (Director of WINS Lab)

GPA (Major Course): 3.8/4.0 (top 5% of majors in 2021-2022)

*ranking **1st*** in Image Process, Advanced mathematics, Scientific Research Practice and Innovation, Introductory Internship

Research Experience

WINS Lab Laboratory July. 2023 – Current

Research Internship Advisor: Shimin Gong

Project 1 Sept. 2023 – Feb. 2024

First Author IRS-Assisted Wireless Secure NOMA Transmission

D. Zhou, S. Gong, L. Li, B. Gu and M. Guizani, "Deep Reinforcement Learning for IRS-assisted Secure NOMA Transmissions Against Eavesdroppers," accepted by 2024 International Wireless Communications and Mobile Computing (**IWCMC**)

- **Introduction**: NOMA system improve spectrum efficiency and connectivity in wireless network. However, they are increasingly vulnerable to unauthorized receivers due to simultaneous transmissions. Inspired by the inherent nature of NOMA and IRS, we intergrated them and explore the potential of further enhancing the seurity.

Project 2 Feb. 2024 – Current

First Author Utilize Hybrid IRS and DRL for Secure NOMA Transmission

Defeng Zhou, Lanhua Li, Shimin Gong, Bo Gu, Mohsen Guizani, Dusit Niyato, "Learning Simultaneous Information and Jamming Beamforming for Hybrid IRS-assisted Secure NOMA Transmissions", going to be submitted to IEEE Transactions on xxx in several days.

- **Introduction**: Expanding on our previous conference version, we consider a new long-term dynamic wireless network with practical energy constraints. We introduce a novel hybrid IRS and develop a lightweight algorithm to avoid the high com- putational complexity of AO.

Issued Patent 1 Aug. 2023 – Apr. 2024

Co-Author Multimode collaborative transmission method and system for wireless networks

- **Introduction**: The present invention discloses a multimode collaborative transmission method and system for wireless networks. After constructing an optimization model of the throughput problem with respect to the control variables, with the objective of maximizing the sum of passive and active transmission throughput, the problem is decomposed using a hierarchical learning approach in order to solve the control variables at different moments.

YCLab Laboratory Sept. 2022 – Nov. 2023

Research Internship Advisor: Calvin Yu-Chian Chen (Director of AI for Science (AI4S) at Peking University)

Project 3 May. 2023 – Nov. 2023

Co-Author Computer vision about image deraining using detail scaling and texture extraction

Jiehui Huang, Zhenchao Tang, Xuedong He, Jun Zhou, **Defeng Zhou**, Calvin Yu-Chian Chen, "Progressive network based on detail scaling and texture extraction: A more general framework for image deraining", accepted by **Neurocomputing** (Chinese Academy of Sciences ranking Q2 and JCR Q2).

- **Introduction**: Many feature extraction components have been proposed for image deraining tasks. However, few models have addressed the integration of multi-scale features from derain images. we introduces a migratable multi-scale feature blending model, which is a progressive learning model based on detail dilation and texture extraction.

Project 4 Sept. 2022 – Mar. 2023

Primary Researcher Multimodal voiceprint recognition and statistical analysis

- **Introduction**: We proposed an innovative approach using the Wav2vec model to extract sound features, significantly enhancing the overall accuracy of multi-classification tasks.
- Demonstrated strong model generalization: the model performs well on both public datasets and our collected data.
- Achieved high accuracy in early diagnosis, surpassing traditional machine learning methods like SVM and K-means.

♡ Hornors and Awards

International

First Prize, 12th Asia and Pacific Mathematical Contest in Modeling (Also Best Programming Award and Best New Media Award) 2022

Domestic

Sliver Prize, 13th MathorCup Mathematical Modeling Challenge for Colleges and Universities 2023

Finalist, LingxiGames Cup (Programming Competition of Sun Yat-sen University) 2023

Scholarship

The Third Prize Scholarship (Top 25%), Sun Yat-sen University 2022-2023 Academic Scholarship 2023

Interdisciplinary Talent Award (Only 6 student in the whole college), Sun Yat-sen University Intelligent Medical Interdisciplinary Talent Training Fund 2023

Ethics Award, Sun Yat-sen University 2021-2022 Specialized Scholarships 2022

The First Prize Scholarship (Top 5%), Sun Yat-sen University 2021-2022 Academic Scholarship 2022

Skills

- Programming: Python, C/C++, Matlab, LaTeX, HTML
- Framework: PyTorch, TensorFlow, Gym, scikit-learn
- Devtools: Git (version control system), Linux (operating system)
- Language: Chinese (Native Speaker), English (IELTS: 6,5(5.5), CET-6)

Academic Service

- Reviewer of Neural Computing and Applications.
- Google Scholar: https://scholar.google.com.hk/citations?hl=zh-CN&user=6B91xcQAAAAJ