Xianzu Wu

Department of Data Science and Big Data Technology
Yangtze University

xianzuwu@gmail.com
+86 18971223095
xianzuwu.github.io
orcid: 0000-0003-4493-4596

EDUCATION

B.E. Data Science and Big Data Technology, Yangtze University, Wuhan, China, 2020-present
advisor: Professor Guozhong Gao

RESEARCH EXPERIENCE

Key Laboratory of Exploration Technologies for Oil and Gas Resources, Ministry of Education, Yangtze University Wuhan, China
Undergraduate Researcher Jul 2021 – 2022 Jul
Data enhancement: The frequency band with the largest signal amplitude is extracted first.
Data correction: We use the high-pass filtering in Fourier filtering to extract the high frequency signal of this frequency band, and then we perform statistical analysis on the processed data.
Data mining: we take statistical analysis of this signal time series data, we are using the k-means mean clustering of this segment data to get 3 types of clusters family we define as background noise, major signal values and outlier signals.
Data analysis: We subtract the background from the main to get the characteristic signal value, and analyze the characteristic signal value of each formation to get the characteristic signal value and water absorption intensity are proportional to each other, and the water absorption intensity and oil and gas reserves are proportional to each other. We can get the characteristic signal value and the oil and gas reserves proportional to each other, so that we can get the rough distribution of oil and gas reserves in the formation through the fiber optic vibration logging signal, and we can know which formation has high oil production, and we can save money on downhole drilling. This work was published in the journal SN Applied sciences,and I am the first author of the publication.

School of Cyber Science and Engineering, Wuhan University Wuhan, China
Intern Jun 2022 – Dec 2022
Under the guidance of Professor Libing Wu.
We organize the problems related to MARL (Multi-Agent Reinforcement Learning) and assist the team to build multi-agent RL environments based on Pettingzoo framework to be applied in simulated maritime warfare confrontation. In the maritime intelligent equipment integration and collaborative warfare refers to the integration and collaboration of different types of unmanned equipment with different capabilities under the top-level integration design requirements of the maritime formation combat system, in order to accomplish specific combat tasks.

Subsurface Modeling and Intelligent Prospecting RD Center, Yangtze Unversity Wuhan, China
Research Assistant Jul 2022 – present
Under the guidance of Professor Guozhong Gao. in order to further optimize the accuracy of the convolutional neural network architecture and inspired by the structure of ResNet and DenseNet, we designed a direct sampling feature transfer method by directly sampling intermediate features and stitching the direct sampling results containing multi-process feature information. We designed a direct sampling feature transfer method by directly sampling intermediate features and stitching direct sampling

results containing multi-process feature information, which is not only more applicable but also effectively improves feature utilization. The research results are submitted to NeurIPS'23, where I am the first author of the work.

Department of Computer Science and Engineering, The State University of New York at Buffalo NY, USA
Remote Intern Dec 2022 – present
Under the guidance of Professor Junsong Yuan. I combined GAN and Transformer to propose a stable point cloud complementation model that can still complement point clouds well with only 16 partial point clouds. This work is currently submitted to ICCV'23.

RESEARCH AREAS

Computer Vision: 3D reconstruction, point cloud Analysis

Trustworthy Machine Learning: Privacy, Robustness

Deep Learning: Graph Neural Networks

PUBLICATIONS

Under review

2023 Xianfeng Wu, **Xianzu Wu**, Tianyu Luan, Zhongyuan Lai*, Junsong Yuan*, FSC: Few-point Shape Completion, International Conference on Computer Vision (ICCV23').

2023 **Xianzu Wu**,Yangyang Zheng,Xianfeng Wu,Weifeng Shang,Cheng Meng,Zhou Xie,Yajing Bai, Guozhong Gao*, DSNs:Can Direct Sampling Networks make for better Information Flow?(NeurIPS23')

Journal Articles

2022 Xianzu Wu, Lixiong Gan, Shixiong Yuan, and Rui Deng. "A preliminary study on wellbore flow interpretation of fiber optic vibration signals based on K-means clustering algorithm." In: *SN Applied Sciences* 4 (Aug. 2022). DOI: 10.1007/s42452-022-05117-6

Conference Proceedings

2022 Xianfeng Wu, Xinyi Liu, Junfei Wang, et al. "Transformer-Based Point Cloud Classification." In: *Artificial Intelligence and Robotics*. Ed. by Shuo Yang and Huimin Lu. Singapore: Springer Nature Singapore, 2022, pp. 218–225. ISBN: 978-981-19-7946-0

AWARDS

Awards and Honors

2022 Third Prize in Hubei Contest District in China Undergraduate Mathematical Contest in Modeling

2021 Third Prize in Hubei Contest District in China Undergraduate Mathematical Contest in Modeling

2021 National Third Prize of Mathematical Modeling Competition in Yangtze River Delta Universities

EXTERNAL AND INTERNAL FUNDING

1 Machine vision-based recognition of abnormal human postures and rehabilitation movements
Key Research and Development program projects of Hubei Province (No. 2020BCB054)
2020/09-2022/07: RMB 1,000,000

2 Intelligent Identification of Fluid around the Well Based on Fiber Optic Vibration Signal
National Key Project of University Student Innovation and Entrepreneurship Program (No. 202210489004)
2022/09-2023/07: RMB 20,000

3 Research on Comprehensive Prediction Method of Casing Damage
Hubei Provincial Education Department Science and Technology Research Key Project (No. D20191302)
2019/09-2021/12: RMB 40,000

SERVICE

Academic Journal and Conference Reviewer

CMC-Computers, Materials Continua

Membership in Professional Societies

China Society of Image and Graphics (CSIG) Student Member

SKILLS

Programming	Python, C/C++, Java, LaTex, Matlab, R
Deep Learning	PyTorch, TensorFlow