Xianzu Wu

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EDUCATION

B.E.   Data Science and Big Data Technology, Yangtze University, Wuhan, China, 2020-present

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 project code is at [DirectSamplingNet](#) .

Department of Computer Science, University of Texas at Dallas Tex, USA
Remote Intern Jun 2023 – Sep 2023
Under the guidance of [Assistant Professor Yunhui Guo](#). We utilize the learning method of continue learning to solve the problem of Machine Unlearning with multiple perspectives. The project code is at [MVCIL](#) .

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 64 partial point clouds.We also present FPFH information entropy to prove the feasibility of our method. This work accept in the CVPR'24.

RESEARCH AREAS

Computer Vision: 3D reconstruction, AIGC

Trustworthy Machine Learning:

AI4Science: AI to model petrophysical

PUBLICATIONS

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

2024 **Xianzu Wu**, Xianfeng Wu, Tianyu Luan, Yajing Bai, Zhongyuan Lai*, Junsong Yuan*, FSC: Few-point Shape Completion, The IEEE / CVF Computer Vision and Pattern Recognition Conference (CVPR'24).

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

PATENT

2024 Zhongyuan Lai, Hui Xiong, Fengchun Zhou, Xianfeng Wu, Yajing Bai, **Xianzu Wu**,et al. 2024, RGB image-based 3D hand pose estimation method, device and processing equipment, 2024103536669, filed Mar. 27 2024

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

Computer Vision Foundation (CVF) Fully Enrolled Member

SKILLS

Programming   Python, C/C++, Java, LaTex, Matlab, R

Deep Learning   PyTorch, TensorFlow