

Zirui Zhang

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EDUCATION

Haifa University, Haifa, Israel

Oct. 2022-Dec. 2024

Master of Science in Marine Geosciences by thesis, LEON H .Charney School

Supervisor: Prof.Regina Katsman

Grade: 90.5/100

China Three Gorges University, Hubei, China

Sep. 2018-July 2022

Bachelor of Civil Engineering

Supervisor: Prof.Jie Liu, Prof.Ruihong Wang

Grade:84.8 Ranking: 19/200

Outstanding graduate from CTGU

RESEARCH EXPERIENCE

Master Thesis Research Project, University of Haifa, Israel,

2022-2024

Project: "*Mechanism and Exploitation of Methane Hydrates in the Mediterranean Sea*"

- Employed representative elements volume (REV) of rocks to analyze the complex structure of quartz sand.
- Performed numerical simulations to investigate fluid environment changes during the development of methane hydrates from nodules to mature stages.
- Utilized scale-up techniques to extrapolate micro-scale parameters to macro scales for assessing methane hydrate exploitability.
- Developed an academic poster presented at academic conference.

Undergraduate Scientific and Technological Innovation Project, China Three Gorges University

Project: "*Study on the mechanism of fracture visualization grouting diffusion and magnetic fluid infiltration*",

2018-2021

Research Assistant and Leader of undergraduate

- Proposed a Device and Method of Visualization Fracture seepage Simulation using Magnetic fluid;
- Proposed An experimental device and method for Measuring the Opening of a certain point of rock; fissure and calibrating the permeability Pressure value using magnetic fluid;
- Assisted professor in monograph editing;
- Participated in the design and implementation of magnetic fluid seepage test on rock fissure.

PAPER & PUBLICATION

Patent

- Liu Jie, **Zhang Zirui**, LI Zhao, SHI Qian, Tang Hongyu, Wang Shuyu, Gao Sufang, Sun Tao, LUO Zhiqiang, Xie Xiaokang, Li Hongya, CAI Xianchan, Shen Haowei. *Experimental device and method for measuring opening degree of certain point of rock fracture and calibrating osmotic pressure value by using magnetic fluid* [P]. China: CN110763604B,2022-02-08.
- Liu Jie, Li Zhao, **Zhang Zirui**, WANG Shuyu, GAO Sufang, Sun Tao, Tang Hongyu, SHI Qian, Li Zheng, CAI Xiancan, SHEN Haowei, LI Yuanhang, HE Zhuowen, Wu Zijin, WU Jianghong, ZHAO Min, Wu Hao. *Device and Method of Visualization Fracture seepage Simulation using Magnetic fluid* [P]. China: CN110296928A,2019- 10-01.
- Liu Jie, GUO Jianxiang, JIANG Pan, **Zhang Zirui**, Liu Zhongkai, Tang Hongyu, Chen Ziyue, Wang Yansong, Song Rui, Sun Rongqi, Li Yunzhou, SHI Qian, Yang Haoyu, XIE Xiaokang, Li Hongya. *The invention relates to a test device and method for simulating anchor drawing of constant resistance soil in deep soil layer.*[P] China: CN112730055A,2021-04-30.

- Liu Jie, Guo Jianxiang, Liu Zhongkai, Jiang Pan, **Zhang Zirui**, Cai Xiancan, Mo Chenglin, Chen Ziyue, Wang Yansong, Song Rui, Sun Rongqi. An Electric Hydraulic Device for Conversion and Pressurization between Flow and Solid States and Its Usage Method [P]. China: CN114934919A, 2022-08-23.

Journal

- Liu Jie, Li Zhao, Yang Yunan, **Zhang Zirui**, Tang Hongyu, Gao Jin, Shen Jian. *Rockfracture seepage device feasibility and visualization experimental study* [J]. Rock and soil mechanics, 2020, 9 (12) : 4127-4136 + 4144. DOI: 10. 16285 / sm j.r. 2019. 1482.(in Chinese)

Undergraduate graduated thesis

- Optimization design of residential building pile foundation based on neural network learning. (Grade A+)

Master Thesis

- Permeability evolution of gas hydrate bearing sediments affected by hydrate formation morphology and precipitation pattern: insights from the pore scale modelling.

ACTIVITIES & AWARDS

- **Charney school fellowship** at Haifa university
- **Hatter Excellent scholarship** at Haifa university
- **Israel China Friendship Society Excellent Student Scholarship** in 2022
- **First-class** (5% in the grade) outstanding student scholarship of CTGU in the first and second semester respectively during 2018 to 2020
- **Second-class**(10% in the grade) outstanding student scholarship of CTGU in the fifth and sixth semester respectively during 2020 to 2022
- **Meritorious Winner**(Top5% Internationally) of *America Mathematical Contest In Modeling* in 2020
- **Second prize**(Top 10% in the China)of *China National Structural Design Information Technology Competition* for College Students in 2021
- **Second prize**(10% in the China) of *Higher Education Cup National College Students Mathematical Modeling* Hubei Contest in 2019

INTERNSHIP EXPERIENCES

Guangxi Beibu Gulf Investment Group, China **July 2021 --Sept.2021**
Engineering management, Engineering department

- Project bidding management
- Engineering construction coordination
- Shallow foundation pit excavation management
- Project schedule management;

CSCEC Oriental Decoration Research and Design Institute, China **Dec 2021--March 2022**
BIM R&D Engineer

- Architectural and building model design
- Developing building information model software by python and c#
- Constructing building information model lightweight platform

LANGUAGES & SKILLS

- Microsoft Office
- Matlab 、 python 、 C++
- Origin 、 Spss
- AutoCAD 、 Rhinoceros 、 PKPM 、 comsol
- Html 、 csc 、 javascript
- Adobe Premiere Pro 、 Photoshop