Jiarun Yang

311 Ferst Drive Atlanta, GA 30332-0340
jyang968@gatech.edu

EDUCATION

Ph.D. in Geophysics, Georgia Institute of Technology, Atlanta, GA, U.S. 2025 - Present

M.S. in Geophysics, Jilin University, Changchun, China 2022 - 2025

B.S. in Geophysics, Jilin University, Changchun, China 2018 - 2022

RESEARCH INTERESTS

1. Observations of planetary surfaces and subsurface structures using Ground-Penetrating Radar (GPR) and other radar technologies.
2. Subsurface imaging and target identification based on Full-Polarimetric Ground-Penetrating Radar (FP-GPR).

RESEARCH EXPERIENCE

Master's Thesis, supervised by Prof. Xuan Feng 2022 - 2025
Jilin University, Changchun, China.
- Developed dominant scattering mechanism analysis of FP-GPR for cavity detection and target identification.
- Analyzed fine structure of Martian regolith by processing the data from the Zhurong rover, Tianwen-1 mission.

Project Leader, Graduate Innovative Research Program 2024 - 2025
Jilin University, Changchun, China.
- Developed identification methods for extraterrestrial lava tube detection based on FP-GPR.
- Searched for Moon lava tube by analyzing GPR data from the lunar rover Yutu-2.

Research Assistant, National Key Research and Development Program of China 2022 - 2024
Jilin University, Changchun, China.
- Conducted field experiments to verify the effectiveness of millimeter-scale fracture detection using FP-GPR.

FELLOWSHIP AND GRANTS

- Graduate Innovation Fund of Jilin University 2024 - 2025
  Extraterrestrial Lava Tube Identification Technology Based on Full Polarimetric Ground Penetrating Radar
- National Scholarship for Graduate Students of Jilin University 2024
- Graduate Scholarship of Jilin University 2022, 2023, 2024

- Graduate Student Merit Scholarship of Jilin University 2022, 2023, 2024
- Undergraduate Scholarship of Jilin University 2019, 2021, 2022

AWARDS AND HONORS

- Outstanding Master's Thesis of Jilin University 2025
- Outstanding Graduate Student of Jilin University 2025
- Excellent Student Presentation Award of GPR 2024 2024
- Meritorious Winner of Mathematical Contest in Modeling (Top 8%) 2021
- Third Prize of National College Students Exploration Geophysics Competition 2020

ACADEMIC SERVICE

Conference Staff

- Inaugural Conference of Urban and Underground Space Committee of China Geophysical Society and Symposium on Detection and Utilization of Underground Space
- 20^{TH} International Conference on Ground Penetrating Radar (GPR 2024)

PRESENTATIONS

1. Target Identification Using Dominant Scattering Mechanism Analysis of Full Polarimetric Ground Penetrating Radar for Cavity Detection, *20^{TH} International Conference on Ground Penetrating Radar*, Changchun, China, 2024. (Oral)

2. Polarimetric Attributes of Martian Regolith at the Tianwen-1 Landing Site, *20^{TH} International Conference on Ground Penetrating Radar*, Changchun, China, 2024. (Oral)

3. Lava Tube Detection Method of Ground Penetrating Radar Based on Freeman Decomposition, *Symposium on Scientific and Technical Issues in Extraterrestrial Lava Tube Detection*, Wuhan, China, 2023. (Oral)

PUBLICATIONS

1. **J. Yang**, X. Feng, M. Zhang, Y. An, Y. Zhang, L. Wang, Y. Wang, W. Liang, C. Liu, "Target Identification Using Dominant Scattering Mechanism Analysis of Full Polarimetric Ground Penetrating Radar for Cavity Detection," ***IEEE Transactions on Geoscience and Remote Sensing***, vol. 62, pp. 1-14, 2024, doi: 10.1109/TGRS.2024.3394546.

2. **J. Yang**, X. Feng, T. Khuut, Q. Lu, H. Zhou, Z. Dong, M. Zhang, Y. An. "Polarimetric Attributes of Martian Regolith at the Tianwen-1 Landing Site," ***Journal of Physics: Conference Series***, vol. 2887, no. 1, p. 012064, 2024/11/01 2024, doi: 10.1088/1742-6596/2887/1/012064.

3. X. Feng, Y. An, H. Zhou, **J. Yang**, Z. Dong, W. Liang, Y. Wang, L. Wang, “Study on Time-Lapse Detection and Polarization Response Characteristics of Cracks with FP-GPR Based on H-Alpha Decomposition,” ***2025 13th International Workshop on Advanced Ground Penetrating Radar (IWAGPR)***, doi: 10.1109/IWAGPR65621.2025.11108998.

4. X. Feng, L. Wang, H. Zhou, **J. Yang**, Z. Dong, Y. Wang, Y. An, W. Liang, “Research on Rapid

Acquisition of Ice Crack Morphology Using a Decision Tree Fusion Model with FP-GPR," ***2025 13th International Workshop on Advanced Ground Penetrating Radar (IWAGPR)***, doi: 10.1109/IWAGPR65621.2025.11109028.

5. H. Zhou, X. Feng, Z. Dong, E. Nilot, **J. Yang**, L. Wang, et al, "Predictive Rotation Fusion: A Physical Model-Based Fusion Method for Full-Polarimetric GPR Data," ***IEEE Transactions on Geoscience and Remote Sensing***, pp. 1-1, 2025, doi: 10.1109/TGRS.2025.3550887.

6. Y. An, X. Feng, Q. Lu, T. Khuut, **J. Yang**, Z. Dong, et al., "A Study on the Characteristics of Time-lapse Full-Polarimetric GPR for Ice Fractures," ***Journal of Physics: Conference Series***, 1 ed., doi: 10.1088/1742-6596/2887/1/012057.

7. Z. Dong, X. Feng, H. Zhou, M. Zhang, Q. Liu, Y. An, Y. Zhang, **J. Yang**, W. Liang, Y. Yu, C. Liu, "Super-Resolution Detection of Millimeter-Scale Fractures With Fluid Flow Using Time-Lapse Full-Polarimetric GPR and Anisotropy Analysis," ***IEEE Transactions on Geoscience and Remote Sensing***, vol. 62, pp. 1-16, 2024, doi: 10.1109/TGRS.2023.3344665.