Dr. Engr. MUHAMMAD JUNAID

Postdoc Researcher| Exploration Geophysics| Rock Mechanics| Remote sensing| Aerial and laser scanner

Contact Information

Tel: +966579806832, +923015507172 Email: Junaid.mine682@gmail.com

Working Rights: Saudi Premium Residency

Google scholars: https://scholar.google.com/citations?user=IH8QH2oAAAAJ&hl=en

ResearchGate: https://www.researchgate.net/profile/Muhammad-Junaid-76

Membership: Saudi Council of Engineers (**Mining**)

RESEARCH INTERESTS

- Firm background in near surface geophysics applied majorly to mineral exploration and geotechnics
- Strong background in Aerial Photogrammetry, Laser scanner and remote sensing survey for mineral exploration and slope stability assessment
- Active participation in consultancy projects for mineral exploration and geotechnical investigation at national and international level.
- Produced high-quality scholarly publications in internationally recognized peer reviewed journals.

EDUCATION

- **Universiti Teknologi Malaysia, Malaysia.** **2019-2020**
  Doctor of Philosophy (Research) (**Geotechnics**)
  Research area: Aerial Photogrammetry, Applied geophysics, Slope stability assessment

- **Universiti Teknologi Malaysia, Malaysia.** **2017-2019**
  Master of Philosophy (Research) (**Geotechnics**)
  Research area: Aerial Photogrammetry, Electrical resistivity, Exploration geophysics,

- **University of Engineering and Technology, Peshawar, Pakistan** **2010-2014**
  Bachelor of Science (**Mining Engineering**)

EXPERIENCE

1) **Post doctorate Fellow (September 2025 to date)**
   Prince Sultan University Riyadh, Saudi Arabia

   - Automated discontinuity properties extraction for UAV and Laser scanner base 3D point cloud
   - Perform advance rock mass laboratory testing including triaxial compress test for determination of rock mass strength factors.
   - Numerical modelling for rock slope stability assessment using numerous geotechnical software
   - Numerical modelling of pile foundations using advanced geotechnical software
   - GIS and Remote sensing analysis for slope stability assessment

2) **Assistant Professor (September 2022 to date)**
National University of science and Technology, Pakistan.

- Teach undergraduate courses including Engineering survey, Engineering geology, rock and soil mechanics to undergraduate students.
- Postgraduate level teaching of mineral exploration and mining geology, and Mine ventilation, health and safety.
- Supervision of master and PhD Dissertation.

3) **Lecturer (October 2021 to Sept 2022)**
Karakoram International University, Gilgit Baltistan, Gilgit, Pakistan

- Undergraduate level teaching of Rock Mechanics and Surface Mine design to
- Supervision of FYP for undergrade students.

4) **Site Engineer (October 2016 – March 2017)**
Pir and Co Contractor and Transporter, Kohat, Khyber Pakhtunkhwa

- Plan and development of new quarry face for future planning execution.
- Supervised rock blasting operations, ensuring compliance with safety regulations and operational efficiency.
- Manage quarry material haulage and logistics
- Maintained comprehensive operational records and technical documentation related to quarry development, blasting activities, production, and regulatory compliance.

5) **Trainee Engineer (June 2015 – June 2016)**
Bestway Cement Limited, Chakwal, Pakistan

6) **Trainee Engineer (January 2015 – June 2015)**
Askari Cement Limited Nizampur, Nowshera, Khyber Pakhtunkhwa

SUBJECT TAUGHT

- Mining Geology and Mineral Exploration
- Surface Mine Design
- Rock Mechanics
- Mine Ventilation, health and safety
- Engineering Surveying 1 & 2
- Engineering Geology

SOFTWARE SKILL

- **Geophysics**: Horin Geophysical, ZondRes2DInv, EarthImager, Res2DInv
- **GIS & Remote Sensing**: ArcGIS, Google Earth Engine
- **UAV / 3D / Laser Scanning**: ShapeMetrix UAV, Agisoft, Cyclone REGISTER 360 (Leica)
- **Modelling**: Golden Surfer, Rocscience, MIDAS GTS NX
- **Programming**: Python

RESEARCH INTEREST

• Mineral resource exploration
• Exploration & Applied Geophysics
• Rock Slope Stability
• Aerial photogrammetry and Laser Scanner
• Remote Sensing
• Rock mass laboratory testing

POSTGRADUATE RESEARCH SUPERVISION

- Faizan ullah. PhD (2023-ongoing)
  Title: Integration of remote sensing and Geophysical techniques for metallic mineral exploration

- Furqan Khan. Master (2022-2024)
  Title: Integrated Aerial Photogrammetry and Magnetic survey for Identification of Iron Ore Mineralization Zone, Pakistan

CONSULTANCY EXPERIENCE

• **Limestone quarry subsurface modelling** - Cherat Cement Limited, Pakistan: ERT and IP field acquisition, processing and subsurface interpretation.

• **Iron ore mineralization identification** - Pakistan: integrated UAV photogrammetry and magnetic data acquisition and processing.

• **Granite deposit exploration and 3D modelling** - Pakistan: ERT-based subsurface investigation and modelling.

• **Subsurface water-saturation characterization** - Civil Aviation Authority, Pakistan: ERT data acquisition and processing.

• **Rock slope stability assessment** - PLUS, Malaysia: ERT investigation integrated with kinematic and limit-equilibrium analysis.

• **Rock slope stability assessment** - JKR Johor, Malaysia: ERT processing and rock-slope stability analysis.

• **Tunnel health assessment** - PLUS, Malaysia: geophysical identification of water-saturated and carbonization zones relevant to stability.

ACADEMIC SERVICES

- Final year project coordinator at National University of Sciences and Technology
- Reviewer services for Bulletin of Engineering Geology and Environment
- Reviewer services for Geocarto International
- Reviewer services for Geomatic Natural Hazards and Risk
- Reviewer services for Journal of Mining and Environment

RESEARCH PUBLICATIONS

Impact factor journals

1. Muhammad Junaid, Ezz El-Din Hemdan, and M.E. Al-Atroush. A Comprehensive Review of 3D Digital Mapping Based Automated Rock Discontinuity Detection: Emerging Technologies, Challenges, and Future Prospects. **(Accepted. 3.2. Geocarto International).**

2. **Muhammad Junaid**, Furqan Khan, Badee Alshameri, Sami Ullah Shah, Muhammad Zaka Emad, Tariq Feroze. Integrated geophysical and aerial photogrammetry approach for detailed delineation of iron ore mineralization in lateritic deposits. Mining Mineral Deposits. (**Impact Factor 2.9, Q1**)

3. Attique, M., Hassan, W., Alshameri, B., Ghani, S., **Junaid, M**., Iqbal, F., & Hassan, J. (2025). Soil-Geomembrane Interfaces Performance Under Monotonic Temperature Cycles: Implications for Infrastructure Durability. *Results in Engineering*, 108268.((**Impact Factor 7.8, Q1).**

4. **Muhammad Junaid**, M.E. Al-Atroush, Sajid Mahmood, Kausar Sultan shah, Arshad Ullah. Recent Developments in Unmanned Aerial Vehicle (UAV) Surveys for Rock Slope Stability Analysis – A Review**.** Geocarto International. (**Impact Factor 3.8, Q2).**

5. **Muhammad Junaid**, Rini Asnida Abdullah, Arshad Ullah, Radzuan Sa'ari, Sajid Mahmood, Hafeezur Rehman, Safi ur Rehman , Mahmut Saari. Discontinuity Characterization for Slope Stability Assessment Using Combined Aerial Photogrammetry, and Geophysics approach. Natural Hazards. **(Impact Factor 3.7, Q2)**

6. Arshad Ullah, Azman Kassim, Ahmad Safuan A. Rashid, **Muhammad Junaid**. Experimental and 3D Numerical Analysis of Embankment on Soft Soil Improved with Cement Bottom Ash Columns. Acta Geotechnica. **(Impact Factor 5.8, Q1, accepted).**
7. **Muhammad Junaid**, Rini Asnida Abdullah, Radzuan Saari, Amber Islam. 2024. Assigning Resistivity Values to Rock Quality Designation Indices Using Integrated Unmanned Aerial Vehicle and 2D Electrical Resistivity Tomography in Granitic Rock. Geocarto International. (**Impact Factor 3.8, Q2).**
8. **Junaid, Muhammad**, Rini Asnida Abdullah, Radzuan Sa'ari, Kausar Sultan Shah, and Rafi Ullah. 2023. 'A Comparative Study of the Influence of Volumetric Joint Counts (Jv) and Resistivity on Rock Quality Designation (RQD) Using Multiple Linear Regression', Pure and Applied Geophysics: 1-18. **(Impact Factor: 2.64, Q2)**
9. Islam, Amber, Rini Asnida Abdullah, Izni Syahrizal Ibrahim, Goh Thian Lai, Muhammad Hamid Chaudry, **Muhammad Junaid**, Zafar Iqbal, Norhadziana Jamal, Azizul Faiz Abd Aziz, and Adam Salim. 2023. 'Effect of Stress Ratio K due to Varying Overburden Topography on Crack Intensity of Tunnel Liner', Journal of Performance of Constructed Facilities, 37: 04023026.**(Impact Factor: 1.54, Q3**)
10. Ullah, Arshad, Azman Kassim, Sarfraz Ahmed, Rafi Ullah, **Muhammad Junaid**, and Muhammad Danish Zia. 2022. 'Experimental analysis of embankment on soft soil improved with bottom ash columns', Transportation Geotechnics, 37: 100881.**(Impact Factor 4.1, Q1).**
11. **Muhammad Junaid**, Rini Asnida Abdullah, Radzuan Saari, Hafeezur Rehman, Kausar Sultan Shah, Rafiullah, Asmawisham Alel, Zuraini Zainal, Nurul Eilmy Zainuddin. 2022. Quantification of Rock Mass Condition based on Fracture Frequency Using Unmanned Aerial Vehicle Survey for Slope Stability Assessment. Journal of Indian Scoiety of remote sensing. (**Impact Factor 1.89, Q3)**.

12. **Muhammad Junaid**, Rini Asnida Abdullah, Radzuan Sa'ari, Wahid Ali, Amber Islam, Mahmut Saari, 2022. 3D Modelling and feasibility Assessment of Granite Deposit using 2D Electrical Resistivity Tomography, Borehole and Photogrammetry. Journal of Mining and Environment. (**Impact factor 0.3, Q4).**
13. **Muhammad Junaid**, Rini Asnida Abdullah, Radzuan Sa'ari, Hafeezeur Rehman, Wahid Ali, Kausar Sulatn Shah, Mahmut Sari. 2022. "Water-Saturated Zone recognition using integrated 2D electrical resistivity tomography, borehole and aerial photogrammetry in granite deposit, Malaysia. Arabian Journal of Geoscience15(14); 1-13. (**Impact Factor 1.82, Q3)**
14. **Muhammad Junaid**, Rini Asnida Abdullah, Radzuan Saari, Nur Asmawisham Alel. An Expeditious for Slope Stability using integrated 2D Electrical Resistivity Tomography and and Unmanned aerial vehicle Survey.2022. Journal of Applied Geophysics. (**Impact Factor 2.12, Q3)**.
15. Hafeezur Reham, Abdul Muntaqim Naji, Wahid Ali**, Muhammad Junaid**, Rini Asnida Abdullah, Han kyu too. Numerical Evaluation of New Austrian Tunneling Method excavation sequences. A case study. International Journal of Mining science and Technology, Volume 30, Issue 3, pages 381-386. (**Impact Factor 1.5, Q2)**.
16. Kausar Sultan Shah, Mohd Hazizan bin Mohd Hashim, Muhammad Zaka Emad, Kamar Shah bin Ariffin, **Muhammad Junaid** & Naseer Muhammad Khan. Effect of particle morphology on mechanical behavior of rock mass. Arabian Journal of Geoscience, DOI https://doi.org/10.1007/s12517-020-05680-5, (**Impact factor 1.4, Q3).**

Scopus Index journals

1. Ullah, Rafi, Rini Asnida Abdullah, Azman Kassim, Nor Zurairahetty Mohd Yunus, Arshad Ullah, Muhammad Junaid, and Mohammad Jawed Roshan. 2022. 'Effectiveness of laser diffraction method for particle size evaluation of residual soil', *Indian Geotechnical Journal*, 52: 1476-86.
2. Hafeezur Rehman, Ahmad Shah, Mohd Hazizan Bin Mohd Hashim, Naseer Muhammad Khan, Wahid Ali, Kausar Sultan Shah, **Muhammad Junaid**, Rafi Ullah, Muhammad Bilal Adeel. Investigating Effect of Tunnel Size, Rock Mass Conditions, and In-Situ Stresses on Stability of Tunnels
3. **Muhammad Junaid**, Rini Asnida Abdullah, Radzuan Saari, Wahid Ali, Arshad ullah Recognition of boulder in granite deposit using integrated borehole and 2D electrical resistivity imaging for effective mine planning and development, Bulletin of the Geological Society of Malaysia, Volume 67, June 2019, pp. 99 – 104, DOI : https://doi.org/10.7186/bgsm67201912.
4. **Muhammad Junaid** , Rini Asnida Abdullah , Radzuan Sa'ari , Wahid Ali , Hafeez Rehman ,Usman Ghani, Mohd Nur Asmawisham Alel, 2021. 2D Electrical Resistivity Tomography an advance and expeditious exploration technique for current challenges to mineral industry, Journal of Himalayan Earth sciences, Volume 54, Issue 1, 31 March 2019, pp. 11-32 .
5. Arshad Ullah, Azman Kassim, Ishtiaq Alam, **Muhammad Junaid**, Izwan Shah, Efficiency analysis of seepage of Baz Ali small dam, Kurram Agency using clay blanket and cut-off wall with sand filter, Bulletin of the Geological Society of Malaysia, Volume 67, June 2019, pp. 125-130, DOI https://doi.org/10.7186/bgsm67201915 .

Conference Papers

1. Arshad Ullah, Yu Huang, Azman Kassim, Ahmad Safuan A Rashid, Nor Zurairahetty Mohd Yunus, **Muhammad Junaid 2025**. Evaluating the Bearing Capacity and Environmental Performance of Bottom Ash Columns for Soft Soil Stabilization Under Embankments. International Conference on Geosynthetics and Environmental Engineering.
2. **Muhammad Junaid**, Rini Asnida Abdullah, Radzuan Sa'ari. 2024. Evaluation of Rock Mass Quality using Unmanned Aerial Vehicle Survey for Slope instability Assessment.
3. Wahid Ali, Rini Asnida Abdullah, Hafeez ur Rehman, **Muhammad Junaid**. The effect of scanline direction and extent of rock exposure on assessment of geometrical properties of discontinuities in rock mass. DOI: 10.1088/1757-899X/527/1/012034.Conference JPaper.

GRANTS AND AWARDS

- Seed Grant for rock slope stability assessment by Prince Sultan University Riyadh
- Research grant for early warning landslide predictions awarded by Pakistan Science Foundation
- Best Postgraduate Student Award, awarded by Universiti Technologi Malaysia
- Research Grant of MYR 27,000 awarded by Ministry of Science and Technology, Malaysia (Grant# Q.J130000.2651.16J25.
- Ms leading to PhD scholarship, awarded by Higher Education Commission, Pakistan

CERTIFICATIONS/PRESENTATIONS/SEMINARS

• 2026: **Attendee-** Tailing Dams - Subsurface Intelligence, Geophysics and AI-Driven Monitoring for Safer Mine Waste Management.

• 2026: **Attendee** - Advanced Ground Penetrating Radar Processing.

• 2026: **Attendee** -High-Precision Ground Magnetic Data Processing and 3D Inversion Interpretation.

• 2026: **Attendee** - EM & MT Data Processing, Forward Modelling and Inversion Workflow in Horin Software.

• 2023: **Speaker** - Theory and Application of Aerial Photogrammetry and Aerial Geophysics.

• 2023: **Speaker** - Application of Geophysics for Geotechnical Investigation.

• 2022: **Speaker** - Comparative study of 2D Electrical Resistivity Tomography, Borehole and Aerial Photogrammetry for Feasibility Assessment of Granite Deposit

• 2021: **Participant** - 4th research Canvas Competition at Universiti Teknologi Malaysia

• 2019: **Attendee** - A practical guide to multi-dimensional ERT survey, interpretation and integration

Professional membership

- International Society of Rock Mechanics
- Member of European Association of Geoscientist
- Member of Society of Engineering Geology and Rock Mechanics

- Member of Society of Exploration Geophysics registration number 000000504485.
- Member of Australian Society of Exploration Geophysics registration no ASEG 152520
- Member of Pakistan Engineering Council registration no Mining/1600.
- Member of Institute of Mining Engineers Pakistan registration no 10-14.

REFEREENCES

- Dr Yasser Mansour
  Professor Prince Sultan University Riyadh, Saudi Arabia
  ymansour@psu.edu.sa

- Dr Zaka Emad
  Associate Professor King Fahad University of Petroleum and Minerals
  muhammadzaka.emad@kfupm.edu.sa

- Dr Rini Asnida Abdullah
  Associate Professor Universiti Teknologi Malaysia
  Email: asnida@utm.my

- Dr Safi-ur-rehman
  Assistant Professor National University of Science and Technology, Pakistan
  Email: mine.safi@gmail.com

- Dr Mahmut Sari
  Assistant Professor Gümüşhane University, Geophysical Engineering Department
  Email: msari@gumushane.edu.tr