Dr. Vinoth, Srinivasan.

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Executive Summary

With a background in Engineering Geology and practising in Geotechnical and Rock Engineering, I currently serve as an Assistant Professor of Rock Engineering and Engineering Geology in the Department of Civil Engineering at the National Institute of Technology Karnataka, Surathkal, Mangalore, INDIA.

Currently, our research focuses on the Geomechanical and Geological Evaluation of Energy Transition, with an emphasis on Subsurface Energy Storage and Energy Geotechnics. We also work on the mechanics of geohazards such as landslides and slope stability. We focus on developing innovative methods and advanced AI & ML in these areas. The current research includes subsurface characterisation through advanced analytical and experimental methods, time- and stress-dependent characterisation of rocks and cementitious materials, and potential applications of ML and AI.

Our research group's (Sustainable Geo-energy Science and Engineering Research Group NITK Surathkal) and Research lab (Engineering Rock Mechanics Lab, NITK Surathkal) current areas of interest are:

1. Sustainable Energy Transition and Renewable Geo-Energy Systems;
2. Subsurface Energy Storage (Evaluation and Implications)
3. Experimental Rock Mechanics and Rock Engineering;
4. Geo-AI and ML for Engineering Geology;
5. Mechanical and Fracturing behaviour of Novel Cementous Composites and Materials;
6. AI and Machine Learning for Material Characterization and Behaviour;
7. Microseismic Monitoring of Induced Seismicity in Underground Excavations and Petroleum Reservoirs

Professional Experience

- **Assistant Professor (2019-Till data)**
  - ✓ *Department of Civil Engineering, National Institute of Technology Karnataka, Surathkal.*
- **National Postdoctoral Fellow (2017– 2019)**
  - ✓ *Department of Earth Sciences, Indian Institute of Technology Bombay, Mumbai, India*
- **Postdoctoral Research Fellow (2015 – 2017)**
  - ✓ *Department of Mining Engineering, Indian Institute of Technology (IIT(ISM), Dhanbad, India.*
- **Project Research Fellow (2008 – 2015)**
  - ✓ *Department of Mining Engineering, Anna University, Chennai, India.*

Academic Background

- **PhD (2015)** - Department of Mining Engineering, Anna University, Chennai
  - *Specialization – Rock Mechanics & Mining Slope Stability and Monitoring*
- **M.Sc. (2008)** - Department of Applied Geology, University of Madras, Chennai
  - *Specialization – Applied Geology*
- **B.Sc. (2006)** – Department of Geology, Govt. Arts College, Salem-7.
  - *Specialisation – Applied Geology.*

Research Areas

- Experimental Rock Mechanics, including Rock Fracture Mechanics and Deformation
- Rock Engineering, including Tunnelling and Underground Space, Rock Slope Stability
- Energy Geotechnics, including Subsurface Energy Engineering, Energy Storage and Geological Carbon Sequestration
- Mechanical and Fracture Damage Characterization of Sustainable Construction Materials
- Geo-AI: Application of AI and ML in Engineering Geology and Geological Hazards

Research Profiles

- Google Scholar: https://scholar.google.co.in/citations?user=MC18A4oAAAAJ&hl=en
- ResearcherID: A-8716-2012
- ORCID: 0000-0001-9391-3746
- Scopus ID: 57188631247

Significant Projects

1. ANRF – Startup Research Grant: Interaction of various environmental factors on the fracturing behaviour and damage mechanism in rocks (2022-2024)
2. SERB (ANRF) – National Postdoctoral Fellowship A study on the Influence of Thermal Damage on In-Situ Stress Conditions of Rocks using Kaiser Effect Method (Rock Stress Memory) and Its Significance in Evaluation of Damage Accumulation and Rate of Deformation in Rocks (2017-2019)

Academic and Administrative Responsibilities

- Secretary, DUGC (Since 2024) – Department Undergraduate Committee, Department of Civil Engineering, NIK Surathkal
- Faculty Advisor (Photography, Media, Creative Design) (Since 2026) – Student Cultural Club of NITK, Surathkal.
- Faculty Advisor (2022-2026) – B. Tech Civil Engineering Batch of 2022-2026
- Faculty Advisor (2024-2026) – Professional Association of Civil Engineers (PACE) Technical Club of NITK Surathkal
- Faculty In-Charge (2021-2025) – Geology Lab, Department of Civil Engineering, NITK Surathkal
- Hostel Warden (2021-2024) – Brahmagiri PG & PhD Block; Shiwalik UG Block

Research Team

- **PhD:**
  - **Completed: 1; Ongoing: 5.**
- **MTech: Total:**
  - Completed: 18 (Geotechnical Engineering – 12; Construction Technology and Management - 6);
  - Ongoing: 3 (Geotechnical Engineering – 2; Construction Technology and Management - 1)

Significant Publications: Total: 19

Published Peer-Reviewed Journal Articles: Total: 11 (Q1: 9; Q2: 2)

1. Sivaraj, V.M., Manikanta, V., Rincy, M.V., Harishankar, M., Srinivasan, V., 2026. Stability and fracture surface morphology evolution in granite subjected to high-order thermal cycles – Implications for enhanced geothermal systems. J. Rock Mech. Geotech. Eng. https://doi.org/10.1016/j.jrmge.2026.03.069. (Q1; IF: 10.2)
2. Prabhat, P., Ramu, M., Srinivasan, V., 2026. Petrographic thin section image classification using traditional and deep learning techniques − A comparative evaluation. Appl. Soft Comput. 194, 114898. https://doi.org/10.1016/j.asoc.2026.114898. ((Q1; IF: 7.8)
3. Ramu, M., Srinivasan, V., Pandey, R., Singh, T.N., 2026. Impact of underground coal thermal treatment on the structural framework and compositional transformations in bituminous coal: Opportunities for enhanced CO_2 geo-storage. Gas Sci. Eng. 148, 205847. https://doi.org/10.1016/j.jgsce.2026.205847. (Q1; IF: 6.8)
4. Sivaraj, V.M., Srinivasan, V., Manikanta, V., Priyam, A., 2026. Implications of varying thermal regimes on the thermo-mechanical and fracturing characteristics of granite. Bull. Eng. Geol. Environ. 85, 364. https://doi.org/10.1007/s10064-026-05020-z. (Q1; IF: 4.9)
5. Srinivasan, V., Hasainar, H., Singh, T.N., 2022. Experimental study on failure and fracturing attributes of granite after thermal treatments with different cooling conditions. Eng. Geol. 310, 106867. https://doi.org/10.1016/j.enggeo.2022.106867. (Q1; IF: 10.2)
6. Tripathy, A., Kumar, A., Srinivasan, V., Singh, K.H., Singh, T.N., 2019. Fractal analysis and spatial disposition of porosity in major indian gas shales using low-pressure nitrogen adsorption and advanced image segmentation. J. Nat. Gas Sci. Eng. 72, 103009. https://doi.org/10.1016/j.jngse.2019.103009.(Q1; IF: 6.8)
7. Ansari, T.A., Srinivasan, V., Singh, T.N., Das, A., 2019. Slope instability analysis in Phyllitic rock in the Lesser Himalayan using three different modeling approach. Bull. Eng. Geol. Environ. 78, 5695–5706. https://doi.org/10.1007/s10064-019-01498-y.(Q1; IF: 4.9)
8. Tripathy, A., Srinivasan, V., Singh, T.N., 2018. A Comparative Study on the Pore Size Distribution of Different Indian Shale Gas Reservoirs for Gas Production and Potential CO2 Sequestration. Energy and Fuels 32, 3322–3334. https://doi.org/10.1021/acs.energyfuels.7b04137. (Q1; IF: 6.1)
9. Vinoth, S., Ajay Kumar, L., Kumar, E., 2015. Slope stability monitoring by quantification and behavior of microseismic events in an opencast coal mine. J. Geol. Soc. India 85, 450–456. https://doi.org/10.1007/s12594-015-0236-1. (Q3; IF: 1.8)
10. Vinoth, S., Ajay Kumar, L., 2014. Applying real-time seismic monitoring technology for slope stability assessment - An Indian opencast coal mine perspective. Int. J. Min. Sci. Technol. 24, 75–80. https://doi.org/10.1016/j.ijmst.2013.12.013. (Q1; IF: 15.9)

Selected Conference Proceedings: Total: 8

1. Sinha, P.P., Srinivasan, V., 2026. Performance Evaluation of Different Machine Learning Techniques for Rapid Prediction of Rocks from Petrological Thin-Section Image Features, in: Advanced Engineering Optimization Through Intelligent Techniques, Lecture Notes in Electrical Engineering. pp. 309–318. https://doi.org/https://doi.org/10.1007/978-981-96-8070-2_25
2. Rajput, P., Ananya, M., Prajwal, L., Srinivasan, V., 2026. Image Classification of Rocks Using Deep Learning, in: Latest Advances in Field Monitoring, Instrumentation, and Data-Driven Geotechnical Engineering. pp. 487–500. https://doi.org/10.1007/978-981-95-7956-3_36
3. Ramu, M., Srinivasan, V., 2026. Temperature and Fluid Saturation Impact on the Mechanical and Fracturing Behavior of Deccan Basalt under Uniaxial Compression, in: Developments in Earthquake Engineering, Tunneling, and Rock–Soil Interaction, Lecture Notes in Civil Engineering 837. pp. 425–439. https://doi.org/10.1007/978-981-95-7960-0_30
4. Raj, M.S.V., Srinivasan, V., 2025. The Physical and Mechanical Properties of Closepet Granite After Thermal Treatments with Water and Brine Cooling Conditions, in: Proceedings of the Indian Geotechnical Conference (IGC 2024), Volume 8, Lecture Notes in Civil Engineering 704. Springer Nature Singapore, pp. 275–289.
5. Manikanta, V., Hasainar, H., Badiger, N.K., Kothari, V., Bhat, A., Srinivasan, V., 2024. Effect of High Temperature on the Compressional Wave Velocity of Two Sandstones with Different Grain Sizes, in: Technologies for Sustainable Transportation Infrastructures, Lecture Notes in Civil Engineering 529. Springer Nature Singapore, pp. 717–729. https://doi.org/10.1007/978-981-97-4852-5
6. Gafur, I.A., Anilkumar, A., Parappalli, A.N., Srinivasan, V., 2024. Effect of Heating and Fluid Saturation on Certain Physico-Mechanical and Fracturing Behaviour of Concrete, in: Technologies for Sustainable Buildings and Infrastructure, Lecture Notes in Civil Engineering 528. Springer Nature Singapore, pp. 861–873.
7. N. N. Sirdesai, V. Srinivasan, R. Singh and T. N. Singh, 2018, Thermo-Temporal behaviour of uniaxial compressive strength of a fine-grained Indian sandstone, Geomechanics and Geodynamics of Rock Masses: Selected Papers from the 2018 European Rock Mechanics Symposium, 377-382, CRC Press, ISBN: 9781138327481.
8. A. Tripathy, **V. Srinivasan**, K. K. Maurya, N. N. Sirdesai and T. N. Singh, 2018, Acoustic and failure behaviour of Gondwana shale under uniaxial compressive and indirect Brazilian tensile loading – an experimental study, Geomechanics and Geodynamics of Rock Masses: Proceedings of the 2018 European Rock Mechanics Symposium, 687-694, CRC Press, ISBN: 9781138616455

Professional Association:

Indian Professional Bodies:

1. Life Member, Indian Geotechnical Society (IGS) & Executive Committee Member and Treasurer, IGS Surathkal Chapter
2. Life Member, Indian Science Congress Association
3. Life Member, Indian Geological Society
4. Life Member, Indian Society of Engineering Geologists (ISEG (India))

International Professional Bodies:

1. Member, American Rock Mechanics Association (ARMA)
2. Member, International Society of Rock Mechanics and Rock Engineering (ISRM)
3. Member, European Geosciences Union (EGU)
4. Member, European Association of Geoscientists & Engineering (EAGE)