

Sumanta Roy

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EDUCATION

Indian Institute of Technology Madras

Jul. 2022 – Present

Master of Science in Civil Engineering

Chennai, India

- Major: Computational Solid Mechanics

Jadavpur University

Aug. 2017 – May 2021

Bachelor of Engineering in Civil Engineering

Kolkata, India

- CGPA: 8.15/10

EXPERIENCE

Research Associate

June 2021 – July 2022

Indian Institute of Technology (BHU), Varanasi

Varanasi, India

- Pseudo-Static stability analysis of unsaturated soils using Limit Analysis
- Computed Bearing Capacity of Rough Footings on Unsaturated Soil using Limit Analysis
- Studied Stability Number of Unsaturated Soil Slopes subject to steady state seepage using Limit Analysis

Undergraduate Research Assistant

Dec. 2020 – May. 2021

Jadavpur University, Kolkata

Kolkata, India

- Simulated the 1D consolidation of a representative silty-clay sample, subject to various time varying ramp loadings

RESEARCH PROJECTS

Geotechnical Application of Limit Analysis | *MATLAB, OptumG2*

IIT (BHU), Varanasi

- Developed MATLAB codes to compute factor of safety of Unsaturated Soil Slopes using Limit Analysis subject to steady state infiltration. The slopes were subjected to surcharge loads and pseudo-static seismic forces.
- Developed MATLAB codes to study bearing capacity of rough footings on Unsaturated Soil by Upper Bound Limit Analysis
- Studied the effect of interference of closely spaced strip footings on their bearing capacities resting on Unsaturated Soil

Seepage and Suction in Unsaturated Soil | *MATLAB*

IIT (BHU), Varanasi

- Developed numerical models to study the difference between Darcian Flow with a Hansbo Non-Darcian Flow in Unsaturated Soil subject to various flux conditions
- Interpreted the steady state suction stress profiles in unsaturated soil by considering the complete independence of van-Genuchten parameters.

Consolidation subject to Ramp Loadings | *MATLAB*

Jadavpur University, Kolkata

- Developed MATLAB codes to simulate the 1D consolidation of silty clay subject to various time dependent ramp loadings.

RESEARCH PUBLICATIONS

Roy, S. and Chakraborty, M. "Bearing Capacity of Rough Foundations on Unsaturated Soil by Upper Bound Limit Analysis". *Computers & Geotechnics* (Elsevier) (Under Review)

Roy, S. and Chakraborty, M. "Interpreting the Suction Stress Profiles Under Steady-State Conditions Considering the Independence of van-Genuchten SWCC Parameters". *Arabian Journal of Geosciences* (Under Review)

Roy, S., Sarkar, S. and Chakraborty, M. "Pseudo-static Stability Analysis of Unsaturated Slopes by Limit Analysis" (in preparation)

Sarkar, S., **Roy, S.** and Chakraborty, M. "Pseudo-static Stability Analysis of Unsaturated Slopes with Cracks by Limit Analysis" (in preparation)

CONFERENCE/WORKSHOPS

Roy, S., Sarkar, S. and Chakraborty, M. “Stability of Unsaturated Embankment by Upper Bound Limit Analysis”. Geo-Trans 2022. International Conference on Transportation Geotechnics (Accepted and in press for Special Issue on Transportation Geotechnics, International Journal of Geotechnical Engineering)

Roy, S. and Mukherjee, S. “1D Consolidation of Silty Clay Subject to Different Ramp Loadings.” IGGECC-21. NIT Jalandhar. November 19-20, 2021 (Accepted and in Press for Lecture Notes in Civil Engineering, Springer)

TEST SCORES

GATE 2022 CE: Secured an All India Rank of 244 out of 100,043 students appearing in GATE 2022 (Graduate Aptitude Test in Engineering, Civil Engineering), India

TOEFL: Secured a score of 100 out of 120 in TOEFL (R-29, L-23, S-24, W-24) in July 2022.

TECHNICAL SKILLS

Languages: C/C++, Python

Softwares: MATLAB, Microsoft Excel, Optum G2