

RISHABH TIWARI (+44)7423662605 rishabh.tiwari.21@ucl.ac.uk

EDUCATION

PhD Machine Learning in soil mechanics and micro imaging, (£200,000 four-year scholarship)

University College London, UK

March 2022- Present

ME Tunnels and Underground structure, (8.67 CGPA)

Indian Institute of Technology (IIT) India

June 2020

BE Civil Engineering, (8.31 CGPA)

Government College, India

June 2016

HONORS AND AWARDS

Research Scholarship (£200,000 four-year scholarship)

Chadwick Award, University College London UCL, London, UK

2022-26

Research & Teaching Assistantship (CAD 27,000/year)

McGill University Montréal, Canada

2021-22

Research Fellowship (INR 600,000/year)

Institute fellowship Indian Institute of Technology, Delhi, India

2020

Research Travel Grant (INR 80,000)

Institute grant for attending international conference, Indian Institute of Technology, Dhanbad, India

2019

Research Grant, Institute fellowship, Indian Institute of Technology, Dhanbad

2019-20

GATE scholarship (INR 200,000 two-year scholarship)

2018

Score: 607, Ministry of Human Resource Development, Gov. of India

Professional work experience (3 YEARS) and Research Work experience (4 years)

Machine Learning Engineer, Linear Labs, London, UK

Hyperspectral imaging, concrete microstructure

Sept, 2025 - Present

Research Assistant, ENPC Paris, France

2024; July -Sept 2025

NAVIER Lab Pore size characterisation and modelling

May-Aug 2023; Aug-Oct

Research Assistant, McGill Montreal, Canada

Permeability modelling in rocks for nuclear waste storage

May 2021- March 2022

Intern, HDR, London

Design of Student Accommodation Building

Preparation of detailed drawing works, Meetings with lead architects, Arrangement of reports and contracts review.

June 2024 to July 2024

Civil Engineering, Indian Railway, India

Dec 2019 to March 2022

- **Rail Track Geometry Assessment and Optimisation**

Supported engineering teams in analysing track geometry data, including alignment irregularities, cant variation and gauge deviation. Contributed to recommending maintenance interventions and improving long-term stability under heavy freight loading.

- **Subgrade and Ballast Layer Evaluation for High-Density Rail Corridors**

Conducted geotechnical assessments of ballast, sub-ballast, and formation layers, including plate load testing, soil classification, and CBR evaluation. Assisted in developing improvement strategies for weak formation zones.

- **Design of Track Drainage and Formation Rehabilitation**

Planned drainage improvement designs to reduce track settlement and fouling. Responsibilities included surveying, hydraulic assessment, and preparation of technical solutions for waterlogging-prone track sections.

- **Level Crossing Safety Upgrade Programme**

Evaluated civil and geotechnical works for upgrading level crossings, including foundation checks, retaining wall design, and improving embankment stability for upgraded road approaches.

- **Bridge and Culvert Condition Assessment**

Conducted inspections and structural evaluation of minor bridges and culverts to ensure compliance with Railway Board standards. Assisted in preparing rehabilitation plans including grouting, lining, and replacement of deteriorated elements.

- **Track Relaying and Route Modernisation Works**

Performed alignments and civil works during major relaying operations, coordinating between engineering teams, materials suppliers, and site crews to ensure timely delivery of sleepers, rails, fastenings, and ballast.

- **Embankment Stabilisation for Railway Expansion**

Synthesised geotechnical stability analysis and slope reinforcement design for new embankments. Activities included soil investigation review, modelling of slope stability, and preparation of reinforcement detailing.

- **Surveying and Alignment Setting-Out for Double-Tracking Projects**

Performed topographic and alignment surveys using total station and GPS equipment. Produced drawings and setting-out information for contractors during execution of double-tracking and curve-straightening works.

- **Railway Station Area Drainage and Pavement Rehabilitation**

Served to civil engineering works around station premises, including pavement design, stormwater management, and integration with pedestrian underpasses and foot-over-bridges.

- **Geotechnical Investigations for Rail Over Bridge (ROB) and Underpass Projects**

Supported borehole logging, soil sampling, and geotechnical interpretation for substructure design of ROB and underpasses. Prepared soil profiles, engineering parameters, and recommendations for foundation design.

Design Engineer, Snowy Mountains Engineering Corporation, India

May, 2019 to Nov, 2019

- **Geotechnical Design Integration Across Multiple Projects**

Working directly within multidisciplinary design teams exposed to diverse geotechnical and structural challenges caused by varying geological conditions, teaching how to adapt design assumptions, ground models, and support systems from one project to another.

- **Nikachhu Hydroelectric Scheme – Bhutan**

Coordinated to design and analysis of key components of hydropower facility, including underground caverns and water conveyance structures, ensuring stability and structural integrity under complex Himalayan geology.

- **Mumbai Coastal Road Project – India**

Undertook detailed design tasks for TBM-driven tunnel, including segmental lining verification, temporary support assessment, and preliminary ventilation system design for safe TBM operations in a marine environment.

- **Zojila Approach Road Tunnel – India**

Strategised in tunnel support design based on NATM principles and performed slope stability analysis for portal area, addressing highly jointed rock masses and challenging Himalayan topography.

- **Salang Tunnel Modernisation – Afghanistan**

Delivered geotechnical and structural analyses for refurbishment of tunnel and its cross passages, including numerical modelling of support systems and rock-mass behaviour under seismic and thermal loading.

- **Pandoh Highway Tunnel – India**

Completed geotechnical interpretation, slope stability evaluations, and tunnel support design for a national highway tunnel, developing safe excavation sequences and reinforced support layouts.

- **Shongtong Karcham Hydroelectric Project – India**

Conducted geotechnical and structural design for several components of dam and power intake system, including assessment of rock foundations, excavation stability, and support systems for underground structures.

- **Vishnugad–Pipalkoti Hydroelectric Project – India**

Performed advanced 3D numerical analysis using FLAC3D to model cavern behaviour, stress redistribution, and support requirements, improving prediction accuracy for excavation-induced deformation.

Skills and LANGUAGES

English: Advanced, **French:** Beginner

Code: C, C++, MATLAB, Python, **Software:** Plaxis, RS3, Abaqus, Strand7, Itasca FLAC and PFC, DIPS/SLIDE/SETTLE 3D and ROCFALL

PUBLICATIONS

Books

Dynamics of Soil and Modelling of Geotechnical Problems - Proceedings of Indian Geotechnical Conference 2020 Volume 5: Springer Nature, 2021.

Journal Publications

Rishabh Tiwari and U K Singh, Practical Approach to Sinking of Shaft in Sedimentary Rock Formations, High Technology Letters ISSN 1006-6748, Volume 26, Issue 11, 2020, Page 620 – 629.

Journal Papers in press

Tiwari, Rishabh and Singh, U.K., “A Novel Approach for Design and Simulation of Equivalent Continuum Model of Lattice Structures Used in Tunnels and Caverns,” To be published in: IOP Series: Earth and Environmental Science.

Conference Papers (Peer-Reviewed) published

Tiwari, Rishabh (2024) “Behaviour of clay micro pore to macro scale mechanical loading” GM3 UK travelling geotechnical engineers conference, Dec 2024, Liverpool, UK

Tiwari, Rishabh (2024) “Micro to macro relationship in clay soil” ISSMG conference, Sept 2024, Grenoble, France

Tiwari, Rishabh (2024) “Microscale image analysis” ALERT geomaterial conference, Sept 2024, Aussois, France

Tiwari, Rishabh (2024) “Investigation of clay micro pore to macro scale mechanical loading” BGS Young geotechnical engineers conference, June 2024, Cambridge, UK

Tiwari, Rishabh (2022) “Micromechanics in clay soil” BGS Young geotechnical engineers conference June 2022, Newcastle, UK

Tiwari, Rishabh and Singh, U.K. (2019) "Ground Surface Settlement study of underground metro project in soft ground", ISRM Young Scholars Symposium on Rock Mechanics and International Symposium on Rock Engineering for Innovative Future, 01- 04 Dec 2019, Okinawa, Japan. ISBN 978-4-907430-04-7.

Tiwari, Rishabh and Singh, U.K. (2021), “A Novel Approach for Design and Simulation of Equivalent Continuum Model of Lattice Structures Used in Tunnels and Caverns,” EUROCK 2021 - TORINO (Italy) Mechanics and Rock Engineering from theory to practice, ISRM symposium, ID: 1170.

Tiwari, Rishabh and Singh, U.K. (2020) "Development of Equivalent Lattice Beam Model for Support System in Tunnels and Caverns using FEM Analysis", Indian Geotechnical Conference 2020, December 17-19, 2020, Andhra University, Visakhapatnam.

Tiwari, Rishabh and Singh, U.K. (2020) "Development of equivalent continuum model of lattice structures using numerical analysis tool strand 7.0" National conference on “Emerging Practices and Innovations in Civil Engineering” (EPIC – 2020) 26th– 27th October, 2020. ISBN: 978-93-89044-24-9.