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Major Areas of Research/Up to 3 major sponsored projects

- Nanomaterials for Water, Wastewater, Air, Soil, Subsurface & Groundwater Contamination
- Electrocatalysis, Membrane, Photocatalysis, AoP, Disinfection
- Environmental Chemistry - Surface & Groundwater Pollution – Sampling & Assessment
- Beneficial Recovery from Waste - Waste to Wealth, Circular Economy
- LCA, Impact and Health-Risk Assessment, Climate Change & Sustainability
- PFAS, Microplastics, Heavy Metals, Agrochemicals, Drugs, Micropollutants

Major Research Facilities in the Group

- Solar simulator, Membrane filtration, photocatalytic reactors,
- Set ups to fabricate micro/nanomaterials-solgel, hydrothermal, combustion, solvothermal, thermochemical, mechanochemical
- Membrane fabricator
- Reactors to study water/wastewater/air/soil/groundwater
- State of Art analytical instruments GC-MS, LC-MS/MS, ICP-MS

Technology/Product Developed

- Solar based photocatalytic membrane treatment of emerging contaminants
- Interested Sectors: Pharmaceutical industry, agrochemical industry, agricultural runoff, textile industry
- Solar-Thermal based resource recovery from wastewater (metals and deionized water)
- Interested Sectors: Electroplating industry, paper and pulp industry, RO reject treatment
- Conversion of carbon waste into valuable materials – graphene, GO, rGO, GO-Me oxide composites
- Any industry which produce carbon-based waste

Graphite waste from Auto-forging Industries

Products

Graphite waste - Layered surface

Exfoliated Graphite

Visible Light Photocatalysis

- Graphene Composites

Mechanisms

- Presence and Absence of Graphene Derivatives

Reuse Study

- Chemical &
- Photo corro

GRAPHENE COMPOSITES IN PHOTOCATALYSIS



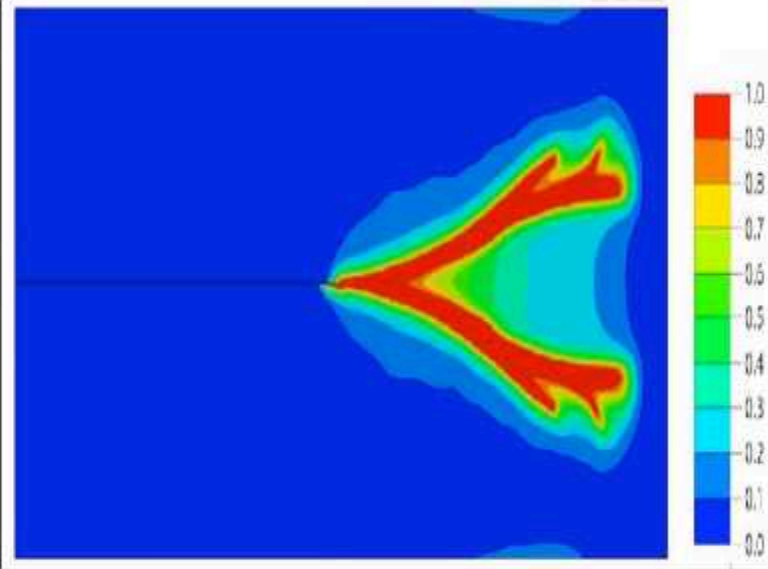
Amirtham Rajagopal

Professor, ACSM Lab, Department of Civil Engineering

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Major Areas of Research/Up to 3 major sponsored projects

Fracture/Damage Mechanics, Material Constitutive Modelling, Mechanics of Composites, Computational Mechanics- Multiscale modelling and Simulation, Finite Element and Mesh free analysis



Major Research Facilities in the Group

20 Node cluster for high performance computing

Technology/Product Developed/Up to 3 most significant Publications

- P. Kasirajan, S. Bhattacharya, A. Rajagopal, J.N. Reddy, Phase field modeling of fracture in Quasi-Brittle materials using natural neighbor Galerkin method, Computer Methods in Applied Mechanics and Engineering, Volume 366, 2020.
- K. Akshaya Gomathi, A. Rajagopal, S. Suriya Prakash, Predicting the failure mechanism of RC slabs under combined blast and impact loading, Theoretical and Applied Fracture Mechanics, Volume 119, 2022,



Anil Agarwal

Associate Professor, Professor, SAFER Lab, Department of Civil Engineering

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Major Areas of Research

- Analysis and design of structural systems in fire conditions
- Design and optimization of FRP structural systems
- Use of lightweight composites in structural applications

Major Research Facilities in the Group

- Combined structural-fire testing facility
- Vacuum infusion based FRP manufacturing
- Pseudo dynamic structural testing facility
- Fatigue testing facility
- Computational research facilities

Technology/Product Developed

- Coupled thermal structural analysis of composite floor systems.
- Post-earthquake fire performance of structural columns.
- Design and testing of man-portable deployable bridge system.





Asif Qureshi

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Major Areas of Research/Up to 3 major sponsored projects

- Environmental Health & Climate Change
- Trace Contaminants and green house gases;
- Biogeochemical cycles.

Major Research Facilities in the Group

- Computer modeling;
- Mercury and other elements measurements;
- Flux assessments

Letter | Published: 07 August 2019

Climate change and overfishing increase neurotoxicant in marine predators

Amina T. Schartup, Colin P. Thackray, Asif Qureshi, Clifton Dassuncao, Kyle Gillespie, Alex Hanke & Elsie M. Sunderland

Nature 572, 648–650 (2019) · Cite this article

RETURN TO ISSUE FEATURE NEXT

Mercury in Dental Amalgam, Online Retail, and the Minamata Convention on Mercury

Alpin Joy and Asif Qureshi*

Cite this: *Environ. Sci. Technol.* 2020, 54, 72, 14179–14182
 Publication Date: November 2, 2020
<https://doi.org/10.1021/acs.est.0c01248>
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Article Views: 516 Abstracts: 6 Citations: -

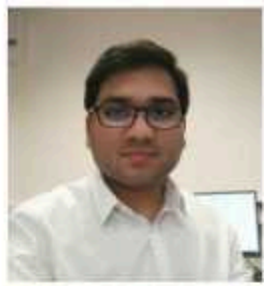
LEARN ABOUT THESE METRICS

Technology/Product Developed/Up to 3 most significant Publications

- Majumdar, A. Qureshi, A. (2022) Thinking about infertility from a mixed methods perspective: the need to look at toxicity in rural India. *Sexual and Reproductive Health Matters*, doi: 10.1080/26410397.2021.1999565.
- Akila, M., Earappa, R., Qureshi, A. (2020) Microbes and endotoxins in indoor and outdoor air of rural households of southern India. *Building and Environment*, doi: 10.1016/j.buildenv.2020.106970.
- Joy, A., Qureshi, A. (2022) Reducing mercury emissions from coal-fired power plants in India: possibilities and challenges. *Ambio*, doi: 10.1007/s13280-022-01773-5.



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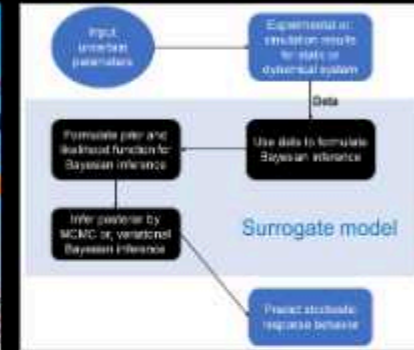
Biswarup Bhattacharyya

Assistant Professor, SCM Lab, Department of Civil Engineering

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Major Areas of Research/Up to 3 major sponsored projects

- Digital Twin
- Uncertainty Quantification by surrogate models
- Reliability and global sensitivity analysis



Major Research Facilities in the Group

- high-dimensional problems. Codes for digital twin and uncertainty quantification of dynamic problems.
- Reliability analysis framework for high-dimensional problems.

Technology/Product Developed/Up to 3 most significant Publications

- **Bhattacharyya, B., Jacquelin, E. and Brizard, D. (2022)**, “Stochastic analysis of a crash box under impact loading by an adaptive POD-PCE model”, *Structural and Multidisciplinary Optimization*, 65: 229, pp. 1-26.
- **Bhattacharyya, B. (2022)**, “Uncertainty quantification of dynamical systems by a POD-Kriging surrogate model”, *Journal of Computational Science*, Vol. 60, 101602, pp. 1-12.
- **Bhattacharyya, B. (2020)**, “Global sensitivity analysis: A Bayesian learning based polynomial chaos approach”, *Journal of Computational Physics*, Vol. 415, 109539,



Debraj Bhattacharyya



Associate Professor, Department of Civil Engineering

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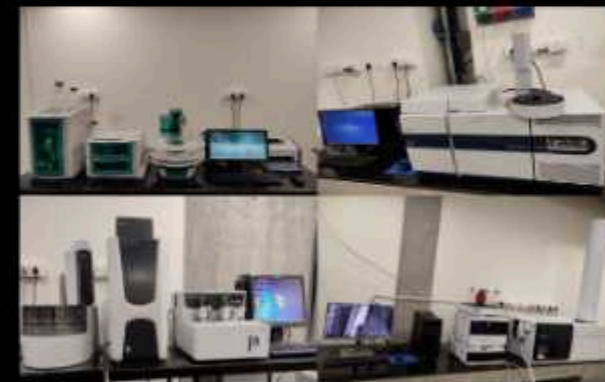
<http://civil.iith.ac.in/people/faculty/debrajb/>

Major Areas of Research/Up to 3 major sponsored projects

- Comprehensive Resource Recovery from Waste, Wastewater, and Emissions of Sugar/Distillery Plants: Proof-of-Concept Study (Funding: Industry-sponsored)
- Developing a Diatom Algae-based Biological Treatment System for Simultaneous Removal of Organic Carbon, Nutrient, and Micropollutants from Domestic Wastewater: Pilot-scale Demonstration - (Funding: MoE)
- Understanding the Fate and Effects of Pharmaceutically Active Compounds, Per- and Polyfluoroalkyl Substances in Contaminated Water Bodies and in Treatment Plants – (Funding: JICA)

Major Research Facilities in the Group

- High Resolution Liquid Chromatography-Mass Spectrometry
- Gas Chromatography-Mass Spectrometry
- Total Organic Carbon – Total Nitrogen Analyzer
- Ion Chromatography



Technology/Product Developed/Up to 3 most significant Publications

- Improved Sequential Batch Reactor for Wastewater Treatment
- Algal-Bacterial Photobioreactor for Wastewater Treatment
- Continuous Bipolar-Mode Electrochemical Reactor
- for Wastewater Treatment



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Digvijay S. Pawar

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Major Areas of Research/Up to 3 major sponsored projects

My research predominantly focuses on traffic operations and safety, human factors and highway geometric design with emphasis on Intelligent Transportation Systems (ITS) and Naturalistic Driving Studies (NDS).

Project: Modeling Driver Behaviour Profiles using Naturalistic Driving Data for Road Safety Analysis. Funded by Science & Engineering Research Board, India.

Major Research Facilities in the Group

- 1) High end driver simulator to simulate driver behavior in critical environment.
- 2) Instrumented vehicle to capture NDS data
- 3) Driver vision testing equipment
- 4) Traffic simulation softwares



Significant Publications

Yarlagadda, J., Jain, P., and Pawar, D. S.* (2021). Assessing Safety Critical Driving Patterns of Heavy Passenger Vehicle Drivers Using Instrumented Vehicle Data—An Unsupervised Approach. *Accident Analysis & Prevention*. 163, 106464. (DOI:<https://doi.org/10.1016/j.aap.2021.106464>)

Malaghan, V. and Pawar, D. S.* (2022). A Short-Term Naturalistic Driving Study on Predicting Comfort Thresholds for Horizontal Curves on Two-Lane Rural Highways. *Journal of Transportation Engineering, Part A: Systems*. 148(8), 04022045 (DOI:<https://doi.org/10.1061/JTEPBS.0000703>)

Chandrashekar, Chatterjee, P., and Pawar, D. S.* (2022). Estimation of CO₂ and CO Emissions from Auto-rickshaws in Indian heterogeneous traffic. *Transportation Research Part D: Transport and Environment*. 104, 103202. (DOI:<https://doi.org/10.1016/j.trd.2022.103202>)



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Mahendrakumar Madhavan

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Major Areas of Research/Up to 3 major sponsored projects

- Study on integrity of cold-formed steel built-up sections using full-field measurement technique, Department of Science and Technology, CRG (Regular SERB)
- Study on Effect of Imperfection Based on Manufacturing Tolerances in Cold Formed Structural Steel Members, Department of Science and Technology, CRG (Regular SERB)
- Sustainable Lightweight Composite Slabs, Godrej Storage Solutions

Major Research Facilities in the Group

- 3D Digital Image Correlation • Fronius CMT Welding Machine
- High-tech sensors and DAQs for measuring strains and deformations (LVDTs, NCDTs, Accelerometers, Inclometers etc.).



3D Non-contact Faro Arm laser scanner

Fronius Cold Metal Transfer (CMT) Welding Machine

Technology/Product Developed/Up to 3 most significant Publications

- Selvaraj, S., & Madhavan, M. (2021). Design of cold-formed steel built-up columns subjected to local-global interactive buckling using direct strength method. *Thin-Walled Structures*, 159, 107305.
- Selvaraj, S., & Madhavan, M. (2018). Geometric imperfection measurements and validations on cold-formed steel channels using 3D noncontact laser scanner. *Journal of Structural Engineering*, 144(3), 04018010.
- Selvaraj, S., & Madhavan, M. (2019). Improvements in AISI design methods for gypsum-sheathed cold-formed steel wall panels subjected to bending. *Journal of Structural Engineering*, 145(2), 04018243.



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Major Areas of Research

we mainly focus on the multiscale nature of the hydrologic system and try to unravel the multiscale connections for reliable modeling and forecasting. In the process, our group has developed novel methods and metrics for hydrologic forecasting, model calibration, climatic downscaling, and variability of natural processes.

Apart from these, we are also excited to work on understanding the intrinsic complexity of hydrologic and climate systems, surface water groundwater interactions, feasibility on interlinking of rivers, attribution studies for change in hydrologic behavior, application of machine learning in hydro-climatology

Major Research Projects

Wavelet-based multiscale downscaling for Climate and satellite data

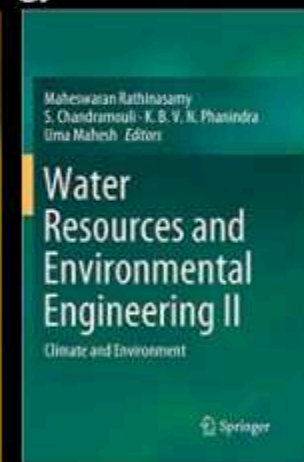
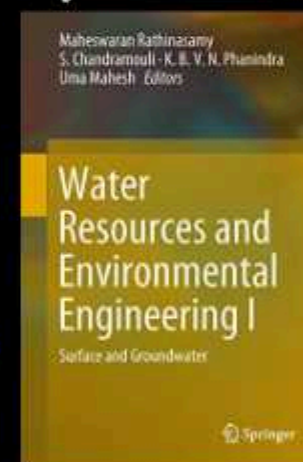
Anomalous Moisture Transport for Hydrological Extremes in a Changing Climate (AMOTHEC)

Technology/Product Developed/Up to 3 most significant Publications

Multiscale model for downscaling climate data from GCM to point scale. The matlab code for this tool is available here. sites.google.com/site/climaticdownscalingtool/

Design flood estimation using extreme Gradient Boosting-based on Bayesian optimization, Journal of Hydrology, 2022.

Investigating the impact of calibration timescales on streamflow simulation, parameter sensitivity and model performance for Indian catchments, Hydrological Sciences Journal, 2022



B. Munwar Basha

Associate Professor, Geotechnical Engineering, Department of Civil Engineering



Major Areas of Research/Up to 3 major sponsored projects

Reliability Based Seismic Design in Geotechnical & Geoenvironmental Engineering, Unsaturated soil mechanics, Earthquake Resistant Design of Slopes and Retaining Structures.

1. Narrow Backfill Width Mechanically Stabilized Earth Walls built near Rock Faces funded by NHAI (Rs. 49.13 lakhs).
2. Vertical Expansion of MSW Landfills funded by SERC, DST (Rs 13.36 Laks)
3. Measurement of Waste Pressure for the vertical expansion of MSW landfills" DST Fast-Track Scheme for Young Scientist award (Rs 10.88 Laks)

Major Research Facilities in the Group

Fully Automated Unsaturated Soil Triaxial Testing System with Bender Elements, Water Retention Characteristic Curves of Remoulded soils using HYPROP and Dew Point Potentiometer

Technology/Product Developed

A.S. S. Raghuram, and B Munwar Basha (2020). Second order reliability based design of unsaturated infinite soil slopes. International Journal of Geomechanics ASCE Vol 21(4): 04021024
[https://doi.org/10.1061/\(ASCE\)GM.1943-5622.0001954](https://doi.org/10.1061/(ASCE)GM.1943-5622.0001954)

B. Munwar Basha, A. S. S. Raghuram and Krishna R. Reddy. (2018). Reliability Analysis of Transport of Nanoscale Iron Particles in Saturated Porous Media. Journal of Geotechnical and Geoenvironmental Engineering ASCE 144(12): 04018090.
[https://doi.org/10.1061/\(ASCE\)GT.1943-5606.0001979](https://doi.org/10.1061/(ASCE)GT.1943-5606.0001979).

B. Munwar Basha and G L Sivakumar Babu (2012). Target reliability based optimization for internal seismic stability of reinforced soil structures, Geotechnique, 62(1): 55-68. <https://doi.org/10.1680/geot.8.P.076>



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Seetha N.

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Department of Civil Engineering

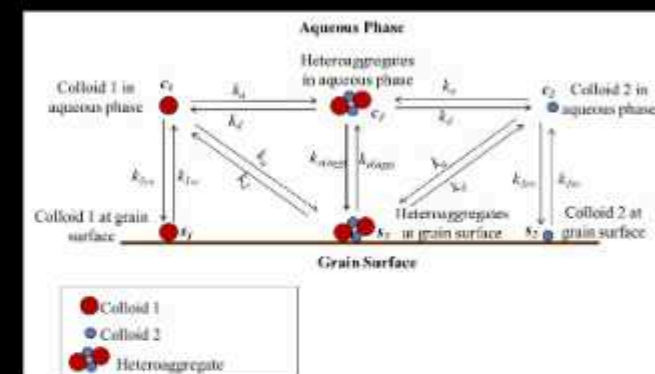
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Major Areas of Research/Up to 3 major sponsored projects

- Understanding nanoparticle deposition in porous media at multiple length scales (Funded by DST)
- Assessing the environmental fate and transport of a mixture of nanoparticles through soil (Funded by DST)
- Experimental and mathematical investigation of fate of colloids in soils under temporally variable conditions (Funded by SERB)

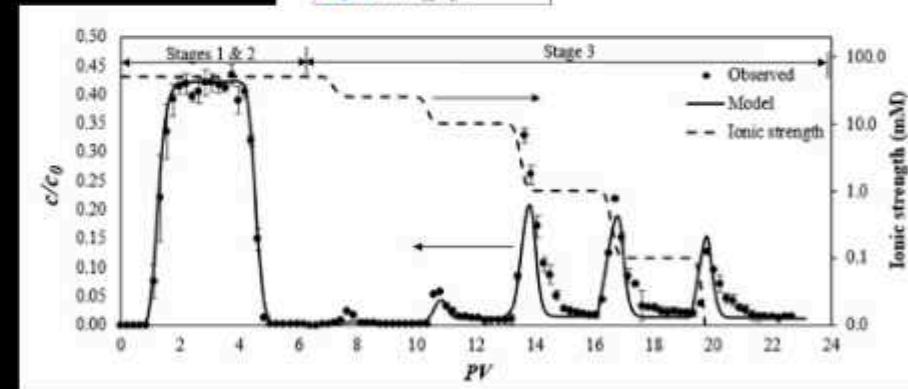


Major Research Facilities in the Group

- 1D soil column and 3D sand box experimental setup
- Multiscale modeling tools for simulating flow and transport in porous media
- Microfluidic experiments

Technology/Product Developed/Up to 3 most significant Publications

- Krishna, Y.S.R., Seetha, N., Hassanizadeh, S.M., 2022. Experimental and numerical investigation of the effect of temporal variation in ionic strength on colloid retention and remobilization in saturated porous media. *Journal of Contaminant Hydrology*, 104079.
- Seetha, N., Hassanizadeh, S.M., 2022. A two-way coupled model for the co-transport of two different colloids in porous media. *Journal of Contaminant Hydrology*, 244, 103922.
- Krishna YSR and Seetha N, 2022. Predicting the rate coefficients of attachment and detachment of colloids in saturated porous media. *Frontiers in water*, 4:827923.



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K.B.V.N. Phanindra

Associate Professor, Department of Civil Engineering

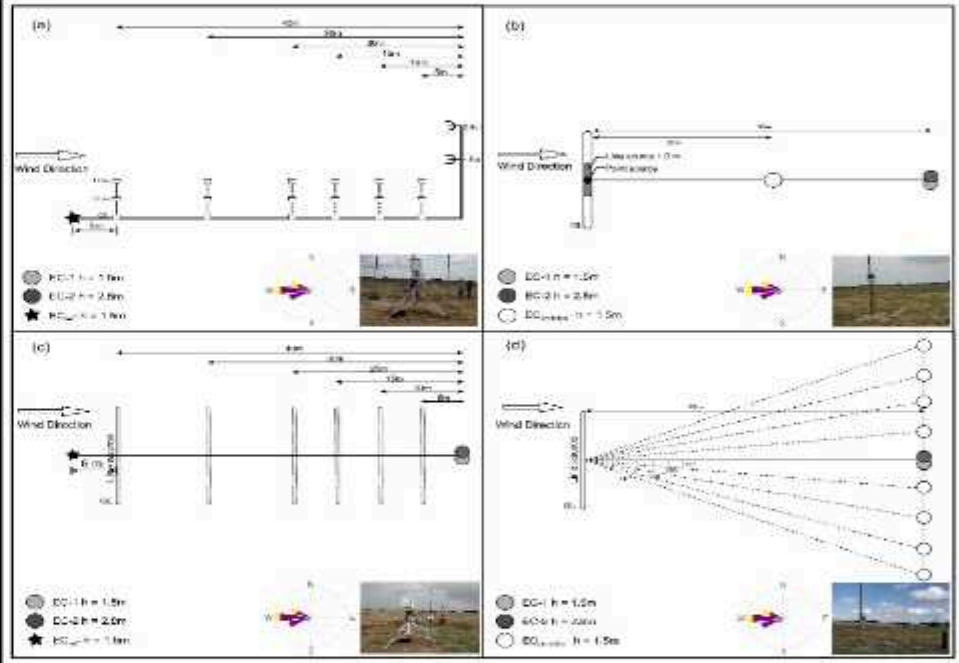
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Major Areas of Research/Up to 3 major sponsored projects

1. Hydrogeology and Groundwater
2. Agricultural Water Management
3. Remote Sensing and GIS

Major Research Facilities in the Group

1. Eddy-Covariance Flux Towers
2. Geophysical exploring equipment
3. River Surveyor, DGPS



Technology/Product Developed/Up to 3 most significant Publications

1. <https://doi.org/10.1016/j.compag.2022.107523>
2. <https://doi.org/10.1061/JWRMD5.WRENG-5644>
3. <https://doi.org/10.1080/02626667.2022.2106142>





Pritha Chatterjee

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Major Areas of Research/Up to 3 major sponsored projects

Resource Recovery from Waste, Climate Change Mitigation, Bioelectrochemical Systems, Wastewater Treatment, Sustainable Mobility

Major Research Facilities in the Group

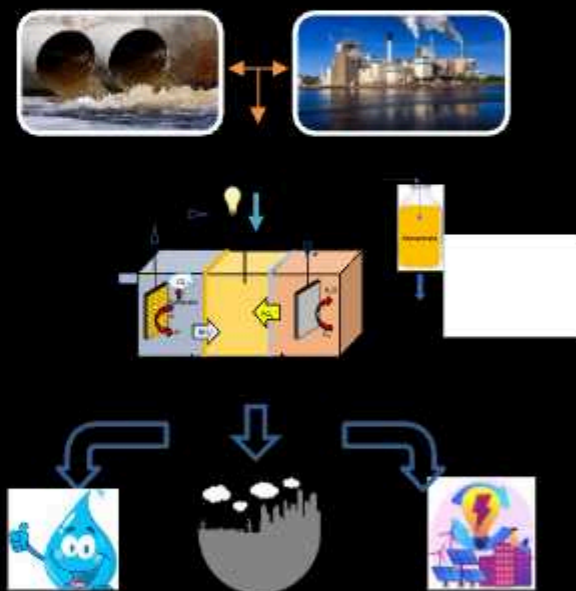
Potentiostat, GCMS, HPLC, IC, QTOF

Technology/Product Developed/Up to 3 most significant Publications

1. Fathima, J., & Chatterjee, P. (2022). A techno-economic assessment of nutrient recovery from wastewater using microalgae: scenario in India collected from published literature. *Water Science and Technology*, 86(6), 1325 – 1341. <https://doi.org/10.2166/wst.2022.260>

2. Hämäläinen, A., Kokko, M., Chatterjee, P., Kinnunen, V., & Rintala, J. (2022). The effects of digestate pyrolysis liquid on the thermophilic anaerobic digestion of sewage sludge — Perspective for a centralized biogas plant using thermal hydrolysis pretreatment. *Waste Management*, 147, 73–82. <https://doi.org/10.1016/j.wasman.2022.05.013>

3. Chandrashekar, Chatterjee, P., and Pawar, D. S. 2022. Estimation of CO₂ and CO Emissions from Auto-Rickshaws in Indian Heterogeneous Traffic. *Transportation Research Part D: Transport and Environment*. 104, 103202.





Mullapudi Ramya Sri

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Major Areas of Research/Up to 3 major sponsored projects

Self-healing characteristics of warm mix asphalt mixtures, funded by SERB

Performance evaluation of CGBM containing RAP, funded by IITH

Major Research Facilities in the Group

- Universal Testing Machine for Bituminous mixes
- Rotary evaporator

Technology/Product Developed/Up to 3 most significant Publications

- Healing ability of bituminous mixes containing RAP material
- Reddy, N. G., Vidya, A., & Sri Mullapudi, R. (2022). Review of the Utilization of Plastic Wastes as a Resource Material in Civil Engineering Infrastructure Applications. Journal of Hazardous, Toxic, and Radioactive Waste, 26(4), 03122004.





M. Roshan Khan

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Major Areas of Research

Railway Geotechnics
High-Speed Railways
Computational Modelling and
Analysis in Geotechnical
Engineering

Major Research Facilities in the Group

4-D High-Speed Train Simulator
(in development)

3 most significant Publications

1. Khan, M. R., & Dasaka, S. M. (2019). Quantification of ground-vibrations generated by high speed trains in ballasted railway tracks. *Transportation Geotechnics*, Elsevier, 20, p. 100245.
2. Khan, M. R., & Dasaka, S. M. (2020). Amplification of high-speed train induced vibrations in railway embankments by passive EPS geofom ground vibration barriers. *International Journal of Geosynthetics and Ground Engineering*, Springer, 6, p. 33.
3. Khan, M. R., & Dasaka, S. M. (2020). EPS geofom as a wave barrier for attenuating high-speed train-induced ground vibrations: A single-wheel analysis. *International Journal of Geosynthetics and Ground Engineering*, Springer, 6, p. 43.

The screenshot shows the journal page for the article 'Quantification of ground-vibrations generated by high speed trains in ballasted railway tracks'. The journal is 'Transportation Geotechnics', published by Elsevier. The authors are M. Roshan Khan and Satyanarayana Murty Dasaka. The article includes an abstract and keywords.

Keywords:
High speed railways
Ballasted railway tracks
Ground vibrations
Peak particle velocities
Moving load analysis

ABSTRACT
Ground vibration generated by high speed trains is one of the major challenges in the operation of high speed railway systems. The transit of high speed trains proximate to vibration sensitive structures pose a risk to the structural health of the buildings, especially when the ground vibrations reaching the structure get amplified through the height of the structure at resonant frequencies. A precise quantification of the peak particle velocities (PPVs) is required for analysis of ground vibrations propagating away from the railway track, which also aids in the implementation of suitable vibration mitigation measures if the vibration levels surpass the vibration safety criteria for various classes of buildings. This study investigates the ground vibrations generated by a high speed train wheel in the component strata of a railway embankment during transit at the speed of 200 km/h. Transient numerical analyses were conducted in full scale 3-D railway track models, developed with the geometric cross sections specified by RDSO, Ministry of Railways in India, for operation of trains in the broad gauge railway track sections. The quantification of vibration velocities were performed in the vertical, longitudinal and lateral axes, and the resultant peak particle velocities were estimated for various strata in the railway embankment and supporting ground. The ground vibrations were found to be oriented mainly in the vertical direction, and the highest vibrations were recorded at the locations when the wheel load was located vertically on top of the section. It was observed that PPVs attenuate with increase in depth from the track level, and with increase in lateral distance from track centreline. High magnitudes of vibration were estimated in the railway embankment and ground when the effect of multiple train wheels superpose. The results also highlight that the horizontal components of ground vibration are significant at further distances away from the track, implying that foundations of buildings proximate to railway tracks are subject to strong excitations in the horizontal direction.

S. Suriya Prakash

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Major Areas of Research

- Application of FRP composites in repair, rehabilitation and retrofitting
- Application of FRP rebars as internal reinforcement for concrete structures
- Development and application of ultra high-performance concrete
- Cellular lightweight concrete hollow core slabs
- Condition assessment of civil infrastructure using drones

Major Research Facilities in the Group

- 100mm diameter Split-Hopkinson Pressure Bar test set-up
- Microtest 3000 kN Compression Testing Machine
- MTS Pseudo Dynamic Test System
- Microtest 500 kN Fatigue Testing Machine



Research Publications

- Balla TM, Prakash SS, Rajagopal A. Role of size on the compression behaviour of hybrid FRP strengthened square RC columns—Experimental and finite element studies. *Composite Structures*. 2023 Jan 1;303:116314.
- Sagi MS, Lakavath C, Prakash SS. Effect of steel fibers on the shear behavior of Self-Compacting reinforced concrete deep Beams: An experimental investigation and analytical model. *Engineering Structures*. 2022 Oct 15;269:114802.
- Thammishetti N, Prakash SS, Al-Mahaidi R, Hashemi J. Simplified biaxial tension stiffening model for the analysis of shear panels using softened membrane model. *Engineering Structures*. 2022 Sep 15;267:114697.





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Major Areas of Research

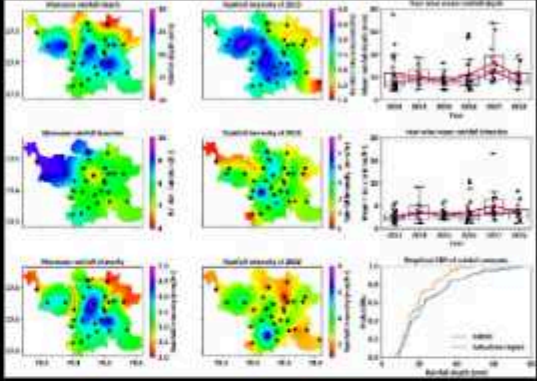
Urban- and riverine- floods; Rainfall; Climate; AI/ML techniques; Statistics; forecasting; Application of drones; Product development; New methods for hydrologic data using satellites, images, IoT, etc; Surface hydrology;

Major Research Facilities in the Group

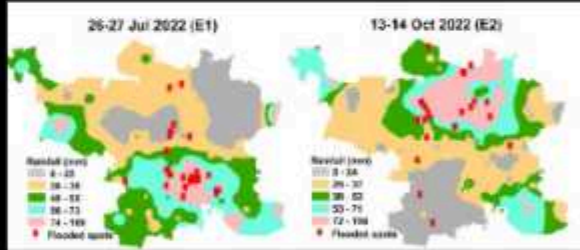
Automatic Rain gauges; Rainfall simulator; Open channel tilting flume; Drone; Availability of high computing resources for hydroclimate modeling purposes;

Technology/Product Developed

- A web-based tool for streamflow diagnostics and postprocessing
- Climatological features of rainfall for city Hyderabad, India
- Operational hydrologic ensemble forecast service
- Rainfall - runoff and flood inundation modeling
- Integration of climate information for agriculture



Space-time rainfall variability for city Hyderabad, India



Spatial distribution of flood hot spots and rainfall for two events for city Hyderabad

Shashidhar

Professor, AMRflows: Contaminant fate & transport modeling,

Department of Civil Engineering

Phone No. +91 40 2301 6305; Email: shashidhar@ce.iith.ac.in; Webpage Link: <https://civil.iith.ac.in/shashidhar>



Major Areas of Research

Antimicrobial resistance and Public health, Contaminant Fate and Transport Modeling, Bioremediation and Pore scale modeling of microbial transport, Microbial interactions in contaminated aquifers, EIA, Microfluidics and CFD simulations, Hydraulics, Hydrology, Hydrogeology, Hydroclimatology, Remote Sensing and GIS applications

Major Research Facilities

Thermo Scientific™ Biosafety Cabinet Level – II

Biorad qPCR CFX96 – eDNA/Gene analysis

Qiagen QIAcuity Digital PCR multiplex System – eDNA/Gene analysis

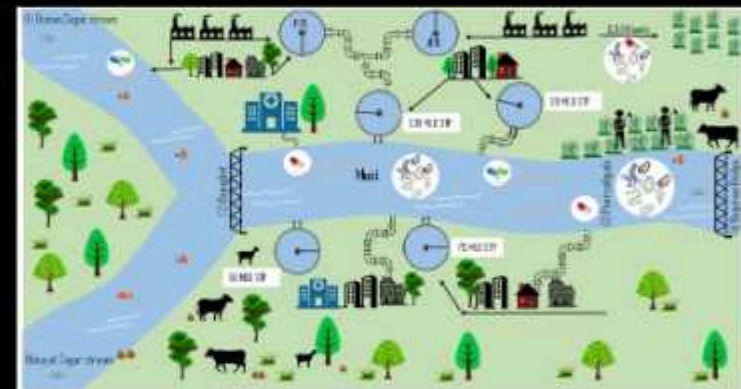
MP Biomedicals Classic Fast prep Bead Beating Equipment/Homogenizer

Invitrogen

Qubit 4 – Fluorimeter for dsDNA assay

Nikon epifluorescence inverted microscope

QTOF LC MS-MS, LC, IC and ICP MS



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भारतीय प्रौद्योगिकी संस्थान हैदराबाद
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Shwetabh Yadav

Assistant Professor, High-speed Imaging Lab, Department of Civil Engineering

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Major Areas of Research/Up to 3 major sponsored projects

Experimental solid mechanics

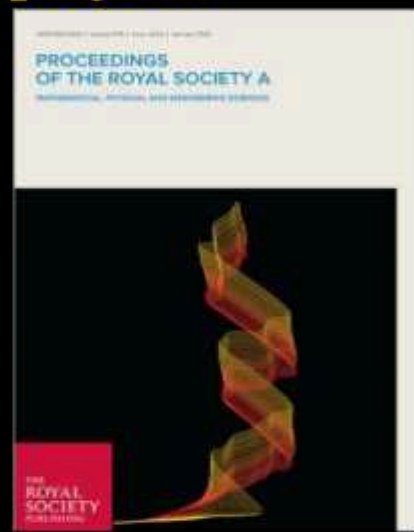
Rock Mechanics

In situ measurement techniques

Major Research Facilities in the Group

High-speed imaging

In situ analysis of deformation of materials



Technology/Product Developed/Up to 3 most significant Publications

Yadav S., and Sagapuram D., (2020) "Nucleation properties of isolated shear bands", Proceedings of the Royal Society A, 476(2241)20200529

Yadav S., and Sagapuram D., (2020) "In situ analysis of shear bands and boundary layer formation in metals", Proceedings of the Royal Society A, 476(2234)20190519.

Yadav S., Saldana C., and Murthy T. G., (2018) "Experimental investigations on deformation of soft rock during cutting", International Journal of Rock Mechanics and Mining Sciences, 105, 123-132.





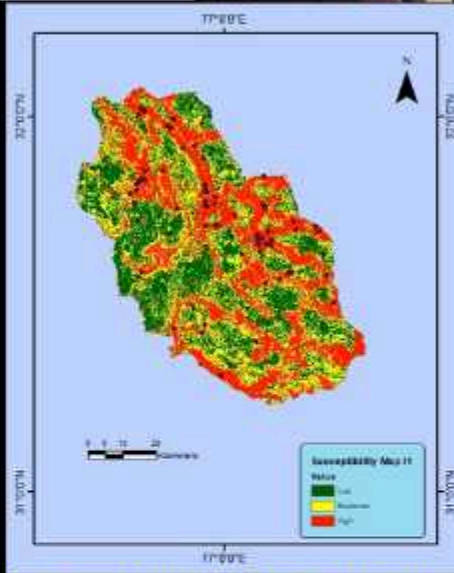
Sireesh Saride

Professor, Pavement Geotechnics Lab, Department of Civil Engineering

B 301; 04023016302; sireesh@ce.iith.ac.in; <https://people.iith.ac.in/sireesh/index.html>

Major Areas of Research/Up to 3 major sponsored projects

- Pavement Geotechnics, Ground Improvement, Geosynthetics, Landslides
- 1. NHAH sponsored Transportation Research and Innovation Hub (TRI HUB)
- 2. 'Design Development of Fly ash Geopolymer Stabilized Marginal Aggregate Base Courses for Flexible Pavements', NHAH, Rs. 91.80 Lakhs, 2022-2025, PI: **Sireesh S**
- 3. Laboratory and Field Investigations on PET Geogrid-Reinforced Base Courses, Rs. 227.5, NTTM, 2022-2025, PI: Sireesh S
- 4. 'Development & Feasibility Studies on Drainage and Reinforcement Functions of 3D Geocomposites in Pavements', Rs. 258.4, NTTM, 2022-2025, PI: Sireesh S



The landslide Susceptibility Map of Mandi, Himachal Pradesh developed based on GIS-ML

Major Research Facilities in the Group

Dynamic actuator system for soils and pavement applications, Cyclic Triaxial Apparatus, Cyclic Simple Shear Apparatus, Resonant Column Apparatus

Technology/Product Developed/Up to 3 most significant Publications

Product: Fly ash stabilized Reclaimed Base (FRB) for Pavements
Technology: MIF-based geosynthetic-reinforced pavement design



Scale-model DSM columns prepared in the lab

Three most significant Publications

1. Saride, S., Ramu, B., Balunaini, U., and Madhav M R (2022). Modulus Improvement Factor-based Design Coefficients for Geogrid and Geocell-reinforced Bases. ASCE Journal of Transportation Engineering, Vol. 148 (3), Sep 2022. <https://doi.org/10.1061/JPEODX.0000380>
2. Vamsi NK Mypati and Sireesh Saride (2022). Feasibility of alkali-activated low-calcium fly ash as a binder for deep soil mixing. ASCE Journal of Materials in Civil Engineering, 34(1), 04021410.
3. Sireesh Saride and Maheshbabu Jallu (2020) 'Effect of Alkali Activated Fly Ash on Layer Coefficients of Reclaimed Asphalt Pavement Bases' ASCE Journal of Transportation Engineering, 146(3), DOI: 10.1061/JPEODX.0000169



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Sk Zeeshan Ali

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Major Areas of Research/Up to 3 major sponsored projects

Analytical hydrodynamics

Turbulent flows

Sediment transport

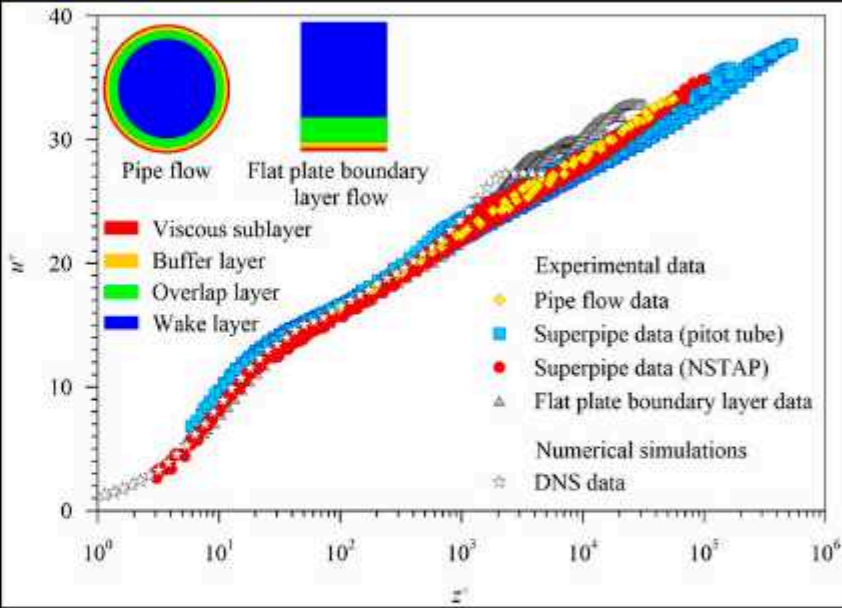
Major Research Facilities in the Group

Experimental flume

Technology/Product Developed/Up to 3 most significant Publications

Ali SZ, Dey S (2020) The law of the wall: A new perspective. *Physics of Fluids* 32, 121401

Ali SZ, Dey S (2021) Linear stability of dunes and antidunes. *Physics of Fluids* 33, 094109



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Major Areas of Research/Up to 3 major sponsored projects

India-SriLanka (2021) OrigamiSat for Structural Health Monitoring [2 years] Role: PI

IUCAA (2018) Seismic studies for LIGO-India site [3 years] Role: PI

SERB-ECR (2016) Investigating Earthquake Source Physics Inclusion into Engineering Analysis of Built Environment [3 years] Role: PI

Major Research Facilities in the Group

High-Performance Supercomputing (HPC) cluster for Civil Department



Geophones 3C 5Hz for sand dunes and oil & gas, mining seismic exploration



CubeSats and deployable space structures for space-based surveillance and monitoring

Unmanned Aerial vehicles and drones for remote sensing applications

PARAM Shavak GPU for Computer Vision, Large Language Modelling, AI

Technology/Product Developed/Up to 3 most significant Publications

Somala, S. N., S. Mangalathu, S. Chanda, K. S. K. Karthik Reddy, and R. Parla (2022) Focal Mechanism Influence with Azimuth using Near-Field Simulated Ground Motion: Application to Multi-Span Continuous Concrete Single Frame Box Girder Bridge, *ASCE Journal of Bridge Engineering*, 27(6), 04022034 (doi: 10.1061/(ASCE)BE.1943-5592.0001875)

Chaudhari, V., and **S. N. Somala** (2022) Fragility of Offshore Wind Turbines Variation with Pulse-period and Amplitude: Directivity and Fling step, *Structures*, 41, 66-76 (doi: 10.1016/j.istruc.2022.04.078)

Somala, S.N. (2021) Lockdowns and their Influence on Earth's Hum, *Scientific Reports*, 11(1), 17838 (doi: 10.1038/s41598-021-97459-1)



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Suvin P. Venthuruthiyil

Asst. Professor, Transportation Engineering, Department of Civil Engineering

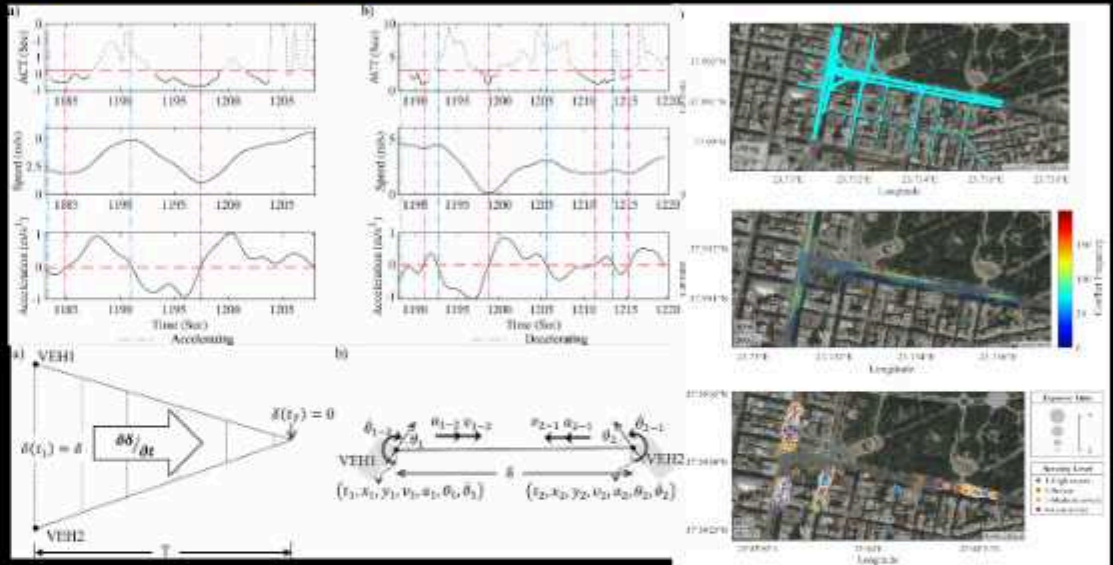
B-305; Office Phone No. 040-23016325; Mob:8486624196; pv.suvin@ce.iith.ac.in; [Suvin P. V. | IIT Hyderabad](mailto:pv.suvin@ce.iith.ac.in)

Major Areas of Research/Up to 3 major sponsored projects

- 1) Proactive Safety Assessment of Road Traffic
- 2) Real-Time Assessment of Autonomous Vehicle Safety at Transport Networks
- 3) Mobility-as-a-Service (MaaS): First and Last Mile Connectivity

Major Research Facilities in the Group

- 1) Driving Simulator
- 2) Virtual Reality Lab
- 3) ITS Devices for Naturalistic Driving Data Collection



Technology/Product Developed/Up to 3 most significant Publications

- 1) Suvin P. Venthuruthiyil & Mallikarjuna Chunchu (2022). Anticipated Collision Time (ACT): A two-dimensional surrogate safety indicator for trajectory-based proactive safety assessment. *Transportation Research Part C: Emerging Technologies*, 139, 103655. <https://doi.org/10.1016/j.trc.2022.103655>
- 2) Suvin P. Venthuruthiyil & Mallikarjuna Chunchu (2022) Interrupted and uninterrupted lane changes: a microscopic outlook of lane-changing dynamics, *Transportmetrica A: Transport Science*, 18:3, 1679-1698, DOI: <https://doi.org/10.1080/23249935.2021.1965240>
- 3) Suvin P. Venthuruthiyil & Mallikarjuna Chunchu (2020). Vehicle path reconstruction using Recursively Ensembled Low-pass filter (RELP) and adaptive tri-cubic kernel smoother. *Transportation Research Part C: Emerging Technologies*, 120, 102847. <https://doi.org/10.1016/j.trc.2020.102847>



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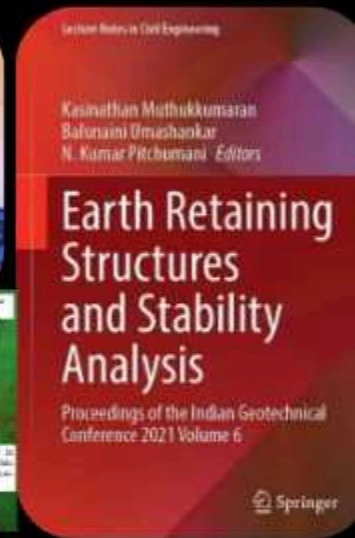
Webpage link- <https://civil.iith.ac.in/dr-b-umashankar/>

Major Areas of Research/Up to 3 major sponsored projects

Research Interest- Reinforced Earth Structures, Soil-Structure Interaction, Foundation Engineering, Ground Improvement Techniques, Recyclable Materials in Geotechnics, Geosynthetics in Pavements

3 Major Sponsored Projects

- Title: Geogrid and geocell reinforced flexible pavements (PI) *Funding Agency: National Highway Authority of India*
- Title: Laboratory Study on the Stabilization of Haul Roads inside Open-Cast Mines (PI) *Funding Agency: Neyveli Lignite Co. Ltd.*
- Title: Use of geosynthetics in pavements over soft and expansive subgrades (PI) *Funding Agency: Ministry of Textiles*



Major Research Facilities in the Group

Large-scale model pavement test facility, Pullout test setup, tensile testing machine, large and small direct shear testing machine, modified, CBR testing apparatus, seismic site characterization using MASW, geosynthetics testing, etc.

Technology/Product Developed/Up to 3 most significant Publications

- An Apparatus for Measuring the Transverse Pullout Resistance of a Reinforcing Element and the Method Thereof Umashankar B. | Hari Prasad C. (Patent No. IN201502927I4)
- Yoon, S., Balunaini, U., Yildirim, I. Z., Prezzi, M., & Siddiki, N. Z. (2009). Construction of an embankment with a fly and bottom ash mixture: Field performance study. *Journal of Materials in Civil Engineering*, 21(6), 271-278.
- Goud, G. N., Ramu, B., Umashankar, B., Sireesh, S., & Madhav, M. R. (2022). Evaluation of layer coefficient ratios for geogrid-reinforced bases of flexible pavements. *Road Materials and Pavement Design*, 23(1), 199-210.