Piyush Vyas

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Education

University Of Southern Calfornia **Ongoing**
PhD in Civil engineering(GPA:3.97/4) *Los Angeles, CA*

Indian Institute of Technology Roorkee **Aug. 2017 – May 2021**
Bachelor of Technology in Civil Engineering(GPA:8.526/10) *Roorkee, Uttarakhand*

Relevant Coursework

- Finite Element Analysis
- Mechanics of Solids
- Structural Dynamics
- Geotech Earthquake Engineering
- Data Management and Programming
- Advanced Concrete Design
- Design of Earth Structures
- Uncertainity Quantification

Research Work and Projects Undertaken

Graduate Research Assistant **Aug 2021- Ongoing**
Supervisor: Dr C.C Nweke *University of Southern California*

- **Evaluation of Dynamic Properties of Biocemented Sand**
- Description: Focused on assessing the dynamic characteristics (shear modulus degradation and damping) of bio cemented sands. I perform resonant column tests on sand cemented by Microbial Induced Calcite Precipitation (MICP) and Enzyme Induced Calcite Precipitation (EICP) across a range of confinement and cementation levels. I am also investigating the microscale alterations of bio cemented sands under various levels of confinement. The overarching goal is to establish a robust database of material properties for bio cemented sands that can be employed in the development of constitutive models and ground improvement design.

Design of Solid Waste Processing and Disposal System **July 2020 – May 2021**
B.Tech Project *IIT Roorkee*

- **Project Supervisor: Prof. Absar Ahmad Kazmi** (Civil Engineering Department, IIT Roorkee)
- A multi-disciplinary project involving the application of knowledge from various disciplines like Environmental Engineering, Civil Engineering, Mechanical Engineering and Chemical Engineering.
- Also, it requires application of concepts of Electrical Engineering like Electric Power, SCADA and Control System.
- **Project Description:**
- Identifying waste composition and segregation processes for various types of waste.
- Selecting adequate Waste Processing and Disposal Machines.
- Carrying out Slope Stability Analysis for Landfill.
- Designing Foundation for the Waste Treatment Plant.
- Carrying out the Structural Design of Plant and Steel/RCC structures for Machines.
- Identifying suitable land for construction and carrying out Surveying of land.
- Carrying out Geometric Design of connector road with the main road, and designing the pavement of connector road for vehicular movement.
- Designing Storm Water Drainage for Waste Treatment Plant.
- The project has been alloted by Civil Engineering Department and is supposed to be completed in a group of 9 students.

Analysis and Design of Prestressed Concrete Box Girder Bridge **August 2019 – July 2020**
Industrial Project *IIT Roorkee*

- **Project Supervisor: Prof. Pradeep Bhargava** (Civil Engineering Department, IIT Roorkee)
- Generated a STAAD Pro model of 25 m long and 15.5 m wide Bridge Deck.
- Carried out Detailed Structural Design of the Bridge.
- Performed Longitudinal and transverse analysis using codal provisions of Indian Road Congress (IRC) 6-2017.
- · Carried the prestress loss analysis, shear and torsion design using IRC 112-2011.
- Software Used: MS Office, STAAD Pro, AutoCAD

Analysis of Structure subjected to Blast Load **May 2019- September 2019**
Research Project *IIT Roorkee*

- **Project Supervisor: Prof. Pradeep Bhargava** (Civil Engineering Department, IIT Roorkee)

- Studied and analyzed the shear failure of a structure subjected to Blast Loads.
- Conducted an extensive literature review on progressive collapse of structures.
- Found the structural response of the frame subjected to Blast Loads and Earthquake using MATLAB.
- Prepared a model of a Simply Supported Beam and Wall using ABAQUS and analyzed their behaviour under explosion.
- Prepared the diagonal strut model of a beam-column joint for a 2D frame on SAP2000.
- Analyzed the failure of the Beam-column joint for different blast load configurations.
- Performed Pushover Analysis of 2-D frame on SAP2000.
- **Software Used: MATLAB, ABAQUS, SAP2000**

Teaching And Mentoring Experience

Graduate Teaching Assistant **Aug 2021-Ongoing**

University of Southern California *Los Angeles, CA*

∗ A Graduate Teaching Assistant, plays role in facilitating classroom instruction, providing valuable academic support to students, and assisting in curriculum development. My dedication to enhancing the learning experience and my communication skills contributed to the success of the educational programs I supported.
∗ **Undergraduate**
∗ CE 334: Mechanical Behavior of Materials(DIC,Concrete Testing,Microscopic Analysis)
∗ CE 309: Fluid Mechanics
∗ CE 482: Foundation Design
∗ **Graduate**
∗ CE 529: Finite Element Analysis(Taught Abaqus Software,Assigned the Project involving ABAQUS and MATLAB)
∗ CE 502: Construction Management and Accounting

Mentoring

University of Southern California *Los Angeles, CA*

∗ **Undergraduate**
∗ Oscar Sosa: Effect of Biocement on Dynamic Mechanical Properties of Cement(Summer Undegraduate Research Experience(SURE 2023))
∗ Hilary Keuni:Effect of Confinement on the Dynamic Properties of Biocemented Sands

Internship

Surveying Camp | *ARC GIS, ERDAS Imagine* **Dec 2018**

∗ Surveyed Dhandera Defence Colony, Roorkee as per a developmental scheme named Atal Mission for Rejuvenation and Urban Transformation (AMRUT) under Government of India.
∗ Developed a standard digital Geo-Referenced Base Map and Land Use Map using GIS.
∗ Route-shooted and attributed the area with over 1500 buildings and 38 roads.
∗ Carried out the digitization of the area using ArcGIS and ERDAS IMAGINE

Technical Skills

Languages: Python, HTML, SQL, MATLAB.
Softwares: ABAQUS, SAP 2000, STAAD Pro, MS Office, ARC GIS, Autocad,Solid Works, ERDAS IMAGINE, Weka.

Leadership / Extracurricular

PEER Student Committee **Aug 2022- Ongoing**

Officer(Professional Subcommittee)

- Organised several seminars beneficial for working professional and researchers
- Organised a event in PEER Annual Meeting 2023 at UC Berkeley

Unnat Bharat Abhiyan (M.H.R.D) **July 2019-July 2020**

Village Coordinator *IIT Roorkee*

∗ Coordinated one of the five independent teams each with an assigned village, with the nearest village cluster Beladi-Salhapur assigned to our team
∗ Lead the Beladi-Salhapur team to bring about transformational changes related to agriculture, sanitation, em- ployment and skill development in rural areas through our student-led initiative.
∗ Successfully conducted Dental Health Camp, Sanitary Pads distribution, LED distribution, Livestock Health Camp, Self Defence Camp and Cycle distribution for meritorious students in the village.
∗ Conducted the laboratory testing of drinking water of the village and found high amounts of arsenic which lead to various skin diseases among the villagers, previously identified during a medical camp. A Water ATM had then been proposed to the higher authorities

References

Dr Chukwuebuka C.Nweke **Assistant Professor**
Sonny Astani Department of Civil and Environmental Engineering *Email: ccnweke@usc.edu*

Dr Pradeep Bhargava **Professor**
Civil Department IIT Roorkee *p.bhargava@ce.iitr.ac.in*

Dr Kaustav Chatterjee **Civil Department IIT Roorkee**
Associate Professor *kaustav.chatterjee@ce.iitr.ac.in*