

BARSHA BHUGAI

 (+977) 986-053-1047  b.rain.bhugai457@gmail.com
 [linkedin.com/in/barsha-bhugai](https://www.linkedin.com/in/barsha-bhugai)  github.com/Barsha-Bhugai

Research Profile

Motivated Civil Engineering graduate and aspiring researcher with a strong foundation in computational modeling (ETABS, SAP2000), structural analysis, and sustainable materials. Demonstrates analytical thinking and systematic problem-solving through hands-on projects in bridge design, pavement systems, and materials assessment. Passionate about integrating engineering fundamentals with environmental and data-driven approaches to design resilient, smart, and sustainable infrastructure systems. Seeking a Research Assistantship to contribute to innovative, interdisciplinary research in computational mechanics, smart materials, and sustainable infrastructure development, while advancing technical and analytical research skills.

Education

Bachelor of Engineering in Civil and Rural Engineering Pokhara, Nepal
Pokhara University

Aug 2019 – Aug 2024

- **Relevant Coursework:** Structural Analysis, Design of RCC Structure, Steel Design, Foundation Engineering, Finite Element Method, Design of RCC Bridge, Soil Mechanics, Concrete Technology and Masonry Structure, Construction Project Management, Safety Engineering, Transportation Engineering, Surveying Engineering, Hydrology, Hydraulics, Fluid mechanics, Geology

GPA: 3.26/4.0

Research & Technical Projects

Project on Flexible Pavement Deterioration Mechanisms Pokhara, Nepal
Pavement Defects Identification Study —

Feb 2020 – Jun 2020

- Conducted systematic field investigation and analysis of pavement deterioration mechanisms, identifying failure patterns and root causes that demonstrate foundational research methodology in infrastructure assessment
- Developed evidence-based maintenance strategies through technical analysis of material performance and environmental factors, showcasing applied research approach to sustainable infrastructure solutions

Experimental Analysis of Sustainable Pavement Materials Pokhara, Nepal
Plastic Waste in Bituminous Road Construction —

Jul 2023 – Sep 2023

- Designed and executed experimental methodology to investigate mechanical properties of plastic-modified bitumen
- Developed testing protocols and analyzed performance data for durability, strength, and flexibility parameters
- Conducted comparative analysis of modified vs. conventional bitumen, identifying key performance improvements
- Documented environmental benefits and implementation challenges in comprehensive technical report

Computational Modeling of Bridge Structures Kusma, Parbat, Nepal
RCC T-Beam Bridge Analysis —

May 2025 – Jul 2025

- Applied finite element modeling using ETABS to simulate structural behavior of 25.5m RCC T-Beam bridge
- Conducted computational analysis of load distributions, shear forces, and bending moments under various conditions
- Verified structural integrity and serviceability compliance with relevant design codes and standards

- Demonstrated proficiency in computational mechanics and structural simulation techniques

Pavement Systems Performance Study

Pang, Nepal

Road Upgrade Project —

Mar 2025– May 2025

- Developed the design for upgrading a 6-km mountain road, employing two different pavement systems to address varying ground conditions and traffic loads.
- Conducted comparative performance analysis of flexible (AC) and rigid (RCC) pavement systems
- Developed optimization framework considering soil properties, traffic loads, and environmental factors
- Integrated field data and analytical modeling to recommend optimal pavement solutions
- Demonstrated systematic approach to engineering decision-making and cost-performance optimization.

Infrastructure Planning & Design

Pokhara, Nepal

Rural Road Development Project —

Mar 2024 – Jul 2024

- Developed Detailed Project Report (DPR) for about 3-km mountain road upgrade, employing comparative analysis of flexible (AC) and rigid (RCC) pavement systems
- Created optimization framework integrating soil properties, traffic loads, and environmental factors to recommend cost-performance balanced pavement solutions
- Utilized AutoCAD and Smart Road for technical documentation and design visualization

Technical Skills

- **Computational Modeling:** ETABS, SAP2000, Finite Element Analysis, Structural Simulation
- **Programming & Analysis:** Python, C, LaTeX, Advanced Excel
- **Engineering Software:** AutoCAD, Smart Road, SketchUp, Technical Documentation
- **Research Methods:** Experimental Design, Data Analysis, Literature Review, Technical Reporting
- **Languages:** English (Professional), Nepali (Native), Hindi (Conversational)

Professional Experience

Civil Engineer Supervisor

Kusma, Parbat, Nepal

Infrastructure Development Office —

Feb 2025 – Jul 2025

- Managed technical supervision and quality control procedures for infrastructure projects
- Conducted data analysis and documentation for project monitoring and compliance verification
- Collaborated with multidisciplinary teams, enhancing project coordination and problem-solving skills

Laboratory Experience

- Performed geotechnical and structural material testing (CBR, Proctor, Atterberg, Abrasion, Marshall, Bitumen, concrete strength, and NDT) per DoR, NS, and IS/IRC standards.
- Analyzed experimental data, prepared reports, and evaluated material behavior for quality control and structural performance of pavements and bridges.
- Developed strong research aptitude in soil–structure interaction, seismic response, and material characterization for sustainable infrastructure.

Additional Qualifications

- Certified National Chess Arbiter (FIDE) - Advanced analytical reasoning and strategic decision-making
- Continuous skill development in Python programming and data analysis for research applications

References

Prof. Dr. Tek Raj Gyawali
 Professor, School of Engineering
 Pokhara University, Nepal
 tekg@pu.edu.np