# Ph.D. Openings: AI-Driven Research in Infrastructure Resilience

**One to two graduate research assistant** positions are available in Dr. Debasish Jana's group in the Department of Civil and Environmental Engineering at Colorado State University, beginning in Spring or Fall 2026.

## Job Description

The AI for Resilient Infrastructure Systems (AiRIS) Lab conducts interdisciplinary research at the intersection of structural engineering, infrastructure networks, risk analysis, and AI-driven solutions.

Potential projects include, but are not limited to:
- Conducting AI-driven risk and resilience assessments for structures and infrastructure
- Developing vision-based and data-driven methods for infrastructure condition monitoring
- Integrating remote sensing data (satellite, LiDAR, cameras) for hyperlocal risk analysis
- Applying graph machine learning (GNNs) to optimize network resilience
- Creating generative models for synthetic hazard integration
- Advancing data-driven decision-making for natural hazard mitigation
- Building foundational models (LLMs) to fuse multi-modal sensing data

Ph.D. students will have the opportunity to contribute to these topics and collaborate closely with Dr. Debasish Jana in exploring new, innovative research directions aligned with their interests.

## Candidate Requirements

- Bachelor's degree (Master's preferred) in Civil, Structural, Infrastructure Engineering, Data Science, or a related field.
- Research experience in risk analysis, AI/ML/DL, decision-making, computer vision, and/or sensing technologies (e.g., camera, LiDAR, Satellite).
- Strong programming skills in Python and MATLAB, with proficiency in at least one machine learning framework (e.g., PyTorch, TensorFlow).
- Ability to conduct independent research and collaborate effectively within a team.
- Excellent scientific writing and communication skills.

## What We Offer

- Competitive stipend with full tuition coverage.
- Access to state-of-the-art research facilities and computing resources.
- Opportunities for interdisciplinary collaboration across engineering and data science.
- Comprehensive professional development support, including conference travel, workshops, leadership training, and career mentoring.

# To Apply

Interested candidates should email Dr. Debasish Jana at debasish.jana@colostate.edu with the subject line: "Ph.D. Application — Your Name". **Please attach a single PDF** containing:

1. A one-page cover letter summarizing relevant research experience, research interests, and career goals.
2. Curriculum vitae.
3. Unofficial transcripts.

Applications will be reviewed on a rolling basis until the positions are filled.

# About the Principal Investigator

Dr. Debasish Jana is an Assistant Professor in the Department of Civil and Environmental Engineering at Colorado State University. He previously held a position as a Postdoctoral Researcher in the Sensing and Robotics for Infrastructure (SRI) Lab at the University of California, Los Angeles, and earned his Ph.D. in Civil and Environmental Engineering from the Nagarajaiah Research Group at Rice University. Throughout his academic career, he has actively mentored both undergraduate and graduate students in their research.

For more information, please visit: `https://sites.google.com/view/airis2025` and `https://www.engr.colostate.edu/ce/people/debasish-jana/`

# About the Department of Civil and Environmental Engineering

The Department of Civil and Environmental Engineering at Colorado State University is a dynamic academic unit recognized nationally and internationally for excellence in education, research, service, and outreach. Faculty, staff, and students conduct cutting-edge work across numerous areas of civil and environmental engineering, addressing pressing technical, economic, environmental, and social challenges. Their efforts not only provide solutions to problems of state, national, and global importance but also advance the discipline to ensure resilient infrastructure and improved quality of life for future generations. Students are deeply involved in this mission through high-impact research that integrates technical, organizational, and human factors, preparing them to become leaders in academia, industry, and government.

# About the Colorado State University and Fort Collins

Colorado State University (CSU) is one of the nation's leading public research universities (R1: Doctoral Universities – Very high research spending and doctorate production), recognized for excellence in education, research, and community engagement. With a strong emphasis on innovation, interdisciplinary collaboration, and global impact, CSU provides world-class resources and facilities that support student success.

The university is located in Fort Collins, Colorado, a city consistently ranked among the best places to live in the United States. Fort Collins combines a vibrant downtown, thriving technology and innovation sectors, abundant outdoor recreation, and a welcoming community. Nestled at the foothills of the Rocky Mountains, it offers an exceptional quality of life with natural beauty, cultural activities, and convenient access to Denver International Airport.