

Dr. Angshuman C Baruah

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EDUCATION

PhD in Structural Engineering <i>University of Illinois Urbana-Champaign, USA</i> • GPA: 3.87/4.00	January 2021 - May 2025
MS in Structural Engineering <i>University of Illinois Urbana-Champaign, USA</i> • GPA: 3.87/4.00	August 2019 - December 2020
B.Tech. in Civil Engineering <i>National Institute of Technology (Silchar), India</i> • GPA: 8.91/10.00	July 2010 - May 2014

HONORS & AWARDS

EMI Conference Student Paper Competition (2nd Place)	2025
Invited Research Seminar at Cornell University	2025
O.H.Ammann Research Fellowship	2023
UIUC Graduate College Mentoring Certificate	2023
Mavis Future Faculty Fellowship	2023-2024
Siess Award in Civil Engineering	2023
Jacob Karol Fellowship	2023
SEI Graduate Student Chapter of the Year (<i>as President</i>)	2023

RESEARCH EXPERIENCE

Characterization and Control of Deployable Origami Structure Towards a Sustainable Built Environment <i>University of Illinois Urbana-Champaign, USA</i> • Developed a novel design concept inspired by biomimicry and origami principles for deployable structures • Investigated the deployment behavior of a 3D printed model under force-controlled and displacement-controlled actuation methods • Designed, built, and experimentally tested a meter-scale prototype, determining its shape and modal frequencies using optical measurement systems • Characterized deployment dynamics using a combined approach of dynamic relaxation methods and finite element analysis • Utilized multi-objective optimization to identify optimal sensor placements, assessing deployment performance under various actuation schemes and rates • Developed a method for detecting damage via strain profile variation, with classification achieved through supervised machine learning algorithms • Conducted a comparative life cycle assessment, quantifying environmental impacts and highlighting sustainability benefits for emergency shelter applications	January 2020 - May 2025
Design of Earthquake Resistant Structure <i>National Institute of Technology (Silchar), India</i> • Design of a 5-storied earthquake-resistant structure • Dynamic analysis under Zone V earthquake	Jan 2014 - May 2014
Finite Element Code for 2D & 3D Truss <i>Indian Institute of Technology (Guwahati), India</i> • Developed a C++ code for Finite Element Analysis of truss structure • Implemented the Finite Element Analysis Method to capture load effects on 2D and 3D truss structures	May 2012 - July 2012

TEACHING & MENTORING EXPERIENCE

Teaching Assistant

- CEE 465 Design of Structural Systems January 2023 - December 2024
University of Illinois Urbana-Champaign
 - Led three lectures, led concrete and steel design tutorials, conducted ETABS training, held weekly office hours, graded student assignments, and evaluated semester examinations.
- CEE 461 Reinforced Concrete I January 2020 - May 2020
University of Illinois Urbana-Champaign
 - Held weekly office hours, graded student assignments, and evaluated semester examinations.

Mentoring

- Research Experience for Undergraduate Program January 2023 - December 2024
University of Illinois Urbana-Champaign
 - Graduate student mentor to four undergraduate researchers at SMARTI lab
- Undergraduate Independent Study May 2023 - August 2023
University of Illinois Urbana-Champaign
 - Graduate student mentor to two undergraduate researchers during their summer research at SMARTI lab

PROFESSIONAL EXPERIENCE

Project Engineer

July 2025 - ongoing

Datum Engineers – Chicago, Illinois

- Working on high-rise towers, historic restorations, institutional projects across US.

Post Doctoral Researcher

June 2025 - ongoing

University of Illinois Urbana-Champaign – Urbana, Illinois

- Leading a DFG Excellence Strategy funded research collaboration with the University of Stuttgart on adaptive composite lattice structures.
- Developing methodologies for strategic fiber-optic strain sensor integration in coreless filament-wound (CFW) lattices.

Graduate Research Assistant

August 2020 - May 2025

University of Illinois Urbana-Champaign – Urbana, Illinois

- Conducted computational and experimental research under Dr Ann Sychterz at SMARTI lab, UIUC

Deputy Manager

April 2019 - August 2019

Power Grid Corporation of India Ltd. – Guwahati, India

- Monitored construction of substations under North Eastern Region Power System Improvement Program (NERPSIP)
- Designed & executed Bio-Engineering Methods of Slope Stabilization using cost-effective indigenous materials

Assistant Manager

September 2018 - March 2019

Power Grid Corporation of India Ltd. – Guwahati, India

- Supervised construction of four Extra High Voltage substations
- Enforced field quality regulations to optimize delivery of power & reinforcing reliability

Executive Engineer

September 2014 - August 2018

Power Grid Corporation of India Ltd. – Gurgaon, India

- Surveyed proposed sites for ARP-SS-02 package of Comprehensive Scheme
- Initiated construction activities of 220kV Seppa substation

Summer Intern

May 2013 - June 2013

Cortex Construction Solutions Pvt. Ltd. – New Delhi, India

- Implemented Non-Destructive diagnosis techniques to monitor health of civil structures
- Analyzed & recommended retrofitting strategic system for fire-damaged Delhi Metro Rail

SERVICE

Core Member, AI Pilot Program

2025 – present

Datum Engineers

- Investigating integration of AI methodologies into structural engineering workflows through pilot-scale implementations
- Developing and evaluating scalable AI-driven approaches for improving efficiency in analysis, design, and documentation
- Facilitating knowledge transfer and collaborative learning on emerging AI tools within engineering teams
- Assessing performance and applicability of AI workflows for broader adoption in engineering practice

Campus Recruitment Lead

2026 – present

Datum Engineers

- Leading Datum Engineers' campus recruitment initiative at the University of Illinois Engineering Career Fair
- Coordinating the campus recruitment team and organizing company representation at the career fair
- Screening resumes and conducting interviews to identify candidates aligned with the firm's hiring needs
- Evaluating prospective hires and providing hiring recommendations

Member, Research & Development Group

2025 – present

Datum Engineers

- Contributing to the development and formalization of structural design standards aligned with evolving codes and research
- Conducting technical validation of typical structural details to ensure analytical rigor and reliability
- Evaluating emerging software tools and computational workflows for integration into engineering practice

Chair, Graduate Student Chapter Leadership Council (GSCLC)

October 2022 – January 2024

American Society of Civil Engineers (ASCE)

- Acted as a voting member of the GSCLC and presided over meetings of the GSCLC
- Collaborating with all graduate student chapters to foster the SEI organizational activities

Vice-Chair, Graduate Student Chapter Leadership Council (GSCLC)

November 2021 - September 2022

American Society of Civil Engineers (ASCE)

- Acted as a voting member of the GSCLC
- Represented the council at meetings/activities during the absence of the Chair
- Collaborated with all graduate student chapters in carrying out council activities

President, Structural Engineering Graduate Student Organization (SEGSO)

May 2022 – January 2024

University of Illinois Urbana-Champaign

- Presided and managed regular board meetings and meetings with advisor
- Represented SEGSO with different entities and organizations

Professional Chair, Structural Engineering Graduate Student Organization (SEGSO)

August 2021 - April 2022

University of Illinois Urbana-Champaign

- Proposed, organized and managed professional events

Chapter Chair, Graduate Student Chapter

August 2021 – May 2025

Structural Engineering Institute (SEI)

- Corresponded between Local Graduate Chapter and SEI
- Organized activities, seminars and events under SEI banner

General Secretary, Civil Engineering Society

July 2012 - May 2013

National Institute of Technology (Silchar)

- Managed finances & secured event sponsors
- Spearheaded education outreach program for underprivileged children in rural areas

PUBLICATIONS

Journal Papers:

- **Baruah, A. C.** & Sychterz, A. C. (2025). Machine Learning-Based Damage Classification and Comparative Life Cycle Assessment of Deployable Origami Pill Bug for Emergency Shelters. *Journal of Building Engineering*, 113, 114051.
- **Baruah, A. C.** & Sychterz, A. C. (2025). Optimization of sensor placement and actuation strategy for a deployable origami structure through computational analysis and experimental investigation. *International Journal of Space Structures*, 2025, 40(1):42-56.
- **Baruah, A. C.** & Sychterz, A. C. (2025). Comparison of Computational and Experimental Dynamic Behavior of a Meter-Scale Deployable Origami Pill Bug Structure. *Structures*, 71 (2025), 108033.
- **Baruah, A. C.** & Sychterz, A. C. (2022). Assessment and Comparison of Cable-Actuation of Pill Bug Inspired Adaptive Origami Structure Using Computer Vision and Dynamic Relaxation. *Frontiers in Built Environment*, 8, 813543.
- Sychterz, A. C. & **Baruah, A. C.** (2021). Active Control for Adaptive Origami Structures Undergoing Damage. *Engineering Structures*, 242, 112457.
- Grünvogel, N., **Baruah, A. C.**, Mindermann, P., Sychterz, A. C., & Bischoff, M. (2026: **UNDER REVIEW**). Methodological positioning of fiber optic strain sensors in coreless filament-wound lattice composite structures. *Structures*.

Conference Papers:

- **Baruah, A. C.** & Sychterz, A. C. (2025). Damage Classification of Deployable Origami Structure Using Supervised Machine Learning. *Proceedings of the Engineering Mechanics Institute (EMI) Symposium*, Anaheim, CA, 2025.
- **Baruah, A. C.** & Sychterz, A. C. (2024). Optimizing Sensor Placement for Characterization and Control of a Meter-Scale Origami Pill-Bug Structure. *Proceedings of the Engineering Mechanics Institute (EMI) Symposium*, Chicago, IL, 2024.
- Sychterz, A. C. & **Baruah, A. C.** (2024). Sensor Placement for Control of a Meter-Scale Origami Structure. *Proceedings of the International Association for Shell and Spatial Structures (IASS) Symposium*, Zurich, Switzerland, 2024.
- **Baruah, A. C.** & Sychterz, A. C. (2023). Dynamic Characterization of Cable-Actuated Origami Pill Bug. *Proceedings of SEI Structures Congress 2023*, New Orleans, LA, 2023.
- **Baruah, A. C.** & Sychterz, A. C. (2022). Damage Detection of Cable-Actuated Origami Structure using Dynamic Relaxation. *Proceedings of the Engineering Mechanics Institute (EMI) Symposium*, Baltimore, MD, 2022, 29.
- **Baruah, A. C.** & Sychterz, A. C. (2021). Origami Enabled Pill-Bug Inspired Tuned-Mass Dampers. *Canadian Society for Civil Engineering Conference 2021*, 1—8.
- **Baruah, A. C.** & Sychterz, A. C. (2020). Active Control of 3D Printed Pill-Bug Inspired Adaptive Origami. *Proceedings of the International Association for Shell and Spatial Structures (IASS) Symposium*, Surrey, UK, 2020, 1—10.

PROFESSIONAL AFFILIATIONS

- Structural Engineers Association of Illinois, Member
- American Society of Civil Engineering, Member
- Chi Epsilon Civil Engineering Honor Society, Member

TRAINING & WORKSHOPS

- Quality Control in Construction & Durability Assessment in Concrete Structures, National Council for Cement & Building Materials (Dec 2017)
- Dynamic Response & Structural Health Monitoring, National Institute of Disaster Management (Jan 2014)
- Rapid Visual Screening, National Institute of Disaster Management, (Jan 2014)

TECHNICAL SKILLS

ABAQUS, ETABS, RISA-3D, spColumn, S-CONCRETE, S-LINE, ADAPT PT-RC, SAP2000, SOFiStiK, STAAD.Pro, MATLAB, Python, C++, SOLIDWORKS, LaTeX, SketchUp, Adobe Photoshop, Microsoft Office Suite