PCI Precast/Prestressed Concrete Institute

Daniel P. Jenny Research Fellowship Awards

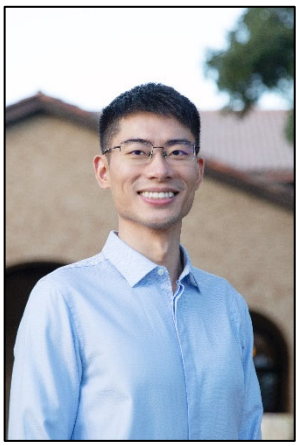
The PCI Research and Development Council (Andrew Osborn, chair) is pleased to announce the council awarded four Daniel P. Jenny Research Fellowships and one Dennis R. Mertz Bridge Research Fellowship in the fall of 2023. The fellowship program connects students and faculty with precast producers and industry experts to advance research in precast concrete, providing a valuable experience to the student, faculty, and the precast concrete industry. PCI especially thanks all producers who provide in-kind support for universities proposing research ideas.

Daniel P. Jenny Research Fellowship Awardees:

Automatic Assembly of Rebar Cages: Computer-Vision-Based Manipulation Techniques
Student: Tao Sun
University: McGill University
Faculty advisor: Yi Shao, Ph.D.
Producer support: Metromont Corporation; Tindall Corporation
Additional support: Facca Incorporated; Lafarge Canda Inc.; BPDL

Student Statement: “Currently, reinforcement cages are assembled manually in the precast concrete industry, which is a highly repetitive, time-consuming, and labor-intensive task. I am fascinated with developing novel automated manufacturing techniques for reinforcement cages to overcome these limitations. This pioneering exploration is expected to increase the efficiency of precast concrete industry and thus promote the usage of precast concrete products.”

Tao Sun



Yi Shao

PCI Precast/Prestressed Concrete Institute

Composite Ultra-High Performance Concrete Decked Beams Subjected to Heavy Podium Loading
Student: Khaled Al-Sakajai
University: North Carolina State University
Faculty advisor: Greg Lucier, Ph.D.
Producer support: Gage Brothers Concrete Products; Gate Construction Materials Group
Additional support: e.Construct USA LLC

Student Statement: “My background in structural engineering at an international multi-discipline company led me to develop the passion to think outside of the box to find better design solutions using different systems, materials, and elements. What fills me with enthusiasm about our planned research on UHPC podium structures is combining new precast sections with a revolutionary material (UHPC) to replace a conventional system in a way that will surpass the old system in all aspects. The use of game-changing construction materials such as Ultra-High Performance Concrete (UHPC) to increase the robustness, flexibility, efficiency, and constructability of structures is a subject that the whole world is sprinting to discover. It is a great honor to be a part of this PCI Daniel P. Jenny Fellowship.”

Khaled Al-Sakajai

Greg Lucier

PCI Precast/Prestressed Concrete Institute

Analytical and Experimental Investigation of Use of UHPC to Simplify Structural Detailing of Precast Shear Walls in Seismic Regions
Student: Anupama Kamani
University: University of Alabama
Faculty advisors: Sriram Aaleti, Ph.D.
Producer support: Clark Pacific; Contech Engineered Solutions; Metromont Corporation

Student Statement: “Having worked in the industry for nearly three years, my professional journey has exposed me to the complexities of projects dealing with high seismic loads. What particularly captivates my interest in this project is the exploration of Ultra-High Performance Concrete (UHPC) for boundary elements. The prospect of overcoming challenges related to rebar cage fabrication in confined areas through UHPC not only intrigues me but also aligns with my passion for innovative and efficient solutions in structural engineering. The potential to reduce costs, enhance production friendliness, and optimize performance in critical regions like boundary elements makes this project a compelling and exciting opportunity for me.”

Anupama Kamani

Sriram Aaleti

PCI Precast/Prestressed Concrete Institute

Simplified Tools for Structural-Fire Design of Hollow-Core Slabs Based on Critical Temperatures
Student: Lauran Liantero
University: Lehigh University
Faculty advisors: Spencer Quiel, Ph.D. and Clay Naito, Ph.D.
Additional support: PCI Fire Committee

Student Statement: “Precast hollow core slabs are becoming increasingly utilized in present-day construction. Their reduced self-weight, rapid assembly, and versatile spanning capabilities make them a very attractive option when designing residential, commercial, and industrial buildings. This project piques my interest because as engineers, it is important that we continually improve the design processes that we implement and develop deeper understanding about their fundamental purpose. This project will enhance the fire-related design guidance for precast prestressed hollow core elements, thus enabling engineers to make better decisions about both their collapse resistance during a fire event and the loss of functionality following the fire. I am very excited to start this project and thank PCI for this wonderful opportunity!”


Lauren Liantero


Spencer Quiel


Clay Naito

PCI Precast/Prestressed Concrete Institute

Dennis R. Mertz Bridge Research Fellowship Awardee:

Improving Splicing of Prestressed UHPC H-Piles and Long-term Loss Calculations
Student: Tu Luong
University: University of Alabama
Faculty advisors: Sriram Aaleti, Ph.D.
Producer support: Contech Engineered Solutions; Facca Incorporated; Standard Concrete Products

Student Statement: "What interests me most about this project is the opportunity to delve deeper into the relatively uncharted territory of UHPC, contributing to the ongoing research on UHPC piles. The prospect of understanding its behavior, unraveling its untapped potential, and being at the forefront of advancing practical applications aligns perfectly with my passion for pushing the boundaries of innovative construction materials. I am eager to be part of a project that not only addresses current challenges but also contributes to the evolving landscape of UHPC pile technology."

Tu Luong

Sriram Aaleti