

Research Experience for Undergraduate Student Internship Positions

Two undergraduate internship positions for NSF project entitled “Flood induced bridge scour prediction using bio-inspired smart sensor network” are available for undergraduate students in all engineering, science, or mathematics majors. The positions are funded by NSF Research Experience for Undergraduate (REU) Program. The principal investigators are Dr. Jennifer G Duan (Water Resource Engineering) and Dr. Hongki Jo (Structural Engineering) in the Department of Civil Engineering and Engineering Mechanics at the University of Arizona.

The internship will be **8 weeks from June 2017**. Interns will receive \$500/week stipend, and \$420/week renting allowance. The location is **University of Arizona at Tucson, Arizona**.

Position Description

One intern will work on experimental study of local scour around bridge piers, and the other will carry out the performance tests of scour sensors in sediment-laden flows in laboratory and field. The experimental study of local scour around bridge piers will study the scour process under unsteady flow in a laboratory flume. Several unsteady flows will be generated using a water pump, and delivered into a flume installed with a single and a cluster of piers. The measured bridge scour depth in unsteady flows will be correlated with flow properties and pier geometry. These results will be compared with field measurements.

The second topic is to test the performances of sonar-based and hydrophone-based scour sensing systems in sediment laden flow. Extensive lab-scale hydrophone tests will be conducted under various levels of turbid turbulent flow conditions. In addition, a sonar-base scour sensing system will be installed in bridge piers in the Santa Cruz and Rillito Rivers to test the performances of real-time recording of scour depth. Obtained sonar data from the field will be processed to improve the quality by minimizing possible noises from sediment laden flow, and compared with the flume experiments.

Selection Criteria

The interns will be selected based on academic record, research experiences, award, leadership, and social service. The evaluation criteria consists of academic record (60%), research experience (10%), research publications (10%), award (10%), leadership (5%), and social service activities (5%).

Application Procedure

Applicants need to submit a curriculum vita (1 page), college transcripts, and one reference (name, phone, and email contact) to Jennifer G Duan at gduan@email.arizona.edu or Hongki Jo at hjo@email.arizona.edu as soon as possible. The applicants must be US citizen or permanent residence. Successful applicants will be notified by email.