DEPARTMENT OF INTERNATIONAL PARTNERSHIPS AND STUDENT MOBILITY

Research Project Internship Form

Date: ____/____/_____

Faculty Supervisor Name: Dr. Sudipta K Mishra

Faculty Co-Supervisor Name: *(if any)*

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Department/School: Civil Engineering/ School of Engineering

Internship Project Name: Digital River: Development of DAS (Data acquisition system) for a Low-cost Instrument for Rapid Monitoring of Riverine Hydrodynamics

Duration of Internship: 3-4 months

Number of Students Needed: 2-4

Location of Internship (Lab/Company/Office): GDGU lab/office

Prerequisites: Python programming/ Preferable: knowledge on Signal processing, GIS database

Project Details: *(At least 150 words)*

Accurate measurement of flow variables in rivers/streams (Riverine hydrodynamics) are vital to building well-calibrated, reliable simulation models that can predict accurately the timing and extent of floods. This can also provide the data needed for effective management of water resources in a river catchment. By determining how water moves, scientists can determine how organisms, nutrients, and other biological and chemical constituents are transported throughout the river/streams. Nutrient transport is important for biological studies such as biomass concentrations, and sediment transport is important for studies such as river bed morphology and beach changes over time (Guerrero et al. 2016).
The acoustic Doppler current profiler (ADCP), originally developed for oceanographic work, is recently adapted for inland streamflow measurements. ADCPs use the Doppler effect produced by the reflection of sound waves off particles carried by stream currents to measure current speed and directions (hydrodynamics). It can measure velocity profile in-stream and can reconstruct river bed bathymetry by measuring water depths (Lurton 2002). Though the cost and its accessibility, often limit the usage of such instruments.
Hence, the research objectives (ROs) of this project are to:
RO1: develop a low-cost ADCP instrument
RO2: develop a data acquisition and processing system for the ADCP
RO3: deploy and validate the instrument effectively at field for rapid monitoring of riverine Hydrodynamics and bed morphology.

Comments/Notes:
RO1 is being worked upon by another GDGU team. Here, we need interns to develop the DAC (RO2) under this opportunity.