THE UNIVERSITY OF SYDNEY

FACULTY OF ENGINEERING

Engineering Vacation Research Internship Program

PROJECT MANAGEMENT RESEARCH PROJECTS FOR SUMMER 2022-23

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PROJECT MANAGEMENT RESEARCH PROJECTS

PROJ2022-23/1 Machine learning to explore project complexity

Supervisor: Dr Shahadat Uddin

- Eligibility: Must have good knowledge about supervised machine learning
- Should have advanced knowledge in Python
- Must be analytical minded
- Good to be familiar with different project contexts

Project Description:
By using different project attributes (e.g., duration, time, variability in stakeholder engagement etc.), this project will explore project complexity. The intended outcome of this project is to find attributes that significantly contribute to the perceived level of project complexity. It will use different supervised machine learning algorithms and data analytics methods to explore the research dataset.

Note: A student worked on this project in Winter 2022 (under the Winter scholarship scheme). Further experiments/research are needed for model improvement.

Requirement to be on campus: No

PROJ2022-23/2 Developing a Social Network-Identity Model for Stakeholder Engagement in Infrastructure Projects using Netnography

Supervisor: Dr. Ken Chung

Eligibility: Distinction average, strong data analytics skills (e.g. coding in Matlab and/or Python, R or other statistical packages) and written communication skills.

Project Description:
Public infrastructure megaprojects are complex and often met with opposition. This requires meaningful and effective stakeholder engagement. In this research, we seek to understand community voice and sentiment (emotion-work) with regards to infrastructure projects (such as roads development, and building an aerotropolis) using social identity theory, social network analysis and social media data analysis

Requirement to be on campus: No

PROJ2022-23/3 Organising for resilience of the infrastructure systems

Supervisor: Dr. Nader Naderpajouh

Eligibility: WAM>75 and Undergraduate candidates must have already completed at least 96 credit points towards their undergraduate degree at the time of application.

Project Description:
Building resilience of critical infrastructure requires decisionmakers working in different industry sectors to understand 'what' can be done, 'why' it should be done, and 'how' to put it into practice. Our work to date has told us that key stakeholders are often either unaware of the

value that resilience can bring or are constrained by a lack of resources or support in terms of how to embed and enhance resilience. In this research the student will provide a review of the grey literature to address these questions and informs a framework developed by Dr Naderpajouh with the synthesis developed through the analysis of the documents that are retrieved through the search of the grey literature.

Requirement to be on campus: No

PROJ2022-23/4 Ensemble machine learning for predictive project analytics

Supervisor: Dr Shahadat Uddin

Eligibility:

- Must have good knowledge about supervised machine learning
- Should have advanced knowledge in Python
- Must be analytical minded
- Good to be familiar with different project contexts

Project Description:
Often an ensemble machine learning approach performs better than each of its constituent machine learning algorithms. Using a project-related dataset (which contains several relevant variable information), this project will follow a data-driven approach for developing ensemble models for predictive project performance analysis. The intended outcome of this project is twofold – first, to develop an ensemble model that performs best, and second, to find out attributes contributing most to project performance measures.

Requirement to be on campus: No

PROJ2022-23/5 Tracking the Career Path of BPM Graduates

Supervisor: Dr Ken Chung

Eligibility: Distinction average, qualitative data analysis, understanding of social network analysis.

Project Description:
The Bachelor of Project Management (BPM) degree launched in 2012 and has continued with much success. This project tracks BPM graduates from 2015 onward to understand their career trajectory, experience with industry, including challenges and dilemmas faced during their career path. This research will take a social identity-based approach looking at the connections and salience of various identities.

Requirement to be on campus: No