

Investigating the Recovery of Critical Urban Infrastructure

Study Project (M.Sc.)

Description:

The function of critical urban infrastructure is under constant threat from natural hazards. When a flood occurs, the infrastructure which we all rely upon for our daily lives – drinking water, electricity, highways, internet, food supply – can come to a complete and abrupt halt. While much work has already been done to estimate the inundation and associated damages resulting from floods, there is less research focused on the recovery of the affected infrastructure. A prototype of a numerical model has already been developed for the purpose of modeling the recovery of residential buildings from flood damages. This project will seek to gather the data needed to adapt that model to estimate the recovery of another specific part of critical infrastructure, including but not limited to: transportation network, electrical grid, or water supply and sewer system.

Tasks:

During the course of this project, the following work should be carried out:

- Review of the background material describing the recovery model.
- Literature review of:
 - related numerical models
 - damage estimation of infrastructure
 - tasks required to repair affected infrastructure
 - required materials, duration, and costs of repair tasks.
- Analysis and summary of the collected literature in a final report.

Prerequisites:

The following skills are required for this project:

- General research skills (retrieving literature from databases, reading and analysis of scientific articles, proper citation of all work, etc.).
- Ability to write in a clear and concise manner.

The following skills are not required, but are highly recommended:

- Experience programming in Python.
- Prior use of QGIS or ArcMap
- Familiarity with inundation models, specifically PDWave.

Target Start:

Immediately

Contact:

For more information about this project and related projects, please contact:

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