Soil Permeability and Seepage Flow

Get a taste of real-world soil-water interaction problems and learn to analyze and model geotechnical behavior like a practicing engineer!
Advisor: Dr. Yingxiao Liu

This hands-on project bridges experimental soil testing with numerical modeling. Students will measure soil properties using laboratory tests and then apply their results to simulate water seepage through a soil profile.

Through this project, students will gain practical experience in:
- **Soil hydraulics**
- **Experimental testing**
- **Simple numerical simulation (just with a few lines of Python code)**
- **Engineering analysis**
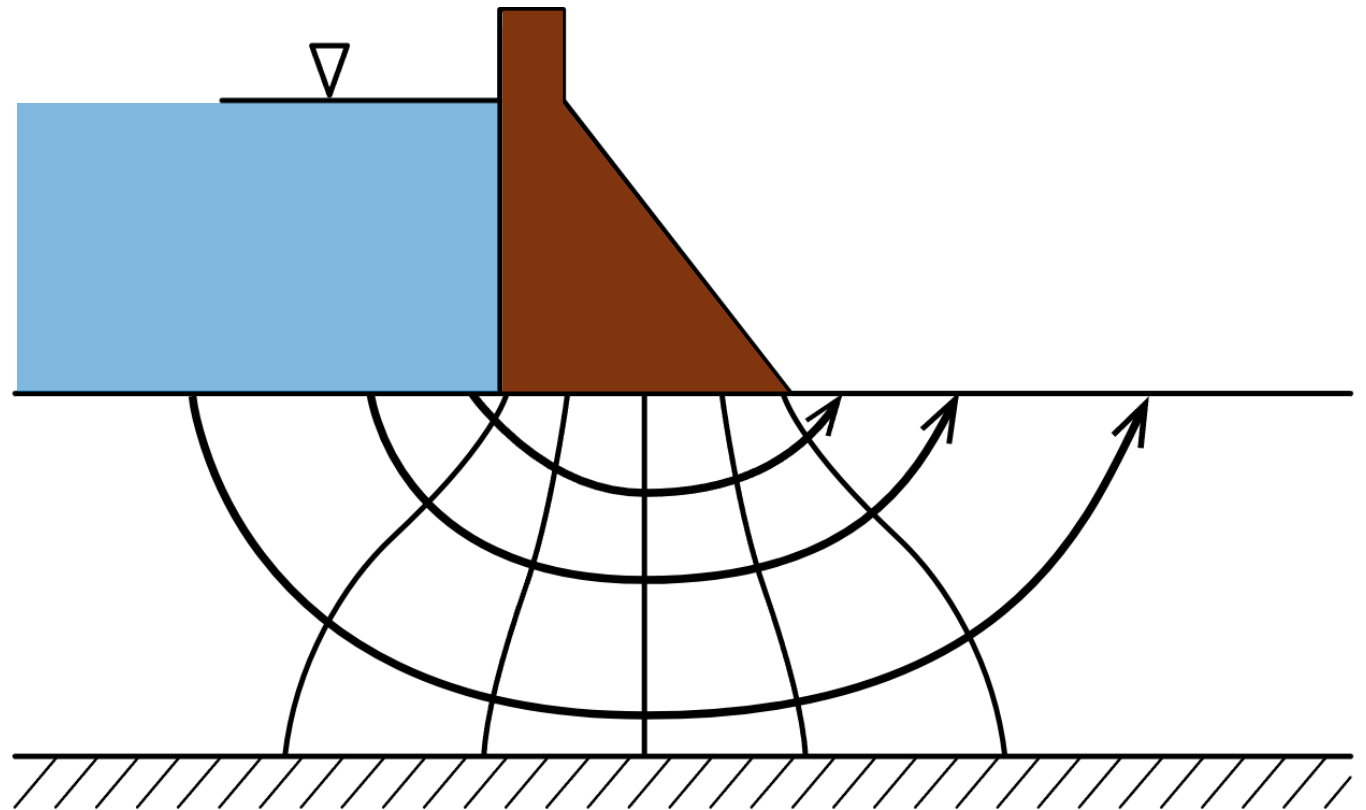
Machine Learning for Construction Safety

No prior experience with machine learning is required! Step-by-step support and simplified tools will be provided!

Advisor: Dr. Yingxiao Liu

This project introduces students to the exciting world of computer vision and machine learning through a real-world civil engineering problem: identifying safety equipment (like hard hats and vests) on construction sites.

Students will:
- Explore the importance of safety monitoring in construction.
- Learn the fundamentals of object detection and AI-based image labeling.
- Build their own dataset by labeling real images from construction sites.
- Train and test a machine learning model to detect people and safety gear in images.

* Image data from Kaggle

Rowan University