M.Sc. Topic

Climate aridity in the Punjab region of Pakistan results in major role of irrigation in agricultural production in the area. Surface water - an artificial channel system is the main and reliable source of good quality water for irrigation. Surface water supply operations in Pakistan are based on heuristic approaches. This heuristic management technique often depends heavily on expert human judgment. Pakistan has one of the world’s most complex demand based irrigation networks. In order to cope with the current challenges faced to water resource system in Pakistan, the surface water needs to be managed efficiently.

The primary purpose of this master thesis is to develop and most importantly to optimize a network model for maximizing water utility during operations of the Punjab Irrigation System in Pakistan. The operational model needs to be developed to address day to day irrigation operational management issues and water audit and accounting. The model should have the capability of handling flow routing, system operational constraints, and to assist decision makers in deducing the Punjab irrigation system operations keeping in view the objectives 1) maintaining an equitable distribution pattern and 2) maximizing water utility.

Prospective Tasks

- Literature Review,
- Existing flow routing, regression analysis, and statistical optimization techniques,
- Understanding of the irrigation system in Punjab-Pakistan,
- Model development,
- Optimization,
- Visualization of results and discussion, report writing.

General Information
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Desireable Skills
- Matlab, Python, computer programming
- Hydrogeology, Hydrology, Statistics

Apply now!

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