WILLIAM J. RASEMAN, MS, EI

Civil engineer, software developer, and data scientist

@ wraseman@gmail.com wraseman.github.io wraseman linkedin.com/in/wraseman

EXPERIENCE

Graduate Research Assistant

University of Colorado Boulder

2015 – Ongoing Boulder, CO

- Developing multi-objective optimization approaches to generate cost-effective and resilient water treatment operating policies
- Analyzing water quality data from water utilities across the nation to generate realistic water quality scenarios, including extreme events:

  github.com/wraseman/influent-wq-generation

- Updated EPA Water Treatment Plant Model, improving organic carbon removal and disinfection byproduct (DBP) modeling
- Modernizing the EPA Surface Water Analytical Tool for upcoming Six-Year Review of DBP regulations
- Managed the development interactive visualization library, Parasol, to improve environmental decision making:

  github.com/ParasolJS/parasol-es

Country Director

SPOUTS of Water—Social Enterprise & Affordable Filter Manufacturer

2014 – 2015 Kampala, Uganda

- Constructed ceramic water filter factory for national-scale production
- Managed 14 employees tasked with production and testing of filters
- Coordinated "Filters for Schools" program focusing on teaching clean water education and supplying schools with safe drinking water

PUBLICATIONS

- **Raseman, WJ**, et al. "Nearest Neighbor Time Series Bootstrap for Generating Influent Water Quality Scenarios" (under review).
- **Raseman, WJ**, et al. "Parasol: An Open Source, Interactive Parallel Coordinates Library for Multi-Objective Decision Making" Environmental Modelling and Software (2019).
- Clarkin, T, et al. "Diagnostic Assessment of Preference Constraints for Simulation Optimization in Water Resources." Journal of Water Resources Planning and Management 144, no. 8 (2018).
- Stewart, JR, et al. "A Multialgorithm Approach to Land Surface Modeling of Suspended Sediment in the Colorado Front Range." Journal of Advances in Modeling Earth Systems 9, no. 7 (2017).
- **Raseman, WJ**, et al. "Emerging Investigators Series: A Critical Review of Decision Support Systems for Water Treatment: Making the Case for Incorporating Climate Change and Climate Extremes." Environmental Science: Water Research & Technology 3, no. 1 (2017).

COURSEWORK

- **Modeling**: Advanced Data Analysis, Surface Water Quality Modeling, Modeling of Hydrologic Systems, Water Res. Systems and Mgmt.
- **Fundamentals**: Env. Engineering Processes, Water Treatment, Env. Fluid Mechanics, Numerical Methods, Probability & Statistical Methods for Natural and Engineered Systems

EDUCATION

Ph.D. & M.S. in Civil Engineering

University of Colorado Boulder

Aug 2015 – May 2019

GPA: 4.0

Thesis: Improved decision support for water treatment plant operations via stochastic water quality, optimization, and visual analytics

B.Sc. in Civil Engineering

University of Notre Dame

Aug 2010 – May 2014

GPA: 3.8, **Focus**: Env. Engineering

PROGRAMMING

- **R (advanced)**: expertise in *tidyverse* (e.g., ggplot2, dplyr, etc.) and *forecast* (i.e., time series analysis) packages
- **C/C++ (advanced)**: creating and editing source code of EPA WTP Model, coupling simulation models with optimization algorithms
- **Visual C# (advanced)**: user interface design with Windows Forms, interoperating with unmanaged code, asynchronous programming, manipulating databases with SQL
- **Git (advanced)**: version control for both local and remote repositories (e.g., GitHub and Azure DevOps)
- **Linux/Bash (intermediate)**: interacting with supercomputers, installing software/open source packages, manipulating files and directories
- **Python and MATLAB (intermediate)**: used in coursework throughout higher education

AWARDS

Honorable Mention
NSF Grad Research Fellowship

Eng. Honor Society Member
Tau Beta Pi and Chi Epsilon

Cum Laude
University of Notre Dame