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SINA GOLCHI

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EDUCATION

University of Waterloo **Waterloo, ON** **Sep 2018 – Nov 2021**

- **MASc. in Civil Engineering**
- **Thesis title:** Super-fine Powdered Activated Carbon for the Removal of Microcystin-LR from Drinking Water (currently under embargo)

Azad University **Tehran, Iran** **Sep 2013 – May 2018**

- Bachelor of Science in Chemical Engineering
- **Significant Coursework:** Control theory, Mass transfer, Heat transfer, Fluid mechanics,Industrial microbiology

EMPLOYMENT

Research Associate **University of Waterloo** **Jan 2022 – Present**

- Preparing and refining manuscripts for academic publication
- Assisting with graduate student research and providing counsel with technical and analytical aspects
- Developing online and local software tools for facilitating and automating research and lab work via Python, JavaScript and PostgreSQL
- Repairing and maintaining analytical instruments by applying technical knowledge in power and control circuitry field and industrial communication protocols such as Modbus-RTU, Modbus-TCP and serial ASCII over RS-485

Research Assistant - Multiple Terms **University of Waterloo** **Sep 2019 - May 2021**

- Performed GIS analysis for estimation of urban density via QGIS, GDAL and GeoPandas and developed an Atlas of 30 sectioned maps to facilitate a 2-day workshop activity called Urban Design Days at the Univerisity of Waterloo
- Developed and Deployed a complete Webapp for the Flood Resilience Challenge Game, the app consists of both a user and admin panel and was developed based on Streamlit platform on pure python along with some custom JS scripts. The data for the app was stored and managed on a server-less PostgreSQL database

LANGUAGES AND TECHNOLOGIES

- Python (Advanced), Streamlit, Pandas, Scipy (Peak analysis), QGIS, GDAL, GeoPandas, Javascript, CSS, HTML5, Bootstrap
- Liquid Chromatography Tandem Mass Spectrometry (LC-MS/MS), Liquid Chromatography Organic Carbon Detection (LC-OCD), Scanning Electron Microscopy (SEM) (Certified user), STM32, ESP32 MicroPython development, Modbus-RTU, Modbus-TCP

TECHNICAL EXPERIENCE

Academic Projects

- **LC-MS/MS Method Development:** Successfully developed an analysis method for the detection of Microcystin-LR in ultrapure and raw water via LC-MS/MS. The method had a wide quantification range of 0.2-100 $\mu g/L$ with a minimum detection limit (MDL) of 0.065 $\mu g/L$
- **Particle size analysis via SEM imaging and static image analysis** Developed a mathematical method for choosing the right magnification for analysing the particle size distribution (PSD) of carbon particles, the method then was used to determine the PSD of three superfine carbon samples by analysing the SEM images via the ImageJ software and Python.
- **Development of FRC Game companion webapp** A widescale web application was designed and deployed based on the Streamlit platform, the web application consists of both user and admin side, and all the use instances actions and data are stored in a PostgreSQL database ensuring a synchronous experience for all users participating in the game

ADDITIONAL EXPERIENCE AND AWARDS

- **Runner up to Micheal R. Provart Award at 2021 OWWA Conference** Ontario Water Works Association, 2021 - Full description available on my LinkedIn
- **Laurence Hamlin Memorial Award for outstanding classroom teaching** University of Waterloo, 2021 - full description available on my LinkedIn
- **CDP Climate Hackathon Winner team** CDP not-for-profit organization, 2020 - Participated in the 2020 CDP climate hackathon as part of team Catalyst and won challenge 3: Renewable Energy Demand Projects