Jamshid Jalali, EIT

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PROFESSIONAL SUMMARY:

Self-motivated water resources analyst with broad expertise in researching climate change impacts assessment, hydrological modeling, uncertainty analysis and model calibration, machine learning, remote sensing, geospatial data analysis, programming, big data analysis, and data preparation and visualization. Led several successful projects, including climate change impact assessment on water resources as well as water quality mapping employing remote sensing techniques followed by machine learning models that resulted in significant advancements in climate change adaptation, large-scale water quality quantification, and future water availability assessment. Effective communicator, skilled at translating technical concepts for non-technical stakeholders.

EDUCATION

- **M.S. student in Water Aquatic Sciences**, Grand Valley State University, Allendale, MI (4 GPA)   Jan 2023 – Present
- **M.S. in Civil and Water Engineering**, Isfahan University of Technology, Iran (3.69 GPA)   2019
- **B.S. in Civil Engineering**, University of Kurdistan, Iran (3.51 GPA)   2016

SKILLS

- Extensive knowledge in process-based (SWAT, and SWAT+), and lumped (HEC-HMS) hydrological modeling.
- Expert in machine learning utilizing Scikit-Learn (SVM, Random Forest (RF), Linear Regression, Logistic Regression).
- In depth expertise in uncertainty analysis and calibrating semi-distributed, process-based hydrological models.
- Extensive experience in Optical and Thermal Infrared remote sensing analysis in Google Earth Engine Python API.
- Solid background in geospatial data analysis using ArcGIS Pro, Arc Map, QGIS, and R.
- Strong programming skills in Python (jupiter notebook), MATLAB, and R (RStudio).
- Hands-on experience with Big Data Analysis, GitHub, AWS, and High-Performance Computing.

PROFESSIONAL EXPERIENCE

- **Graduate Research Assistant**, Grand Valley State University   Jan 2023 - Present
  - Developing a cutting-edge, multi-model hydrological approach to assess and address future water availability and scarcity in response to climate and agricultural land use changes in Europe (funded by NASA).
    - Devised an innovative methodology to quantify temporal changes in land use maps, capturing dynamic crop rotation trajectories through advanced analysis techniques and implementing agricultural management practices at the farm field scale.
  - Monitoring water quality using remote sensing (Sentinel-2/MSI and Landsat-8/OLI) and machine learning.
    - Developed an integrated code in Google Colab to extract surface reflectance band values for Sentinel-2/MSI (2019-2023) and Landsat-8/OLI (2013-2023) time series, incorporating water atmospheric correction, cloud and cloud shadow masking, and road and land masking.
    - Developed multiple robust machine learning models, including SVM, RF, and Gradient Boosting Machine (GBM), to forecast water clarity in Lake Michigan, leveraging a large "in situ" and reflectance dataset, where RF and GBM consistently demonstrated the lowest mean absolute error in held-out test data.

- **Research Assistant**, Isfahan University of Technology   Oct 2016 - July 2023
  - Designed a detailed framework to quantify climate change and human activities' impact on water deficit.
  - Created soil and land cover geodatabases for hydrologic modeling in Zayandeh-Roud Basin, Iran.
  - Developed a methodology for hydrologic modeling in data-scarce regions.

PUBLICATIONS (Google Scholar)

- **Jalali, J**., Ahmadi, A., Abbaspour, K., 2021. Runoff responses to human activities and climate change in an arid watershed of central Iran. Hydrol. Sci. J. 66, 2280–2297.

- Ahmadi, A., **Jalali, J**., Mohammadpour, A., 2022. Future runoff assessment under climate change and land-cover alteration scenarios: a case study of the Zayandeh-Roud dam upstream watershed. Hydrol. Res. 53, 1372–1392.

SELECTED PRESENTATION (Total of 10+)

- **Jalali, J.**, et al. "Assessing contributions of agricultural land use and climate change to water scarcity in the Serbian Danube River Basin". In 2023 AGU. San Francisco.

CERTIFICATES

- "Engineer-in-Training (EIT)" certification through successful completion of the NCEES-administered FE exam.
- "Deployment of Machine Learning Models", led by Soledad Galli, and Christopher Samiullah (offered by Udemy).
- "Machine Learning Practical: 6 Real-World Applications", led by Ryan Ahmed, (offered by Udemy).
- "Monitoring Water Quality of Inland Lakes using Remote Sensing" (offered by ARSET, NASA).

AWARDS

- Grand Valley State University Presidential Research Grant, December 2023.