Rouhin Mitra

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EDUCATION

- **Ph.D in Civil and Environmental Engineering, University of California, Los Angeles** *2021-2024(December)*
  - GPA: 3.85/4.00 — Data-driven agricultural water management

- **M.S in Civil and Environmental Engineering, University of California, Los Angeles** *2019-2021*
  - GPA: 3.87/4.00 — Hydrology and Environmental Engineering track

- **B.Tech in Civil Engineering, Manipal Institute of Technology, India** *2015-2019*
  - GPA: 8.86/10.00 — Ranked 12 among 200 students.1 of 10 to receive Honors

PROJECTS

Satellite based agricultural water management and monitoring — PhD Dissertation

- Developed an agricultural water demand correction method to conserve irrigation water by 9.3% using satellite and weather/meteorological data with machine learning models(XGBoost, Random forest)
- Validated Global Forecast products for their ability to forecast daily agricultural water demand in California for upto 7 day lead times.
- Created end to end geospatial workflows to run a high resolution satellite based evapotranspiration model to enable field scale water use mapping in US at 30m
- Applied data driven models and physics informed machine learning to combine satellite based model outputs and observations to improve the existing model by 3.8%

Streamflow Prediction in Western US using Land Surface Models — presentation

- Worked on improving the predictability of summer flows in western US watersheds using land surface models
- Processed drought monitor for western US and ran a land surface model(VIC) using large gridded weather data-sets
- Used unsupervised learning and multiple linear regression to assess the role of soil moisture in summer flow predictions for maritime and interior basins

EEG-based Motor Imagery Classification using Deep Learning Architectures — paper

- We processed brain-computer interface data that captures brain signals of subjects when interacting with a machine where our task was to improve the accuracy to classify the the different movements using these signals
- Using different deep learning architectures, we boosted the baseline accuracy of a CNN model from 66% to 72% by using a transformers architecture

WORK EXPERIENCE

Lead Scientist, Irriquate (NSF Convergence Accelerator) — 📍 Los Angeles, California — *Jun 2024- Present*

- Irriquate is a platform for growers in California to manage their water use. — main Page
- Building a functioning prototype from the ground up for farmers to locate their field and retrieve information of their current field conditions — prototype
- Leveraging high resolution satellite data, crop data and weather forecasts to monitor historical water use and provide recommendations for irrigation to farmers across California *(Team of 3)*

TECHNICAL SKILLS

Languages: Python (Pandas, Numpy, Sckit-learn, Keras, PyTorch, Tensorflow, Xarray, GDAL), R, Javascript
Engineering: Google Earth Engine, Google Cloud Platform, Apache Beam, Dataflow, Jupyter, Git, ArcGIS, ENVI

PUBLICATIONS AND SELECTED PRESENTATIONS

Haleakala, Kayden, Haowen Yue, Sarfaraz Alam, **Rouhin Mitra**, Aqeel I. Bushara, and Mekonnen Gebremichael. "The evolving roles of intensity and wet season timing in rainfall regimes surrounding the Red Sea." *Environmental Research Letters* 17, no. 4 (2022): 044039 — paper

Mitra, Rouhin, M Gebremichael "Satellite based Evapotranspiration over croplands: Quantifying errors in surface energy balance methods and algorithmic improvements?", AGU Fall Meeting, 2023

Mitra, Rouhin, M Gebremichael "A Random Forest Approach to Correct weather stations for Aridity", Google, Geo for Good 2022

Mitra, Rouhin, C. Kayijuka, V Nkundabashaka, M Thomas, V Fritz, N Rose, UM Grace, M Gebremichael, L Gezehegn "Can Remotely Sensed Evapotranspiration be used for yield prediction and water stress detection in footnotesizeholder rice fields?", AGU Fall Meeting, 2022