MOHAMMAD REZA FATHI

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EDUCATION

K.N. Toosi University of Technology *Sep 2021 - Sep 2024*
Master of Science, Remote Sensing Score: 17.35 out of 20 (GPA: 3.77/4.0)

Thesis Topic: Developing a Python API utilizing Google Earth Engine for monitoring susceptible and affected areas by Oak Charcoal Disease (OCD) using a CUSUM-based approach: a case study in Hyrcanian forests (Northern Iran)

Supervisors: Dr. Hooman Latifi & Dr. Siddhartha Khare
Advisor: Dr. Yasser Maghsoodi

University of Bojnord *2016 - 2021*
Bachelor of Engineering, Geomatics Engineering Score: 16.45 out of 20
Supervisor: Dr. Yasser Jouybri

RESEARCH INTEREST

Ecological Remote Sensing | Forest Disturbance Monitoring | Spectral Variation Hypothesis
Time Series Approaches | Trend Analysis | Physical-Based Models

ACADEMIC EXPERIENCE

Teaching Assistant K.N. Toosi University of Technology - MSc course
Ecological Applications of Remote Sensing for Ecosystem Monitoring - Theory & Practice *Tehran, Iran*

- Professor: Dr. Hooman Latifi

EXPERIENCES

Jamefanavaran Omran Gostar Consulting Firm Geomatics Engineer
Conducted surveys and data collection for various geomatics projects. 2018 - 2020

Field Work Hyrcanian Forest for Oak Charcoal Disease (OCD)
Collected and analyzed field data to validate CuSum approach for forest decline identification. July - August 2023

Experience with Very High-Resolution (VHR) datasets (tasking/ordering/utilizing)

- Order, managed and processed VHR datasets for various remote sensing applications in forestry. World-View 2/3 | Spot 6/7 | Pléiades Neo

SAR dataset processing and applications in forestry

- Processed SAR datasets and applied them in forestry for monitoring forests disturbance. Sentinel-1 indices and interferograms

Experience with Environmental datasets

- Utilized various environmental datasets for remote sensing analysis. ERA5 products | Landsat LST | SRTM | NASADEM | Copernicos Dem (DSM)

SELECTED COURSES

Photogrammetry & Remote Sensing Assisted Vegetation Studies *K.N. Toosi University of Technology*
Prof. Hooman Latifi Score: 15.3 out of 20

UAV-Based Photogrammetry *K.N. Toosi University of Technology*
Prof. Masood Varshosaz Score: 18.3 out of 20

Microwave Remote Sensing *K.N. Toosi University of Technology*
Prof. Mahmod Sahebi Score: 17.5 out of 20

Ecological Applications of Remote Sensing for Ecosystem Monitoring Theory & Practice *K.N. Toosi University of Technology*
Prof. Hooman Latifi Score: 15.16 out of 20

Fuzzy Logic & Neural Networks in Photogrammetry & Remote Sensing *K.N. Toosi University of Technology*
Prof. Mehdi Mokhtarzade Score: 17.75 out of 20

Image Recognition for Beginners using CNN in R Studio *Udemy*
Start-Tech Academy ✓

Supervised Machine Learning: Regression and Classification *Coursera*
DeepLearning.AI ✓

Time Series Analysis and Forecasting using Python *Udemy*
Start-Tech Academy ✓

Ecology: Ecosystem Dynamics and Conservation *Coursera*
American Museum of Natural History, Howard Hughes Medical Institute ✓

Aeroecology: Exploring Biodiversity with Radar *Coursera*
University of Leeds ✓

PROGRAMMING BACKGROUND

- Geospatial Operations: Rasterio | Gdal | Geopandas | Rioxarray | Xarray | Spyndex

- Statistics (ML & NN): Scikit-learn | TensorFlow
- Data processing: Numpy | Pandas
- Data Visualization: Matplotlib | Seaborn | Plotly | Leaflet map | Folium
- Parallel Processing: Ray | Dask
- GUI / API development: Tkinter | Ipywidgets | Streamlit
- Cloud computing: EE | GEEmap | Planetary-computer

GOOGLE EARTH ENGINE

- Time series analysis — Monitoring forests decline and Dieback | trend analysis
- Change detection — Deforestation and clear-cut
- Supervised & Unsupervised classification — LULC classification
- API development (EE as backend) — User-friendly Webapp and GUI development

SELECTED PROJECTS

- Developing a graphical python package for monitoring vegetation diversity in terrestrial ecosystems.
- Developing an automate web application utilizing GEE as its back-end for monitoring forests disturbance.
- Monitoring Forest Ecosystem Health and phenology in GEE using long-term Landsat dataset.
- Forest Disturbance Monitoring Using SAR Sentinel-1 Datasets in Google Earth Engine.
- Land Use Land Cover (LULC) Classification with Artificial Neural Networks and Fuzzy Classifiers Using High-Resolution Datasets.
- Trend Analysis Using Harmonized Landsat and Sentinel-2 (HLS) and Merged Landsat Collection for Monitoring Forest decline.

PUBLICATIONS

Fathi, M. R., Latifi, H., Gholizadeh, H., & Khare, S. (2024). PaRaVis: An automatic Python graphical package for ensemble analysis of plant beta diversity using remote sensing proxies. ***Ecological Informatics***, 102739. https://doi.org/10.1016/j.ecoinf.2024.102739

REFERENCES

- Prof. Hooman Latifi Associate Professor hooman.latifi@kntu.ac.ir
Dept. of Photogrammetry and Remote Sensing, K.N.Toosi University of Technology: Tehran, IR

- Prof. Siddhartha Khare Assistant Professor siddhartha.khare@ce.iitr.ac.in
Dept. of Geomatics Engineering, IIT Roorkee

- Prof. Hamed Gholizadeh Assistant Professor hamed.gholizadeh@okstate.edu
Dept. of Geography, Oklahoma State University, Stillwater, Oklahoma, United States

- Prof. Yasser Jouybari Assistant Professor jouybari@ub.ac.ir
Dept. of Engineering, University of Bojnord: North Khorasan Province, Bojnurd, IR