UDIT ASOPA

REMOTE SENSING SPECIALIST | GIS & DATA ANALYST

PYTHON • SQL • POWER BI • REMOTE SENSING • BUDDING DATA SCIENTIST

CONTACT

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Espoo, Finland

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GEE App Gallery - link

Github Gallery - uditasopaiceye

EDUCATION

2017-2019

Master of Engineering | ISRO, India

Remote Sensing and GIS

Published peer-reviewed research in international journals and conferences

2016-2017

Post Graduate Diploma | CDAC, India

Biomedical Instrumentation and Informatics

Specialisation in IoT, Geo-Informatics, and Health Informatics

2011-2016

Bachelor of Engineering | RTU, India

Electronics and Communication Engineering

Specialisation in Embedded Systems, IoT Applications, and Electronic Circuit Design

EXPERTISE

Remote Sensing & GIS Analysis

SAR Data Processing & InSAR Techniques

Python Workflow Automation

Change Detection & Trend Analysis

Geospatial Tool & Dashboard Development

Scientific Writing & Research Coordination

Time-Series Modelling

Cloud-Based Data Processing

PROFILE

I am a remote sensing and GIS engineer with over five years of experience in satellite data analytics, SAR processing, and Earth observation-based product development. I specialize in transforming complex geospatial datasets into actionable insights through Python automation, statistical modeling, and visual reporting. I've worked extensively on environmental monitoring and disaster response, building scalable workflows for change detection, time-series analysis, and decision-ready tools. I value clarity, reproducibility, and collaboration, and take pride in contributing to cross-functional teams through structured problem-solving and open communication. Passionate about geospatial innovation, I'm always looking to grow at the intersection of data science and environmental intelligence.

WORK EXPERIENCE

ICEYE Oy, Finland — DEC 2021 - PRESENT

Data Analyst / Remote Sensing Engineer

(official title: SAR Remote Sensing Engineer)

SAR data processing, geospatial analytics, insight product development, and environmental monitoring using remote sensing. Workflow automation, change detection, trend analysis, and statistical modeling for crisis response. Visual reporting and spatial outputs for decision support. (Python, SAR, QGIS, ArcGIS, GDAL, Power BI)

Freelance Geospatial Data Analyst — MAY 2021 - DEC 2021

Web-based geospatial application development, spatial analysis, and environmental monitoring using satellite data. Storytelling with maps, indicator dashboards, and remote sensing analytics for stakeholder engagement. (Google Earth Engine, QGIS, JavaScript, Python)

Delft University of Technology, Netherlands — APR 2020 - APR 2021

Remote Sensing & GIS Researcher

InSAR time-series analysis, geospatial modeling, and cloud-enabled automation for ground deformation monitoring. Research documentation, training coordination, and reproducible workflow development in a multidisciplinary team. (Python, Bash, QGIS, Sentinel-1, Jupyter)

Indian Institute of Technology, India — SEPT 2019 - FEB 2020

Jr. Remote Sensing & GIS Researcher

SAR feature extraction, polar remote sensing, and field-based environmental data collection for cryosphere research. Integration of in-situ snow observations with satellite imagery to support geophysical modelling. (Sentinel-1, RADARSAT, QGIS, Python)

CERTIFICATES & COURSES

Project Management: Beyond planning and control
Issuer: Politecnico di Milano 1863
Issued: March 2025

Introduction to Git and GitHub
Issuer: Google
Issued: Jan 2025

Introduction to Data Science in Python
Issuer: University of Michigan
Issued: Jan 2024

Machine Learning with Earth Engine
Issuer: Udemy
Issued: April 2020

Object Parameter Estimation and Discrimination Using Hyperspectral Data
Issuer: Geo University
Issued: Sept 2018

IEEE Norway GRSS School AMERSIE 2020
Issuer: IEEE GRSS
Issued: Nov 2020

ISPRS Technical Commission V Education & Outreach – Publication
Issuer: ISPRS TC V
Issued: Nov 2018

Humanitarian Applications Using NASA Earth Observations
Issuer: NASA ARSET
Issued: June 2022

Forest Mapping and Monitoring with SAR Data
Issuer: NASA ARSET
Issued: May 2020

SAR for Disasters and Hydrological Applications
Issuer: NASA ARSET
Issued: Dec 2019

ONGOING COURSES

Introduction to Data Analytics
Issuer: IBM
Issued: –

IBM Machine Learning
Issuer: IBM
Issued: –

AWS Cloud Solutions Architect
Issuer: AWS
Issued: –

PROJECTS

Hurricane Damage Assessment Product
ICEYE Oy | May 2024 - Present

Development and operational delivery of ICEYE's SAR-based hurricane damage assessment product used for rapid disaster response and impact mapping. The product provides building- and neighborhood-level damage heatmaps (30 m raster, 500 m hexgrid) within 24 hours of hurricane landfall, distinguishing between wind and flood impacts. My role includes SAR image analysis, change detection modeling, and automating data pipelines to produce scalable, GIS-ready outputs for government, insurance, and humanitarian stakeholders. I also contribute to visual QA, damage index calibration, and improving detection confidence using statistical methods. *(Python, SAR, GDAL, ArcGIS Pro, Power BI, Google Earth Engine)*

Wildfire Insights Product
ICEYE Oy | April 2022 - May 2024

Development and operational support for ICEYE's SAR-based Wildfire Insights product, delivering near-real-time monitoring and building-level damage assessments within 24 hours of wildfire ignition. Contributed to the processing of wildfire-affected areas using SAR data, supporting product development through geospatial analytics, database management, and statistical modeling. Maintained and enhanced the wildfire monitoring application built with ArcGIS Experience Builder, integrating live perimeters, structure-level impacts, and user feedback layers. Implemented automation using Bash scripts and Python for efficient data handling, and supported data integration with PostGIS-based databases for spatial analytics. Enabled structured delivery of GIS-ready outputs to emergency, insurance, and public-sector clients. *(Python, Bash, SAR, ArcGIS Pro, ArcGIS Experience Builder, GDAL, PostGIS, QGIS, JavaScript, SQL)*

Forest Structure Modelling
Beyond Dead Wood Hackathon | March 2024

Processed airborne LiDAR point cloud data to generate high-resolution digital terrain models (DTMs) and 3D forest structural layers. Estimated canopy heights by integrating very high-resolution DEMs with LiDAR-derived surface and ground returns. The workflow combined QGIS-based spatial visualisation and Python scripting for automated data filtering, raster generation, and canopy metrics calculation. Results supported advanced forest structure analysis and topographic mapping. *(LiDAR, QGIS, Python, VHR DEM, Raster analysis)*

Environment Monitoring applications on GEE
Independent Project | May - Nov 2021

Designed and developed multiple web-based geospatial applications using Google Earth Engine to visualize and analyze environmental changes. Applications included oil spill detection using Sentinel-1 SAR data, forest cover change monitoring with Landsat and Sentinel-2 imagery, and land surface temperature anomaly mapping with MODIS datasets. Built time-series visualizations, threshold-based classification models, and interactive dashboards for real-time user interaction. These apps enabled dynamic exploration of spatial and temporal trends for both scientific and public audiences. *(Google Earth Engine, JavaScript, Sentinel-1, Sentinel-2, MODIS, Landsat, Remote Sensing)*

PUBLICATIONS

Songklanakarin Journal of S & T | 2022
Assessing the role of LULC change in inducing UHI in Jaipur district, Rajasthan, India: A case study from 2009-2019

Advances in Space Research | 2021
Polarimetric calibration of spaceborne and airborne multifrequency SAR data for scattering-based characterisation of manmade and natural features

AGU fall meeting | 2020
Monitoring and modelling land subsidence due to hydrocarbon production, integrating geodesy and geophysics

Earth and Space Science | 2020
UAVSAR Tomography for Vertical Profile Generation of Tropical Forest of Mondah National Park, Gabon

Unmanned Aerial Systems in Geomatics, India | 2019
Multi-Frequency Polarimetric Decomposition of UAVSAR Data

2nd International Electronic Conference on Geosciences, MDPI | 2019
Land Subsidence Monitoring in Jagadhri City Using Sentinel 1 Data and DInSAR Processing

International Society for Photogrammetry and Remote Sensing, India | 2018
PSInSAR Study of Lyngenfjord Norway, using TerraSAR-X Data

PROFESSIONAL SKILLS

Insightful data storytelling
Technical writing & documentation
Workflow automation & reproducibility
Stakeholder-focused analysis
Applied domain modelling
Cross-functional collaboration
Quality control & validation
Data-driven decision support
Spatial and temporal data integration
Data visualisation & dashboarding
Exploratory data analysis (EDA)
Statistical reasoning
Research-method alignment

LANGUAGE

English : Full Professional Proficiency
Hindi : Native Speaker
Swedish : A2, Beginner proficiency
Finnish : A1, Beginner proficiency

PROJECTS

Taal Volcano eruption analysis with Sentinel-1 SAR Data
Independent Project | 2021

Processed Sentinel-1 SAR data to analyze surface deformation caused by the Taal volcano eruption. Generated radiometrically terrain corrected (RTC) backscatter images and created LOS interferograms to detect displacement patterns. Conducted comparative analysis between line-of-sight (LOS) displacement and perpendicular displacement components to evaluate deformation directionality and magnitude. The workflow included InSAR processing, gamma corrections, and spatial analysis of volcanic impact zones. *(Sentinel-1, InSAR, LOS Displacement, QGIS, Python, RTC, GAMMA, Remote Sensing)*

Subscidence Monitoring in Groningen, NL using InSAR
Delft University of Technology | April 2020 - April 2021

Developed cloud-enabled Python and Bash-based workflows to process Sentinel-1 SAR imagery for time-series InSAR analysis of ground subsidence in the Groningen region of the Netherlands. Focused on detecting long-term geophysical deformation patterns related to gas extraction. Managed data ingestion, interferogram generation, and displacement modelling in a reproducible pipeline, supporting research transparency and long-term monitoring. Also led documentation, reporting, and internal team training. *(Sentinel-1, InSAR, Python, Bash, GCP, QGIS, Jupyter)*

Cryosphere Feature Mapping using SAR in Polar Regions
Indian Institute of Technology Bombay | Sept 2019 – Feb 2020

Mapped and analysed cryospheric surface features, including fern line delineation, using Sentinel-1 and RADARSAT SAR data for Greenland and Svalbard. Applied classification techniques to distinguish surface types under polar conditions. Planned and coordinated a high-altitude field campaign in the Indian Himalayas, collecting in situ snow parameters to support model validation. Integrated field observations with satellite-derived measurements to improve geophysical modelling accuracy. *(Sentinel-1, RADARSAT, SAR Classification, QGIS, Python, Snow Parameter Analysis)*

Environment Monitoring & Research with EO and GIS
Indian Institute of Remote Sensing (IIRS), ISRO | 2017 – 2019

Conducted research on radar remote sensing and environmental change monitoring as part of the M. Eng. thesis at IIRS. Developed workflows for SAR data processing, time-series analysis, and geospatial modelling, focusing on geophysical and ecological applications. Participated in national and international conferences, including AGU Fall Meeting and IECG (MDPI), and published peer-reviewed articles in Advances in Space Research, Earth and Space Science, and other journals. Experience included supervised classification, accuracy assessment, integration of SAR and optical data, and communication of research findings through scientific presentations and reports. *(Sentinel-1, SAR, QGIS, Python, ERDAS, Remote Sensing, Environmental Modelling)*

TRANSFERRABLE SKILLS

Curiosity & continuous learning
Clear & adaptive communication
Adaptability in fast-paced teams
Proactive ownership
Feedback-driven growth
Attention to detail
Cultural and interdisciplinary fluency
Resilience under ambiguity
Time and priority management
Empathy in teamwork
Comfort with experimentation
Clarity under pressure

TECHNICAL SKILLS

Remote Sensing & GIS	SAR processing, InSAR time-series analysis, Change detection, Optical remote sensing, Geospatial modeling, Satellite data integration, Google Earth Engine, ArcGIS Pro, ArcGIS Online, QGIS, SNAP, FME, GDAL, Rasterio
Programming & Scripting	Python (*pandas*, *geopandas*, *matplotlib*, *rasterio*, *numpy*), Bash scripting, JavaScript (GEE), Jupyter Notebooks, GitHub
Data Analysis & Visualization	Statistical modeling, Time-series analysis, Environmental trend detection, Power BI, Seaborn, Matplotlib, Excel
Cloud & Platforms	Google Earth Engine, AWS (basic), Azure (basic), JupyterHub, GitHub, VS Code
Tools & Software	ArcGIS Suite, QGIS, FME, GDAL, SNAP, Power BI, Git, Visual Studio Code, JupyterLab, PostgreSQL/PostGIS (basic)

INTEREST & HOBBIES

🧠 Strategic Play & Games
Board games like Cartographers, Carcassonne, Distilled ♟️ | Chess ♚ | UNO 🎴 – *love for logic, creativity, and thoughtful competition*

🏏 Sports & Outdoor Activity
Cricket 🏏 | Volleyball 🏐 | Badminton 🏸 | Table Tennis 🏓 | learning Tennis 🎾 & Ice Skating ⛸️ | Trail Running 🏃 | Biking 🚴 | Sauna 🧖

🌿 Nature & Exploration
Hiking 🥾 | Waterfalls 💧 | UNESCO Sites 🏛️ | National Parks 🌲 | Photography 📷 | Passion for Renaissance & Old English architecture 🏰

📚 Curiosity & Learning
Non-fiction reader 📖 – Ed Yong, Richard Feynman – *fascinated by science storytelling and perspective-shifting ideas* 🌍

🍳 Culinary Exploration
Cooking & baking 🍰 | Exploring global cuisines 🥟🍱🥘 | Eternal pizza lover 🍕 | Culinary curiosity from kitchen to culture