Sanchit Minocha

Seattle, WA, USA | +1 206 436 9521 | sanchitminochaiitr@gmail.com | sanchitminochaiitr | GitHub

SUMMARY

Applied ML researcher with 7 years of research and industry experience developing scalable machine learning systems for large-scale geospatial and satellite data. Experienced in building production-grade ML pipelines, spatiotemporal modeling, and Earth observation analytics for environmental intelligence and decision support. Published author of 15 peer-reviewed papers in geospatial ML and remote sensing, with collaborations involving international stakeholders such as NASA and the Asian Disaster Preparedness Center.

EDUCATION

University of Washington **Mar 2022 - Jun 2026**
MS and Ph.D., Civil and Environmental Engineering with minor in Data Science (GPA: 3.96 / 4.0) *Seattle, United States*

Indian Institute of Technology Roorkee **Jul 2015 - Jun 2020**
Integrated M.Tech., Geophysical Technology (GPA: 9.46 / 10.0) *Roorkee, India*

TECHNICAL SKILLS

- **Programming:** Python, C++, C#, JavaScript, MATLAB
- **Machine Learning:** scikit-learn, TensorFlow, Keras, CNNs, ML pipelines, Graph Analytics, Deep Learning Specialization
- **Data / Visualization:** Pandas, Xarray, GIS, NetworkX, Matplotlib, D3.js, Dash, Streamlit, SQL, Tableau
- **Tools / Deployment:** Git, Flask/Streamlit, Django, Python/Conda packaging, Azure ML Cloud, Docker, Google Earth Engine, Google Cloud

WORK EXPERIENCE

SASWE Research Group | *Graduate Research Assistant* **Mar 2022 - Present**
- Designed and developed a Python-based software platform (RAT 3.0) for global satellite data processing and machine-learning analytics, achieving over 18,000 downloads worldwide
- Developed first global scale predictive model for reservoir sedimentation using multi-decadal satellite data to save billions of dollars in surveys.
- Built end-to-end data pipelines with Python that integrated multi-source satellite data, performed preprocessing, trained machine-learning models, and deployed them, enabling faster analysis and more reliable results
- Led technical onboarding and training for NASA USAID SERVIR SEA and Mekong River Commission stakeholders, helping them adopt the platform and improve their data-driven decision making

NASA Jet Propulsion Laboratory | *Summer Research Intern* **Jul 2025 - Sep 2025**
- Integrated NASA PODAAC Data APIs into an operational Python platform, enabling automated access to satellite data with a user guide and tutorial.
- Validated and analyzed spatio-temporal data using statistical techniques to identify quality issues in SWOT satellite data products, resulting in a reliable dataset that enabled Random Forest-based ML modeling.

Schlumberger Limited | *Data Geo-Scientist* **May 2021 - Mar 2022**
- Implemented scalable backend for large geoscience SQL database using C#, improving reliability and query performance by 90%.
- Designed ML-powered predictive search feature for cloud-based platform, enhancing data discovery and user efficiency.

Other Internships & Trainee Roles | *Data / Research Trainee* **May 2017 - May 2021**
- Completed data science, analytics, and research internships at Rupeek Gold Loans, University of Leeds, and CSIR Fourth Paradigm Institute, where I built data pipelines, wrote SQL queries, developed dashboards, and created web apps to streamline workflows and deliver insights.
- Worked full-time for one year as a Geoscientist at Cairn Oil & Gas, developing Azure ML pipelines and data tools that improved data accuracy and efficiency for exploration projects.

DATA SCIENCE PROJECTS

Open Source Software for satellite-based Reservoir Monitoring | Web-App **Apr 2022 - Jul 2023**
University of Washington
- Python-based platform with 18,000+ downloads, used by 5+ government agencies globally for decision support.
- Integrated ML, satellite analytics, and visualization into a production-ready system.
- Contributed to a chapter in undergraduate textbook, featuring hands-on activity to help students build data science skills.

Global ML Framework for Reservoir Sedimentation | Source Code **Jul 2025 - Jan 2026**
University of Washington
- Built ML pipeline using Boosting regression and classification algorithms to predict reservoir capacity loss using petabytes of geospatial satellite datasets.

- Engineered end-to-end workflow in Python: data ingestion, preprocessing, modeling, packaging and web deployment on Apache Server.
- Featured Article in Communications of the ACM on its potential to save billions of dollars.

Satellite-Driven Flood Forecasting | Web-App **Aug 2024**

University of Washington

- Built a web-based system using JavaScript for satellite-driven flood peak and reservoir outflow forecasting using automated ingestion of real-time geospatial data.
- Designed the pipeline in Python to support decision-making during transboundary flood events; featured in international media.

DamNet: Global Dam Network | Web-App **Apr 2024 - Jun 2024**

University of Washington

- Developed an interactive visualization and network model of 7000+ globally connected reservoirs (first-of-its-kind) using large geospatial datasets and D3.js.

Deep Learning for Geophysical Inversion **Jan 2020 - Jun 2020**

Indian Institute of Technology Roorkee

- Trained CNNs using TensorFlow for high-dimensional inverse problems on simulated geophysical data with strong generalization for subsurface imaging.

Semantic Segmentation of Seismic Images **Sep 2018 - Nov 2018**

Indian Institute of Technology Roorkee

- Built a U-Net–based deep learning model in Keras for pixel-wise seismic image segmentation (salt vs. rock) with strong test performance(IoU = 0.7).

PUBLICATIONS (FIRST AUTHORED)

- Minocha S. et al.(2025).RECLAIM: A Globally Scalable Machine Learning Framework to Predict Reservoir Sedimentation.-*Environmental and Modeling Software (in review). doi:10.2139/ssrn.5623518.*
- Minocha S., Das P., Hossain F. (2025).Reservoir Assessment Tool (RAT): A Python Package for monitoring the dynamic state of reservoirs and analyzing dam operations..*Digital Water. doi:10.1080/28375807.2025.2487762*
- Minocha S., Das P., Hossain F. (2024).Reimagining dams as transit hubs: visualising global water networks with DamNet..-*International Magazine of Water Power and Dam Construction, December 2024.*
- Minocha S. and Hossain F.(2024).GRILSS: Opening the Gateway to Global Reservoir Sedimentation Data Curation..*Earth System Science Data, 2024, 1-23. doi: 10.5194/essd-2024-470.*
- Minocha S. et al.(2024).Reservoir Assessment Tool Version 3.0: A Scalable and User-Friendly Software Platform to Mobilize the Global Water Management Community..*Geoscientific Model Development, 17 (8), 3137-3156. doi: 10.5194/gmd-17-3137-2024.*
- Minocha S. and Hossain F. (2026).Hidden Sediments, Lost Capacity: How Fast Is the World Losing Reservoir Storage in a Changing Climate?.*Nature Sustainability (in review)*
- Minocha S. et al.(2025).Factors influencing Lake Surface Temperature for reservoirs of the Columbia River Basin..*Northwest Science, 97 (4), 260-273. doi: 10.3955/046.097.0403.*
- Minocha S. and Parvez I. (2020).Self-Organized Fractal Seismicity and b-Value of Aftershocks of the 2015 Gorkha Earthquake, Nepal..*International Journal of Geosciences, 11, 562-579. doi: 10.4236/ijg.2020.118030.*

HONORS & AWARDS

- **Contributed Impactful Dataset:**AGU Advances selected GRILSS as impactful Earth and environmental dataset | 2026
- **Profiled in Annual Issue:**The International Water Power and Dam Construction Magazine (Dec'23, pg-36) | 2023
- **People's Choice Graduate Award:**AWRA Annual Conference Poster Competition | 2022
- **Future Rivers - NSF Research Fellowship:**University of Washington | 2022
- **Ivanhoe Foundation Fellowship:**University of Washington | 2022
- **Gold Medalist:**IIT Roorkee | 2020
- **Annual Excellence Award:**IIT Roorkee | 2018
- **Winner:**Deep Volatiles programme funded by UK Natural Environment Research Council (NERC) | 2018
- **Beneficiary:**Summer Research Fellowship Programme - 2017, jointly sponsored by Science Academies' | 2017
- **Green Belt:**Taekwondo | 2017