SKILLS

Inter-Personal

-Communication - verbal and written-
-Marketing-

Programming

-Python-
-R- -LaTex-
-Shell Scripting-

Techniques

-Digital Image Processing-
-Hyperspectral Image Processing-
-Planetary Satellite Data Handling-
-Time Series Analysis-
-Time Series Forecasting-
-Software Development-

Computer

-High Performance Computing (HPC) : Hardware, DIP, Simulations, Modelling-
-Computer Hardware-
-Computer Networking-

Software

-ENVI- -Linux-
-QGIS- -Windows Server-
-ArcGIS- -AutoCAD-
-SAP ERP- -STAAD-Pro-

Operational

-Pre/Post Sales-
-Tendering-
-Management Information System-

Instrumentation

-Echoboat:Bathymetry-
-UV/Vis Spectrophotometer-
-Flame Photometer-
-Atomic Absorption Spectrophotometer-
-High Performance Liquid Chromatography-

Language

-English –Read, Write, Speak, Fluent-
-Hindi –Read, Write, Speak, Fluent-
-Russian-Read, Write, Speak, Basic-

ISHAN RAYAL

RESEARCHER

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About Me

I am a dedicated researcher presently conducting groundbreaking research on lunar volatiles utilizing multiple advanced planetary remote sensing data. With a strong educational background in Environmental Technology and Civil Engineering, I have also gained valuable experience as an engineer at Everest Industries, honing skills in marketing and project management. I am looking for a suitable role to which I can contribute as well as learn from.

Experience

-Senior Research Fellow

- (INSPIRE Ph.D. Fellowship) Jan, 2022 - Present
- Indian Institute of Remote Sensing (IIRS-ISRO) A Research organization focused on remote sensing

-- Conducting doctoral research on the topic "A Study of Lunar Volatiles Using Remote Sensing Data" at Indian Institute of Remote Sensing (IIRS-ISRO) and Doon University

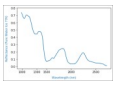
-Engineer

- August, 2014 - June, 2018
- Everest Industries Limited - A leading manufacturer of building materials with a focus on providing innovative end to end Steel Building Solutions

-- Worked with the Steel Building Vertical of Everest Industries Limited in Marketing, Pre-sales, Project Management, and Tender Bidding

Projects

- M.Tech. Thesis - "Study of Lunar Water Ice Using Remote Sensing Data



♦ Hyper-spectral and other signature detection of water ice molecules using five planetary datasets in the Permanently Shaded Regions of Shackleton Crater on the Lunar South Pole

- SelenoRef

♦ Software developed for seleno-referencing hyper-spectral data cubes acquired using Imaging Infra-Red Spectrometer (IIRS) instrument on-board Chandrayaan-2

♦ https://zenodo.org/records/10007761

- legends

♦ Software developed for performing essential GIS processing on very large datasets in bulk

♦ https://zenodo.org/records/17019260

Projects contd. on next page..

Education

Master of Technology - Environmental Technology

- August, 2018– July, 2020
- Doon University, Dehradun, Uttarakhand, India
- Gold Medalist (CGPA 9.46/10)

Bachelor of Technology - Civil Engineering

- August, 2010– July, 2014
- Graphic Era University, Dehradun, Uttarakhand, India
- First Division with Distinction 85.79% (with merit scholarship)

Intermediate - ISC

- April, 2009–March, 2010
- St. Jude's School, Dehradun, Uttarakhand, India
- 84% (with merit scholarship)

High School - ICSE

- April, 2007–March, 2008
- St. Jude's School, Dehradun, Uttarakhand, India
- 87%

Refer Next Page/Overleaf for Publications

Projects

- "Retrieval of Snow Physical Parameter Using Hyper-Spectral Remote Sensing Data"
  - ♦ Carried out snow studies using EO-1 Hyperion data.
  - ♦ NDSI was used to separate snow and now snow pixels
  - ♦ Grain Index was used to classify snow into coarse, medium and fine
  - ♦ Correlation with aspect and elevation was done.
  - ♦ Data was validated using Snow Pack Analyzer at Dhundi Himachal Pradesh

- Contribution to All India Winner ArcGIS Story Map competition - "Ganga: Story of Civilisations"
  - ♦ Ganga feeds the largest contemporary population along any river.
  - ♦ This Story Map was a tribute to various aspects of Maa Ganga.
  - ♦ The story begins from the origins, carries on with the journey while nourishing a civilisation.
  - ♦ All aspects were backed by scientific remote sensing based findings.
  - ♦ https://storymaps.arcgis.com/stories/dc1c327d1abd4ec1b2355f52d142d6c2

- Contribution to IIRS-ISRO Hackathon on Geo Spatial Research Problems
  - ♦ Theme-"Mapping water bodies appearing in time and space - as one 'water body' class in single step processing"
  - ♦ Key highlight - in place of constant thresholding for band indices, a dynamic approach was used using Otsu thresholding techniques which involves generating threshold value for each image using the shortest distance approach from the bimodal histogram while a set of 'n' rasters is being processed.
  - ♦ *https://github.com/ishanrayal/Water-Body-mapping-with-dynamic-thresholding*

- Developed basic github.io webpages for self and also for Doon University Atmosphere and Environment Modelling Lab
  - ♦ https://doonsenraeml.github.io
  - ♦ https://ishanrayal.github.io

Publications

- Multi-mission, multi-sensor study of the Shackleton Crater constrained for volatiles with emphasis on albedo distribution of the Lunar South Pole
  - ♦ https://doi.org/10.1016/j.asr.2023.10.017
- Python-Based Open-Source Tool for Automating Seleno-Referencing of Chandrayaan-2 *Hyper-Spectral* Data Cubes
  - ♦ https://doi.org/10.1007/s12524-024-01814-4