

# Abhishek Mhamane

 [github.com/abhimhamane](https://github.com/abhimhamane)  [abhimhamane.github.io](https://abhimhamane.github.io)  [amhamane22@iitk.ac.in](mailto:amhamane22@iitk.ac.in)

## Education

---

- **Indian Institute of Technology(IIT), Kanpur** 2022-Present  
*MS-Research in Geoinformatics* **CPI: 9.11/10**
- **Visvesvaraya National Institute of Technology(VNIT), Nagpur** 2018-22  
*B.Tech in Civil Engineering* **CGPA: 8.27/10**


## Research Experience

---

- **SOCE Summer Intern** May'23 - July'23  
*Indian Institute of Technology, Kanpur* Kanpur
  - Advisor Ph.D. Scholar Ibaad Anwar and **Dr. Balaji Devaraju** of IIT Kanpur
  - Designed automated data synchronization pipeline for Low-Cost GNSS (LCG) Network
  - Developed a python module with wrapper functions for API access
  - Scheduled cron jobs on NanoPi LCG boards
- **Sumer Research Intern** May'21 - July'21  
*Visvesvaraya National Institute of Technology, Nagpur* Virtual
  - under the guidance of **Dr. Ashwini Mirajkar**
  - Developed Spatial Multi-Criteria Analysis using AHP technique in GIS
  - Implemented Dijkstra's Algorithm to find LCP on a isotropic surface
  - Proposed path reduced length by 17% when compared to government planned route
  - Presented results at the HYDRO-21 International Conference organized by SVNIT Surat, India



## Open Source Contributions

---

- **PySHBundle** Apr'23 - present  
*A Python implementation of MATLAB codes SHbundle initiative by IISc Bangalore*  GitHub Repository
  - Collaborated with **Dr. Bramha Dutt Vishwakarma** and Research Associates from IISc Bangalore
  - Increased accessibility of GRACE L2 data processing through Python's open-source geospatial ecosystem
  - Contributed to debugging and documenting the existing codebase, also created explanatory tutorials
  - Developed new feature utilities for data loading and visualization

## Projects

---

- **Topographic Mapping and GPS Survey** Dec'22  
*Group Project: CE673A-Survey Camp at IIT Kanpur*
  - Coordinated a team of 4 on a week-long mapping exercise
  - Conducted Recki, established control network, captured GNSS coordinates and mapped campsite
  - Bridged the gap between technical understanding and practical experience
  - **Instruments:** Total Station, GNSS receivers, Hand-Held GPS and Auto level
- **Regional Geoid Modelling using GRAV-D Airborne gravimetric data** Sept'22-Dec'22  
*Course Project: CE678A-Physical Geodesy at IIT Kanpur*
  - Adopted Remove-Compute-Restore approach for Geoid determination
  - Computed gravity anomalies, applied different corrections, and computed Stoke's Integral using FFT
  - Collaborated on developing an OCTAVE toolbox for the project
- **Beam Analysis Interactive Web App (Teaching Aid)** May'22 - Jul'22  
*Visvesvaray National Institute of Technology, Nagpur*  GitHub Repository
  - Developed Web App - teaching aid for Structural Analysis course
  - Implemented What-If approach for simply supported and indeterminate beams
  - Automated shear, bending moment, and deflection diagram generation utility
  - **Tools & Technologies:** Python, Science Communication, StreamLit
- **ANN-based Soil Classification from first principles** March'22 - May'22  
*Course Project: MEL457-AI for Engineers at VNIT Nagpur*  GitHub Repository
  - Utilised Landsat data for soil classification
  - Developed ANN from scratch & visualized "Black-Box" nature of ANN

- Published the results as a StreamLit Web App
- **Tools & Technologies:** Python, Sci-Kit Learn, StreamLit

- **Mapathon Organized by IIT Bombay and ISRO**

Dec 2020

*Change Detection Analysis using LISS-3 Imagery data*

- Carried out change detection analysis for Nagpur city b/w 2008 to 2018
- Utilized LISS-3 satellite data, carried out DOSM atmospheric correction
- NDVI, NDWI, and other indices were used for change detection in QGIS
- **Skills:** QGIS, Geospatial Analysis, Satellite Image Processing

## Achievements

---

- **Institute Fellowship**

2022-present

*MS-Research, IIT Kanpur*

- **All India Rank (AIR) - 22 | GATE Geomatics Engineering**

Feb'22

*Graduate Aptitude Test in Engineering (GATE) Entrance Exam for IITs and IISc*

- **Prime Minister's Scholarship Scheme**

2018-22

*Yearly Scholarship of INR. 30,000 for undergraduate education awarded by the Ministry of Defence*

- **National Camp - Bal Shree Honour [Creative Writing]**

2014

*National Bal Bhavan, Ministry of Human Resource Development, Government of India*

Selected for a week-long camp at National Bal Bhavan, New Delhi, after a series of competitions at the district level (Porbandar) and Zonal Level (Goa). Received INR. 5,000 scholarship

## Publications

---

- **Least Cost Path Pipeline Routing Using Spatial Multi-criteria Analysis for Vidarbha Region: A Case Study**

*Mhamane, A., Mirajkar, A.B. (2023).* Least Cost Path Pipeline Routing Using Spatial Multi-criteria Analysis for Vidarbha Region: A Case Study. Geospatial and Soft Computing Techniques. HYDRO 2021. Lecture Notes in Civil Engineering, vol 339. Springer, Singapore.  
[https://doi.org/10.1007/978-981-99-1901-7\\_30](https://doi.org/10.1007/978-981-99-1901-7_30)

## Technical Skills

---

**Programming Languages:** Python, MATLAB/OCTAVE, C, JavaScript

**Software Tools :** Git, Inkscape, QGIS, ArcGIS, L<sup>A</sup>T<sub>E</sub>X, SNAP, Linux