ARNAB LAHA

Doctoral Student | Ernst Mach Scholar

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EDUCATION

Ph.D. (Geoinformatics, Civil Engineering) | IIT Kanpur, India — 2019 – PRESENT
Subjects: Physical Geodesy, Adjustment Computation, Reference Frames, Map projection and Coordinate system, Geodetic astronomy and Satellite Geodesy, Global Navigation Satellite System, and Environmental Geodesy
Subjects (TU Wien): Earth rotation and global geodynamic processes, Space Geodesy, Modern space geodetic techniques, Atmospheric Effects in Space Geodesy, Very Long Baseline Interferometry
Supervisors: Dr. Onkar Dikshit, Dr. Johannes Böhm and Dr. Nagarajan Balasubramanian
CPI: 8.62/10

M-Tech (Geological Technology) | IIT Kanpur, India — 2017 – 2019
Thesis title: *Forest fire risk assessment for Sikkim using remote sensing data and multi-criteria decision-making technique.*
Supervisors: Dr. Rajiv Sinha and Dr. Nagarajan Balasubramanian
CPI: 8.13/10

B-Tech (Civil Engineering) | HPTU, Himachal Pradesh, India — 2011 – 2015
Project Topic (Major)*: Soil stabilization using waste fiber material.*
Project Topic (Minor)*: Effect of corrosion on durability of concrete.*
Percentage: 72.53%

Higher Secondary (Science) | West Bengal Council of Higher Secondary Examination | Kolkata, India — 2009 – 2011
Percentage: 78.14%

Matriculation | West Bengal Board of Secondary Examination | Kolkata, India — 2009
Percentage: 83.6%

PUBLICATION

Laha, A., Balasubramanian, N. and Sinha, R., 2021. Application of earth observation dataset and multi-criteria decision-making technique for forest fire risk assessment in Sikkim, India. Current Science, 121(8), pp.1022-1031.

CONFERENCES

Laha, A., Tiwari, A., Srivastava, S., Singh, S., Joshi, B.C., Balasubramanian, N., Kumar, A., Gupta, Y. and Dikshit, O., 2022. Retrofitting communication antennas for astronomical and geodetic VLBI applications (No. EGU22-13321). Copernicus Meetings.

Laha, A., Singh, S., Mishra, U. and Singh, M., 2021. Estimating spatiotemporal dynamics of forest fire hazard using Analytical Hierarchy Process and geostatistical methods in Similipal Biosphere Reserve, India (No. EGU21-890). Copernicus Meetings.

Dhar, S., Tiwari, A., Balasubramanian, N., Devaraju, B., Dikshit, O., Prakash, J., Mishra, P., Agarwal, D., Sharma, V., Varade, D. and **Laha, A.**, 2021. Establishment of State-of-the-Art Geodesy Village in India: Current status and Outlook (No. EGU21-16068). Copernicus Meetings.

Singh, M.N., Singh, S., **Laha, A.** and Mishra, K., 2021. Applicability of connectivity concept for disaster management and hazard mitigation (No. EGU21-14040). Copernicus Meetings.

Singh, D. and **Laha, A.**, 2021. Application of earth observation datasets and Analytic Hierarchy Process in the mapping of Landslide hazard zones of Manipur, India (No. EGU21-15789). Copernicus Meetings.

Singh, D. and **Laha, A.**, 2020, December. Continuous and Systematic Monitoring of 2018 Kilauea Eruption Leilani Estates Earthquake. In AGU Fall Meeting 2020. AGU.

Laha, A. and Sinha, R., 2020, December. Forest Fire Risk Assessment for Sikkim using Earth Observation (EO) Datasets and Multi Criteria Decision Making Technique. In AGU Fall Meeting Abstracts (Vol. 2020, pp. NH033-0001).

Singh, S., **Laha, A.,** Sinha, R., 2020, October. Morphodynamics and Flood Hazard Assessment in the Tawi river using Multi Criteria Decision Analysis. GSA 2020 Connects Online (Vol. 52/6).

RESEARCH EXPERIENCE

Indian Geodetic VLBI Project (Project Saptarshi) — May 2020 - PRESENT
Organization**:** National Centre for Geodesy (IIT Kanpur)
Funding Agency**:** Dept. of Science and Technology, Govt. of India

Flood Mitigation and Comprehensive River Management Measures for Tawi basin July – Dec 2019
Organization**:** AQUALOGUS and OILTECH Engineering
Funding Agency**:** World Bank

Strengthening State Strategies for Climate Action Dec 2017 – June 2019
Title**:** *Mapping of fire prone regions in Sikkim and to develop an early detection system for effective management of forest fires.*
Organization*:* United Nations Development Programme
Funding Agency**:** Helvetas Swiss Intercooperation

PROFESSIONAL WORK EXPERIENCE

Project Associate | Indian Institute of Technology Kanpur | Kanpur, India July – Dec 2019
Involved in the morphological study of Tawi basin (Jammu and Kashmir) using CORONA, LANDSAT, and Sentinel data. Analysis of different morphological and topographic factors responsible for flood in this region and suggesting some structural and non-structural mitigation measures.

Junior Engineer | Paul Builders Pvt. Ltd. | Kolkata, India Aug 2015 – Jun 2016
Involved in government projects located in town of Kolkata, aiming to achieve high standards in urban planning and real estate developer.

Intern- Project Trainee | Delhi Metro Rail Corporation | Noida, India April – May 2014
Assisted in design development of tunneling and underground stations. Fieldwork at viaduct casting yards and elevated stations. Assigned as trainee engineer in quality control laboratory and as site engineer in piling areas.

Intern | United Handling Technocrats Pvt. Ltd. | Kolkata, India June 2012
Learned basic objects and drawing aids in CAD and trained in 2D and 3D designing, object editing.

TEACHING EXPERIENCE

Teaching Assistantship | Physical Geodesy, IIT Kanpur, India Fall, 2021
Explained and assisted different lab based on Python for analyzing and visualizing different datasets. Prepared and evaluated assignments, and labs for a group of 11 students.

Laboratory | Introduction to GNSS and its Applications, NCG-IIT Kanpur, India Nov 2021
Explained numerical on Satellite Geodesy using MATLAB.

Laboratory | Winter School on Physical Geodesy and its Applications, NCG-IIT Kanpur, India Feb 2021
Explained gravity adjustment using observation equation method and estimation of vertical gravity gradient.

Teaching Assistantship | GNSS (Module 1 and 2), IIT Kanpur, India Spring, 2021 | 2022
Assisted in lab by explaining different software used for baseline processing and creating geoid model. Prepared and evaluated assignments, labs, and quizzes for a group of 27 students.

Tutor | Perpetual Learning Society, Kanpur, India 2018 – 2019
Volunteered as a teacher in science of class 9 and 10 to the needy and poverty-stricken students of the neighborhood area.

Teaching Assistantship | Sedimentology lab, IIT Kanpur, India Spring, 2019
Assisted new M-Tech students in knowing different layers of sediments in river valley or sub-surface core layer and to differentiate between the layers by knowing its physical and chemical properties.

Teaching Assistantship | Solid Earth Geophysics, IIT Kanpur, India Fall, 2018
Designed and instructed tutorial classes based on different geophysical methods. Prepared and evaluated assignments for a group of 13 students.

TECHNICAL SKILLS

Software
VieVS, VieSched++, ArcGIS, QGIS, ERDAS IMAGINE, ENVI, AgiSoft photoscan, DJI GO, Pix4D capture, AutoCAD, Adobe Photoshop, Corel DRAW, Origin, Digital Photo Professional 4, Microsoft Office Suite.

Instruments
DJI Phantom 4 UAV, Differential GPS, Ground Penetrating Radar, Theodolite, Prismatic Compass, Total Station, ICPMS, XRF, Scanning Electron Microscope

Programming
MATLAB, Octave, Python, R (Certified)

ACHIEVEMENTS and INVITATIONS

Delivered lecture on “Earth rotation and Geodynamic processes” to Survey of India personnel. Nov 2022

Awarded Ernst Mach Grant, worldwide for a period of 9 months to carry out research at TU Wien, Austria. Sep 2022

Invited for three-week academic visit to TU Wien, Austria for research collaboration on geodetic VLBI. May - June 2022

Delivered lecture on "Introduction to VLBI and importance of dUT1" and instructed lab on geodetic astronomy to Survey of India personnel. Dec 2021

Seminar at Manav Rachna International Institute of Research and Studies, India on “State-of-the-art techniques for observing Earth from Space”. Nov 2021

2nd prize in poster competition in “Students’ Research Convention ‘19” at IITK 2019

3rd prize in “Earth Science Department Website Banner Collage Competition” at IITK. 2018

MEMBERSHIP

International VLBI Service for Geodesy and Astrometry (Corresponding Member) 2022 - PRESENT

International Association of Geodesy 2020 - PRESENT

Society of Exploration Geophysicists 2017 - 2019

WORKSHOPS

River Styles and River Management under IITGN and SPARC 2019

Physical Geodesy and Its Applications under NCG, IITK, and SPARC 2019

1st IITK-UTokyo Workshop on PM2.5 Mapping using Low-cost Sensors 2019

Challenges in Construction by ACC Cement 2015

“First Aid” by St. John Ambulance Association in Bankura district. 2008

RESPONSIBILITIES

Student Representative in “Department Post Graduate Committee (DPGC)”, Earth Sciences, IITK 2018 – 2019

Treasurer in “IIT, Kanpur SEG Student Chapter” 2018 – 2019

Orientation Team Member in “Counselling Service”, IITK 2018

Student Representative in “Department Under Graduate Committee (DUGC)”, Earth Sciences, IITK 2017 – 2018

REFERENCES

Dr. Onkar Dikshit
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Dr. Nagarajan Balasubramanian
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Dr. Johannes Böhm
Professor
Dept. of Geodesy and Geoinformation
TU Wien
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