



Ankur Shukla
Geoinformatics and Resources Engineering
Indian Institute of Technology Bombay
Specialization: Geoinformatics and Natural Resources Engineering

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M.Tech.
Male
DOB: 23-10-1991

Examination	University	Institute	Year	CPI / %
Post Graduation	IIT Bombay	IIT Bombay	2018	9.13
Undergraduate Specialization : Electrical Engineering				
Graduation	Uttar Pradesh Technical University	Kamla Nehru Institute of Technology, Sultanpur	2014	72.00
Intermediate/+2	ISC	The Modern School	2010	91.50
Matriculation	ICSE	The Modern School	2008	92.60

Areas of Interest

Image Processing | Machine Learning | Dimensionality Reduction | Spatial Data Analysis | GIS | FOSS

Projects & Seminar

Dimensionality Reduction in Hyperspectral Images | *M. Tech. Thesis* [Jul '17 - Present]

- **Implementing Deep Learning Autoencoder** for dimensionality reduction using **TensorFlow**
- **Analysing** linear & non-linear techniques for dimensionality reduction & visualization
- Expecting an increase in performance by using GPU driven **HPC** based approach

Curvelet & Contourlet Application in Remote Sensing | *M. Tech. Seminar* [Jan '17- May '17]

- **Studied** Curvelet & Contourlet transform applications in remote sensing imagery classification & segmentation
- **Proposed** a method for temporal segmentation of multi-temporal satellite data using 3D Curvelet Transform

Facial Expression Recognition using CNN | *Course Project* [Jan '17-May '17]

- Realised two architectures to classify **Extended CKP** dataset images into 7 different facial expressions classes
- Obtained test data accuracy of **60% for 5-6 epochs** with **CNN** and **40% for 2 epochs** with modified **GoogLeNet**
- **Pre-processed** image dataset using **Canny edge detector** & **bi-linear interpolation** applied in Python

Analysis of ANFIS and Random Forests on Distributed Architecture | *Course Project* [Aug '17]

- Investigating the comparative performance of ANFIS and Random Forest for mineral resource potential modelling
- Testing the relative performances on a **2-machine cluster** using **Apache Spark & DeepLearning4j**

GUI for Frequency Domain Visualization of Satellite Image | *Course Project* [Oct '16- Nov '16]

- **Designed** a GUI for frequency domain visualization of satellite images using 2D Fast Fourier Transform
- Applied dynamic visualization for application of Butterworth and Gaussian low pass filters

Genetic Algorithm Dimensionality Reduction Implementation | *Course Project* [Apr '17 – May '17]

- Developed code for dimensionality reduction of Indian Pines dataset using **Genetic Algorithm** in Python

Open Source Contributions

SPark – Open Source Smart Parking using pgRouting and IoT [Oct '16 – Jan '17]

- Work selected among the **best papers presented** at FOSS4G ASIA 2017 held at IIIT Hyderabad
- **Developed** an open source web application in a 3-member team as a smart parking solution
- **Coded the Backend, Mapping Interface** and Device to Server Communication of the app
- Technologies used: **Django, OpenLayers API, IoT** (Arduino Uno)

Contraction by Area - Extension of pgRouting Contraction framework [May '17 - Present]

- Resolving the problem of handling large graphs by reducing the graph storage space for routing problems
- Contributing in developing & documenting code for contraction by area functionality
- **18 pull requests merged** on the main pgRouting Github repository

Publication

Journal of Spatial Information Research

Final Manuscript in Progress

- **Title:** SPark - an Open Source Smart Parking Application using Internet of Things & pgRouting
- **Authors:** Ankur Shukla, Rajat Shinde, Surya S. Durbha
- The paper describes the **architecture & methodology** of the SPark web application in detail

Work Experience

Assistant System Engineer - Trainee | Tata Consultancy Services Ltd.

[Dec '14 - Sep '15]

- Developed a **Java-based ETL testing tool** for checking the integrity of data transfer between Teradata & Hive
- Implemented **Map/Reduce** and **Hive queries** as a part of the tool development on a **Hadoop cluster**

Positions of Responsibility

Company Coordinator | Placement Cell, IIT Bombay

[Apr '17 - Present]

- **Part of a 90+ member team**, responsible for the placement of over 1600 students in the institute
- **Targeted 50+ new potential recruiters** consisting of many Indian & foreign based organizations
- Coordinating with PMs, DPCs at different levels for smooth conduction of the placement process
- **Managing** the recruitment processes of **50+ companies** of various sectors

Teaching Assistant | CSRE, IIT Bombay

[Aug '16 - Present]

- Developing a **RESTful framework** for **Virtual Satellite Image Processing Lab** web application using Django & GDAL
- Responsible for development and management of Satellite Image Processing **Lab Github page**
- **Assisting Prof. B. K. Mohan** in conducting Satellite Image Processing Lab for 24 students
- Conducted training sessions for Image Processing using MATLAB, ERDAS and Python
- **Mentored** M. Tech. students in efficient implementation of course projects

Co-Editor | DrishtICONe - KNIT Newsletter

[May '13 – May '14]

- **Led a 50+ member team**, responsible for publication & distribution of monthly newsletter of the institute
- **Conceptualized** *Voice of KNIT*, *Click of the Edition* columns

Technical Skillset

- | | |
|---------------------|-----------------------------------------|
| • Languages | Python 2.7/3.5, JAVA 7, C++, Javascript |
| • Frameworks | Django, OpenLayers 3.0, TensorFlow |
| • Softwares | MATLAB 2015b, ERDAS, ArcGIS, QGIS |
| • Tools | PostgreSQL, pgRouting, Git |

Key Courses

Advanced Methods in Satellite Image Processing	Foundations of Machine Learning	Principles of Remote Sensing
Natural Resources Potential Modelling	Principles of Geographic Information Systems	

Scholastic Achievements

- **Rank 5** among CSRE M. Tech batch 2016-18
- **Lean Six Sigma Green Belt Certified** from KPMG
- **99.16 percentile** out of **0.12 million** candidates in GATE (EE) 2016
- **State Rank 30** in 7th National Cyber Olympiad 2007

Extra-Curricular Activities

- Secured **1st position** in 'Ashwamegh', a group discussion competition organized by ISTE, KNIT Sultanpur
- **Poem** titled '*Dekho Ram Naam me Khoye Hanuman Hai*' **published** in Hanumat Kripa Sandesh
- **Media Team Head** for Tvaran '13 **National Level Sports Meet**, KNIT Sultanpur
- Planned and executed various literary events as an **Executive of Literary Council**, KNIT Sultanpur
- Managed various institute level events and activities as an **Executive of Cultural Council**, KNIT Sultanpur