Shreya Sharma

shreya.sharma1020@gmail.com | +81-70-4094-5675 | Kawasaki, Japan
LinkedIn | Website

EDUCATION

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
M.Tech In Geoinformatics Engineering
CGPA : 9.79/10

COLLEGE OF TECHNOLOGY, GBPUAT PANTNAGAR
B.Tech in electrical engineering
CGPA : 8.25/10

SKILLS

PROGRAMMING
Python • C • R • Matlab

TOOLS
Keras • TensorFlow • Scikit-learn • Numpy • Pandas • Matplotlib • OpenCV • GDAL • QGIS • ENVI • Hyperas • LaTex • Git • Keras-vis

COURSES
Deep Learning
Machine Learning
Probability and Statistics
Computer Vision
Image Processing
Remote Sensing and GIS
Algorithms
Critical Thinking
Technical Writing

ACHIEVEMENTS

2019 | 1 of 50 researchers selected globally for Google Earth Engine Summit Tokyo
2016 | Top 4 in 21 students in M.Tech
2014 | 99.52 percentile in GATE
2010 | 98.15 percentile in AIEEE
2016 | 3rd in Group Dance Contest
2013 | 3rd in sketching contest organized by SPICMACAY
2012 | Awarded National Service Scheme certificate
2011 | 1st in advertising contest
2011 | Awarded 'Creative Mind' in National-level Cultural Fine Arts Fest
2008 | 1st in Inter-School Basketball Tournament

WORK EXPERIENCE

NEC CORPORATION | Data Science Researcher | Since Oct 2016

SMALL OBJECT CHANGE DETECTION
- Developed a Siamese Convolutional Neural Network (CNN) to detect changes in a parking lot using multi-temporal satellite images of Earth.
- Applied contrastive loss function for optimization, achieving 15% higher f-measure.
- Currently developing a multitask learning framework for more robust detection.

SHIP CLASSIFICATION FOR MARITIME SURVEILLANCE OF SEZ's
- Invented CNN-based ship classification method that incorporates image metadata.
- Created useful features from image metadata using one-hot-encoding for training.
- Achieved 11% improvement in classification accuracy of 3 ship types over a hand-crafted feature-based baseline and 25% reduction in training data requirement.

FEATURE EXTRACTION IN MODERATE RESOLUTION SATELLITE IMAGES
- Surveyed 50+ research papers in 2 weeks on feature extraction in satellite images.
- Developed first comparative study on the feature extraction approaches including hand-crafted features, Principal Component Analysis (PCA) and Autoencoder.
- Demonstrated a case study on ship classification with challenging cases of small length and fast ships in an international conference IGARSS 2018.

LAND-USE LAND-COVER CLASSIFICATION
- Created an application to identify 5 types of land cover from images over Japan.
- Proposed new methods of data exploration and evaluated class imbalancing effect.
- Presented results to business division, increasing research budget and speed by 3x.

COLLABORATION AND BUSINESS INITIATIVES
- Initiated business collaboration between NEC and a European remote sensing firm.
- Collaborated with NEC Labs Europe and AIST Japan for machine learning in SAR.

ACADEMIC PROJECTS

HYPER-SPECTRAL IMAGE SUPER-RESOLUTION
Master's Thesis | Jul 2015 - May 2016
- Developed a novel super-resolution technique based on Ant Colony Optimization.
- Improved accuracy by 21% over baseline and achieved high-resolution maps.

OPTIMAL BIKE PATH PREDICTION
GIS Course Project | Aug 2014 - Dec 2014
- Created a digital road map of IIT Bombay with important stops and frequently travelled paths in QGIS.
- Implemented Dijkstra Algorithm to find shortest route between two stations.

PATENTS & PUBLICATIONS [ALL FIRST AUTHOR]

- 3 Patents : JP2017/047272, JP2019/016540, JP2019/014832 (filed at NEC)
- Very high resolution SAR change detection with Siamese Networks | The 66th Academic Conference of the Remote Sensing Society of Japan | 2019.
- CNN-based ship classification method incorporating SAR geometry information | SPIE Remote Sensing | 2018.
- Comparative evaluation of feature extraction approaches for ship classification in moderate-resolution SAR imagery | IEEE IGARSS | 2018.
- Sub-pixel mapping of hyperspectral imagery using super-resolution | SPIE-Asia Pacific Remote Sensing | 2016.

EXTRA-CURRICULAR

Volunteer at Hands-on-Tokyo, Japan to conduct coaching for specially-abled kids.
Member of Machine Learning Tokyo Group to collaboratively learn and propagate AI.
Served as Teaching Assistant in Image Processing Lab at IITB to mentor 27 students.
Served as PG academic council coordinator to solve issues of 4000+ PG students.