SARTHAK CHAUHAN

IMT Geophysical Technology
UG (IV Year I Semester)
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Indian Institute of
Technology
Roorkee

Area of Interest

Software Development, Machine Learning, Data Science, Geophysics

Internships

Developer | Libra
•Developed and tested a python deep learning API that allows users to use machine learning in their workflows in fluent one-liners.
•Used Python and TensorFlow to make training neural networks as simple as a one-line function call. API was written to make deep learning as straightforward as possible to every user.
•The core functionality of Libra works through the object created for every dataset for which the results are required. All information about the built models, the generated plots, and the metrics designed are stored in the object.

Software Engineering Virtual Experience | JPMorgan Chase & Co.
•Familiarized with JP Morgan Chase frameworks and applied technical skills to conditional request from the firm's trading floor to analyse and visualize data in a new way.
•Adjusted the client-side web application, which displayed a graph that automatically updates when received data from the server application.
•Usage of Perspective to generate a live graph that displays the data feed in a bright and visually appealing way for traders to monitor this trading strategy due to the temporary weakening of a correlation between two stock prices.

Projects

Building PC Application Plugin | Earth Sciences, IIT Roorkee
•Contributed to an open-source research-oriented QGIS Plugin named SMProcessing, supplementary to a Masters' Thesis submitted at IIT Roorkee. Coded GUI (PyQt) and Logic for re-classification of Raster files. The aim was to provide users an intuitive interface to reclassify raster files by giving visual feedback, contrasting to the GRASS GIS' feature-rich yet unintuitive re-classification algorithm.
•The Plugin takes a raster file as an initial input value on three operations can be applied: First, Statistical analysis of the raster, which includes mean, pixel value, etc. Second, the unique value method returns the unique values through Image Processing present in the raster file. Third, Data classification, which takes on another input parameter as range or interval and returns the newly classified values, and histogram, which shows the interval strength.

Predictive analysis of GRACE satellite data over the Ganga river basin using Deep Learning | Earth Sciences, IIT Roorkee
•Extraction of GRACE Satellite data (acknowledged from 2003 to 2017) and land surface model data (available from 2000 to2019).
•Developed a deep convolutional neural network (CNN) model to learn the spatiotemporal patterns of mismatch between TWS anomalies (TWSA) derived from GRACE and those simulated by NOAH, a widely used land surface model.
•Testing and validating the results by observing the correlation coefficient, Nash-Sutcliff efficient, and RMSE.
•The obtained CNN model may be used to predict the observed NOAH-simulated TWSA without requiring GRACE TWSA as inputs.

Ground Water level Measurement using MASW and HVSR data in Nainital | Earth Sciences, IIT Roorkee
•Conducted horizontal to vertical spectral ratio (HVSR) and Multichannel Analysis of Surface Waves (MASW) surveys using Tromino at 6 different locations in Nanital.
•Determined the Shear wave velocity structure modelling of top 30 meter using the joint fit curve of HVSR and dispersion curve of MASW using Grilla Software.
•It can be used for defining the site parameters which will be helpful to find porosity of soil and groundwater level.

Field Surveying | Earth Sciences, IIT Roorkee
•Participated in the calculation of the Strike and Dip of faults, folds, and lineations of the exposed rocks using Brunton compass and GPS in the Rishikesh region, majorly along the banks of river Ganges.
•Contour map profiling of the Rishikesh region for further use in different studies.
•Participated in a land survey for Data acquisition, processing, and interpretation at NGRI, Hyderabad.
•Performed Gravity, Magnetic, ERT, and GPR survey in NGRI, Hyderabad, using different instruments like CG-5 Gravimeter, Resistivity meter, and proton-precision magnetometer.

Awards / Scholarships / Academic Achievements

•Secured 4th position in Weightlifting in InterIIT Sports Meet'18 held in Guwahati, and the Team overall secured 1st position in the event.
•Secured 3rd position in InterBhawan Weightlifting event.
•Secured 3rd position in Colors Trophy under Weightlifting event.
•Winner, Football Tournament conducted by Hamrock Society.

Skills

Computer languages	Python (Advance), Java (Intermediate)
Software Packages	MATLAB, Tensorflow, QT creator, GitHub, Flask, PyTorch, Git, Quantum GIS, Streamlit, Dialogflow, Blender, OpenCv, MS PowerPoint, MS Excel, MS Word, Seisan, IPI2win
Industry Knowledge	Mathematical Modeling, Statistical Modeling, Deep Learning, Data Science, Data Visualization, Image Processing, Time Series Analysis
Additional Courses Taken	Sociology, Planetary Sciences, Build a Data Science Web App with Streamlit and Python, Neural Network Visualizer Web App with Python, Conversational Bot Design
Languages Known	English (SRW), Hindi (SRW)

Positions of Responsibility & Extra Curriculars

Organizing Secretary | Sangram, IIT Roorkee
•Sangram, the Annual Sports Festival of IIT Roorkee, brings together athletes from all around the country to a common ground to compete for victory and excellence in sports.
•Leading a team of coordinators from all the sports teams, responsible for the Promotion and Design under Sangram.
•Previously planned and supervised the marketing activities for the fest's sponsors, ensuring the utmost satisfaction, maintaining relationships with existing and potential sponsors, and managed end-to-end logistics.

Secretary | Cognizance, IIT Roorkee
•Cognizance, the Annual Technical Festival of IIT Roorkee, is the conjugation of some of the country's finest technical minds with a platform for them to promulgate their skills.
•Leading a 3-tier team of 12 members responsible for the Promotion and Sponsorship under the Departmental Cognizance.
•Organized events like Ideaz (a paper presentation competition) and Spectrum (Geo-modelling competition).
•Collaborating with SEG to supervising Poster presentation during Cognizance.

Associate Coordinator | Internship and Placement Cell, IIT Roorkee
•Worked with a 12 Associate Coordinator team during the 2019-20 Internship and Placement Session at IIT Roorkee and successful with the placement of 850+ students in 150+ companies.
•Coordinated with more than 15+ companies during the internship and placement session and strengthened relations with the existing companies.
•Leading a small tier of volunteers for better and smooth processing.

Executive | InterIIT Cultural Meet
•Event and Media Management Executive for the InterIIT Cultural Meet 2018.
•Responsible for handling the Workshops and the media coverage of all the events over various social media platforms, national television, newspapers, etc. and the personnel involved.
•Harmonized with hospitality, logistics, finance team, and the Institute administration to smooth the event's smooth execution.

Member | Weightlifting Team, IIT Roorkee
•Participated in InterIIT Sports Meet held in Guwahati (2018) under 56 kg weight category and secured 4th position overall.
•Participated in SANGRAM'19 in Weightlifting and Powerlifting 62 kg category (2019).
•Participated in SANGRAM'18 in Weightlifting under the 62 kg category (2018).
•Participated in UDGHOSH'18 in Weightlifting under the 69 kg category (2018).
•Participated in InterBhawan Sports Meet in Weightlifting and Powerlifting under the 62 kg weight category (2018).
•Participated in InterBhawan Sports Meet in Weightlifting under the 62 kg weight category (2019).

Coordinator | WAC
•Responsible for the event management of What After College, conducting different training sessions during the Sangram'18.
•Coordinated with the WAC's Manager for the smooth processing of the three-day workshop.

Coordinator | Thomso, IIT Roorkee
•Thomso had 50000+ footfall, 200+ Celebrities, 1.2 Crore+ budget and 2 Crore+ social media reach.
•Coordinator under the Event Management Team, Thomso'17.
•Events handled include Workshops, Step Up, Thomso Got Talent, and the logistics for the events.

Member | Hamrock Society, IIT Roorkee
•Former member of the Departmental Group under Earth Sciences Department.
•Introduced the first departmental magazine, 'Terra,' which informed about Geophysics and Geology's research and events.

References

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