Varun Katoch

DATA ANALYST

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in https://www.linkedin.com/ in/varun-katoch108a68170

Google Scholar https://scholar.google.com/citations? user=GfwWtAwAAAAJ&hl=en
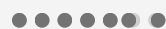
PROFILE

Data Scientist with strong math background and 2 years of experience using predictive modeling, data processing, and data mining algorithms to solve challenging research problems. Involved in Python open source community and passionate about new methodology in machine learning.

SKILLS

Machine Learning (supervised + unsupervised)
● ● ● ● ● ● ● ●

Python
● ● ● ● ● ● ● ●

R Studio and MATLAB
● ● ● ● ● ● ● ●

SQL
● ● ● ● ● ● ● ●

QGIS
● ● ● ● ● ● ● ●

WORK EXPERIENCE

PROJECT SCIENTIST (SATELLITE DATA AND ML/AI)

IIT- Delhi   July 2021 - Present

Geospatial Data Analysis

- Time Series Analysis and Spatial variation analysis to visualize prevailing trends in the spread of air pollution and independent variables affecting air pollution.
- Gap-filling Satellite MODIS aerosol optical depth at a daily scale from the years 2000 to 2021.
- Deploy the dashboard using Plotly Python and Heroku (https://lnkd.in/gf3GMqbq).

Projects

1. To monitor actual exposure to air pollution levels by people, a Random Forest model is trained for PM2.5 at CPCB air quality monitoring station and then predicted at 1km*1km spatial resolution and hourly temporal variation at pan India.
2. Gap-filling Modis daily aerosol optical depth products by developing an XGboost model.
3. SAMOSA: Sensor-based Air Measurement Observatory for South Asia. (Ongoing).

PROJECT SCIENTIST

Pgimer Chandigarh   July 2020 -July 2021

- Application of machine learning approaches to predict the impact of ambient air pollution on outpatient visits for acute respiratory infections.
- In this study 8 ML models are deployed (Xgboost, RandomForestRegressor, SVR, DNN, LinearRegression, KNeighborsRegressor, LassoElasticNet, and, DecisionTreeRegressor)

EDUCATION HISTORY

Master of city and urban environment
                                          Sep 2017 -Sep 2019
Ecole Centrale de Nantes, France

Bachelor of Technology – Civil engineering
                                          Aug 2009 -Sep 2013

Punjab Technical University, Kapurthala, India

RESEARCH PAPERS PUBLISHED AND UNDER REVIEW

- Application of machine learning approaches to predict the impact of ambient air pollution on outpatient visits for acute respiratory infections (https://www.sciencedirect.com/science/article/pii/S0048969722066086).
- At Environmental Research Letters (Sectoral contributions to primary and secondary PM2.5 in regional air sheds of India)

ACHIEVEMENTS

NASA Airathon:
- Predict Air Quality (Particulate Track) 8th Score (Driven Data Competition) Used 3 ML Models (Random Forest, XgBoost, SVM).

AGU 2022 fall meeting abstracts Selected:
- Filling data gap in modis daily aerosol optical depth products by developing an ensemble machine learning algorithm.
- Air Quality Management in India Through a Regional Air-shed Approach.