Durvesh Baharwal

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EDUCATION

Bachelor of Engineering (B.E.) in Artificial Intelligence and Data Science   05/2024

• All India Shri Shivaji Society's Institute of Information Technology, Pune   CGPA – 7.76

EXPERIENCE

Indian Space Research Organization (ISRO) | Research Intern   07/2023 – 12/2023

- Engineered and deployed a Kalman Filter algorithm for satellite navigation systems, improving positioning accuracy by 37%.
- Programmed a MATLAB simulation of the Moving Window Average technique for 5 epoch pseudorange averaging.
- Increased processing speed by 36% and improving data accuracy for 100+ test runs.

PROJECTS

1. Position, Velocity and Time Estimation in GNSS using MATLAB

- Leveraged Adaptive Kalman Filter along with Maximum Likelihood Estimation that mitigated 30% of noise.
- Designed and implemented MATLAB Simulation of Moving Window Averages increasing accuracy to 87%

Keywords: MATLAB, MLE, Python, C++, GNSS, Kalman Filter

2. Enhancing GPS Positioning Accuracy using Machine Learning

- Developed a hybrid GNSS positioning system using Least Square Estimation and Machine Learning Achieving 4.48m accuracy.
- Minimized Mean Absolute Error for Random Forest Regression up to 0.000122.

Keywords: GNSS, PVT, Machine Learning, Random Forest, Least Square Estimation, GPS.

3. Land Segmentation using Satellite Images

- Combined Effcient-Net encoder and CNN to predict forest area using 7000+ TIFF images.
- Achieved a segmentation accuracy of 85%.

Keywords: Convolutional Neural Networks (CNN), CUDA, Deep Learning, Encoders, Data Science

4. Seismic Event Detection Across the Solar System

- Statistically programmed a Python algorithm to detect seismic events in a 24-hour periodic noisy data from Apollo and Mars InSight missions.
- Applied 5+ algorithms such as noise filtering, least squares fitting, moving average techniques, backtracking, and quadratic model fitting.
- Achieved 96% accuracy in peak detection and localization, while optimizing data transmission efficiency.

Keywords: Python, pandas, NumPy, Streamlit, ObsPy, Noise Filtering, Moving Average, Least Squares Fitting, Quadratic Model, Seismic Data.

SKILLS

- **Programming Languages**: Python, JavaScript, HTML, CSS, SQL.
- **Libraries & Frameworks**: Pandas, NumPy, ObsPy, Streamlit.
- **Technologies & Tools**: Machine Learning, Data Analytics, Data Visualization, Natural Language Processing, Microsoft PowerBI, MySQL, Excel, APIs.
- **Algorithms & Techniques**: Kalman Filter, Least Squares Fitting, Moving Average, Noise Filtering, Quadratic Model Fitting.
- **Additional Skills**: Seismic Data Analysis, Statistics & Probability, GNSS Positioning, Regression Techniques.

PUBLICATION

International Journal of Technology Engineering, Mathematics Science   06/2024

- Enhancing GPS Positioning Accuracy Using Machine Learning Regression Vol. 4, No. 1, June2024, pp. 01~06, ISSN: 2583-1224.

CERTIFICATIONS & COURSES

- **AWS Academy Graduate:**
  1) AWS academy Cloud Foundations
- **Kaggle:**
  1) Python.
- **Oracle:**
  1) Oracle Certified Database Programming with PL/SQL.
  2) Oracle Certified Artificial Intelligence with Machine Learning in Java.
- **Hacker Rank**:
  1) SQL (Basic, Intermediate and Advanced).
  2) Python (Basic).
  3) CSS (Basic).
  4) JavaScript (Basic and Intermediate).

WORKSHOPS

- **Forage**:
  1) BCG GenAI Job Simulation.
  2) BCG Data Science Job Simulation.
  3) Accenture North America Data Analytics and Visualization Job Simulation.
  4) Tata Data Visualisation: Empowering Business with Effective Insights Job Simulation.
  5) Thermo Fisher Scientific Genetic Sciences Job Simulation.
  6) PwC Switzerland Power BI Job Simulation.
  7) British Airways Data Science Job Simulation.
  8) Quantium Data Analytics Job Simulation.
  9) Commonwealth Bank Introduction to Data Science Job Simulation.

ACHIEVEMENTS & PARTICIPATIONS

- Attended and actively participated in NASA's Space Apps Challenge 2023 as well as in NASA's Space Apps Challenge 2024, competing with over 1200 participants in a collaborative and innovative environment.
- Presented a project to industry experts at the MindForge event, organized by DYPIEMR, Pune.
- Led the Graphic Design team in producing original visuals for 10+ events, resulting in a 50% increase in social media engagement; ensured consistent branding across all materials, positively influencing committee decisions and membership growth.
- Led over 50 treks in the Sahyadri mountain range, managing groups of 75+ individuals for safe and memorable experiences. Led recruitment efforts, supporting recruitment and team-building processes for Alpine Trekkers.
- Letter of recommendation from the head of Scientific Research and Training Division at SAC ISRO.