GAGANDEEP SINGH

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CAREER HIGHLIGHTS

- **Developed Scalable Data Solutions**: Designed and implemented ETL pipelines and database schemas for cybersecurity threat analysis and student registration systems, ensuring seamless data management and reporting.
- **Proven Machine Learning Expertise**: Delivered 95% model accuracy in predicting airline passenger satisfaction, leveraging decision trees and advanced feature engineering.
- Developed an advanced **object detection system** using YOLOv11 for **underwater human detection**, achieving a **mean Average Precision (mAP) of 0.76**, and addressing real-world challenges in **submarine rescue missions** through innovative dataset preprocessing and transformation techniques.
- **Database Design Proficiency**: Modeled SQL relational and NoSQL schemas to optimize data storage and retrieval for retail inventory systems and log data processing.
- **Award-Winning Collaboration**: Contributed to projects that earned **1st Place in Sustainable Development Goals Hackathon (2023)** and **2nd Place in ELA Hackathon (2023)**, focusing on scalable and impactful data-driven solutions.
- **Commitment to Equity and Diversity:** Experienced in working in diverse environments, fostering inclusivity, and supporting community-focused initiatives.

EXPERIENCE

Data Analyst Intern – Cybersecurity Insights   September 2022 – August 2023

Right Turn Security   Punjab, India

- Designed and implemented **data pipelines** to process real-time log data from intrusion detection systems, ensuring low latency for critical threat reporting.
- Developed **database schemas** to organize and store cybersecurity incident data, enabling seamless querying and efficient reporting.
- Analyzed patterns in historical cybersecurity breaches using **Python (Pandas, Scikit-learn)** to identify high-risk behaviors, contributing to the development of predictive security protocols.
- Collaborated with the team to define **AI/ML standards** for threat detection models, such as anomaly detection and classification of malicious activities.

EDUCATION

Data Science & Machine Learning Diploma   August 2023 – April 2025

Red River College   GPA: 4.361

- Comprehensive coursework in AI and machine learning principles, with hands-on experience in Python and SQL programming.
- Completed practical projects focusing on data analysis, model evaluation, and database management.
- Prepared to apply skills in real-world applications, including dynamic manufacturing environments requiring automated testing solutions.

AWARDS

2nd position holder, ELA Hackathon   November 2023

Hackworks   Winnipeg, Manitoba

Top Applied Research Entry Award   April 2023

Sustainable Development Goals (SDG)   Winnipeg, Manitoba

CERTIFICATIONS

Databases: Advanced Topics in SQL   **Google Data Analytics**

Stanford Online- 2024   Coursera - 2023

MongoDB Python Developer Path   **Certificate in Python & SQL**

MongoDB - 2024   GTB Computer Education - 2023

PROJECTS

All the following projects are available in detail along with the data sets here: gdsai4903 (gdsai4903) / Repositories · GitHub

Underwater Object Detection for Submarine Rescue Missions

This project focused on creating a deep learning-based object detection system using **YOLOv11** to identify humans underwater for submarine rescue operations. The project addressed the challenge of limited datasets for underwater scenarios by leveraging innovative preprocessing and dataset transformation techniques.

Key Features:

- Conducted rigorous **dataset research** to identify suitable underwater datasets.
  - Utilized the **PartSeg dataset** with **CycleGAN** to simulate underwater environments.
  - Created custom datasets by superimposing human images onto underwater backgrounds.
  - Used the **Drowning Detection dataset**, which provided labeled underwater human images.
- Experimented with various deep learning models, including **ResNet50** and **VGG16**, before finalizing on **YOLOv11** for superior performance.
- Achieved a **mean Average Precision (mAP) of 0.76**, indicating reliable detection for real-world applications.
- Refined dataset splits and bounding box annotations, ensuring robust training and validation.
- Technologies Used: TensorFlow, Ultralytics YOLOv11.

Link: https://github.com/gdsai4903/COMP3704_final_project

Machine Learning - Airplane Passenger Satisfaction (Python)

The dataset contained survey responses from airline passengers. The objective of the project was to analyze the data to determine the factors contributing to passenger satisfaction and to predict whether a passenger is satisfied based on these factors. This analysis includes data cleaning, exploratory data analysis (EDA), feature engineering, and building machine learning models.

- Two machine learning models were evaluated to predict passenger satisfaction:
- Decision Tree Classifier
- Support Vector Machine (SVM)

Link: https://github.com/gdsai4903/airplane-passenger-satisfaction-prediction

Python – Online Student Portal

Developed a terminal-based student portal in Python with SQLite for data storage. It allows students to register, log in, manage personal details, upload documents, and pay course fees. The portal includes a status tracking system to monitor student progress and sends email notifications upon fee payment.

Key Features:

- User registration and login
- Profile and document management
- Course selection and fee payment
- Status tracking (Unknown, Candidate, Approved, Enrolled)
- Email notifications for offer letters
- Technologies Used: Python, SQLite, Email Service

Link: GitHub - gdsai4903/online_student_portal

Power Bi - Airbnb Dashboard

This project aims to provide a comprehensive overview of Airbnb listings in Winnipeg using interactive visualizations created with Microsoft Power BI. The dashboard allows users to explore the data and gain insights into different trends and patterns. The Power BI dashboard includes the following features:

- Geographical Analysis: Visualize the distribution of Airbnb listings across different neighborhoods in Winnipeg.
- Pricing Insights: Analyze the pricing trends of listings based on room type, property type, and location.
- Availability Trends: Explore the availability of listings throughout the year.
- Review Analysis: Gain insights into the number of reviews and review scores for different listings.
- Interactive Filters: Use interactive filters to drill down into specific data points and customize the visualizations according to your needs.

Link: GitHub - gdsai4903/airbnb-dashboard