HARSHAVARDHANA MUDDULURU

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Montreal, Quebec, Canada (Open to Re-Locate)

EDUCATION

- **Masters in Applied Computer Science, Computer Science** — ***Sep 2022 - Aug 2024***
  Concordia University — *Montreal*, Canada
- **Bachelor of Engineering, Computer Science** — ***Aug 2018 - Jun 2022***
  Anna university — Chennai, India

WORK EXPERIENCE

- **Data Analyst (Part-Time) – PA Supermarche** — ***Sep 2022 – Aug 2023***
  - **Analyzed weekly sales** trends with Pivot Tables, identifying high-demand products to optimize stock levels & minimize waste.
  - Performance Reporting: Created automated Excel reports to track key metrics, **delivering actionable insights** to management.
  - Insights: Used data-analysis to uncover purchasing patterns, supporting market strategies to enhance customer satisfaction.
  - Forecasting: Assisted with demand forecasting to improve inventory management & reduce overstock.
- **AI Engineer Intern – Bennett University** — ***Dec 2019 - July 2020***
  - Collaborated to develop drone-based search and rescue system using **3D Convolutional Neural Networks** (3DCNN) and **Single-Shot Detector** (SSD) networks to detect distressed individuals from drone video feeds.
  - Coded the system to identify people waving for help, **extract their GPS coordinates**, and send the data to a central database. The system also **reduced redundant data by cropping & storing unique human figures**.
  - Utilized data wrangling techniques to preprocess video data for accurate human detection using 3DCNN.
  - Single-Shot Detector (SSD) was utilized for **rapid & precise human detection**, significantly optimizing system's responsiveness & efficiency in time-sensitive rescue missions, ensuring timely identification and response to critical situations.
  - **Mean Squared Error** (MSE) was employed to perform detailed **similarity checks**, ensuring high accuracy in distinguishing and comparing detected human figures, thereby effectively **reducing redundant data** & improving overall system performance.

ACADEMIC PROJECTS

- **Comparative Analysis of Augmenting Route Algorithms in Graph Networks | Java, Git** — ***Sep 2023 - Nov 2023***
  - Conducted comparative analysis of augmenting route algorithms, including Shortest Augmenting Path, DFS-like, Maximum Capacity, & Random Path, to optimize maximum flow in graph networks, evaluating their performance in terms of efficiency.
  - Implemented **Ford-Fulkerson** as foundational algorithm, achieving a **7% efficiency** improvement with SAP & **5%** efficiency with **DFS-like algorithm** in sparse networks, effectively reducing iterations & computational complexity.
- **Open Tracks Concordia | Java, Android, Maven, Git, Agile** — ***Jan 2023 - Apr 2023***
  - Improved open-source real-time application by **adding weather-display & fixing bugs** to enhance user experience.
  - Integrated Weather APIs to fetch & incorporate external weather data, providing **real-time updates** within app.
- **Flight Data Analysis using MPI and Docker | Python, MPI, Docker** — ***Sep 2022 - Dec 2022***
  - Developed Python scripts to analyze data, utilizing **Message Passing Interface (MPI)** enabling efficient data distribution.
  - Created a Docker environment with multiple containers & analyzed efficiency of script with different numbers of containers to implement Distributed System Design concepts like **parallelism, fault tolerance, scalability**.
- **Heart Rate Monitoring System | Python, Arduino, Flask, MySQL, HTML/CSS** — ***Jan 2021 - Apr 2021***
  - Developed **IoT**-based heart rate monitoring system using Arduino & pulse sensor, with alerts **for abnormal pulse rates**.
  - WebApp developed for **remote monitoring**, allowing real-time tracking of heart rate data & monitor pulse activity.
- **Real-Time Driver Drowsiness Detection System | python, NumPy, OpenCV, Keras, DL** — ***Aug 2020 - Oct 2020***
  - Developed alert system to detect & monitor driver drowsiness, reducing response time to fatigue **within 2 seconds** & addressing major traffic accident causes by providing real-time alerts & enhancing road safety.
  - Employed **OpenCV** for real-time eye movement analysis, enabling precise detection of driver eye states. Used **Keras** to build & train deep learning models (VGGNet, ResNet), achieving **93% accuracy** in drowsiness detection.

CORE SKILLS

- **Programming Languages & Tools:** Python, Java, C, C++, HTML/ CSS, JavaScript, Docker, Git
- **Data Science & Machine Learning:** NumPy, Pandas, Scikit-Learn, OpenCV, Matplotlib, Predictive Analysis
- **Visualization Tools:** Power BI, Tableau, Microsoft Excel (Advance)
- **Database Management:** ETL, MySQL
- **Soft skills:** Problem-Solving, Communication, Teamwork

CERTIFICATIONS

- **Deep Learning for Computer Vision** - *Certified by NVIDIA Deep Learning Institute*
- **Preparing Data for Analysis with Microsoft Excel –** *Certified by Microsoft*