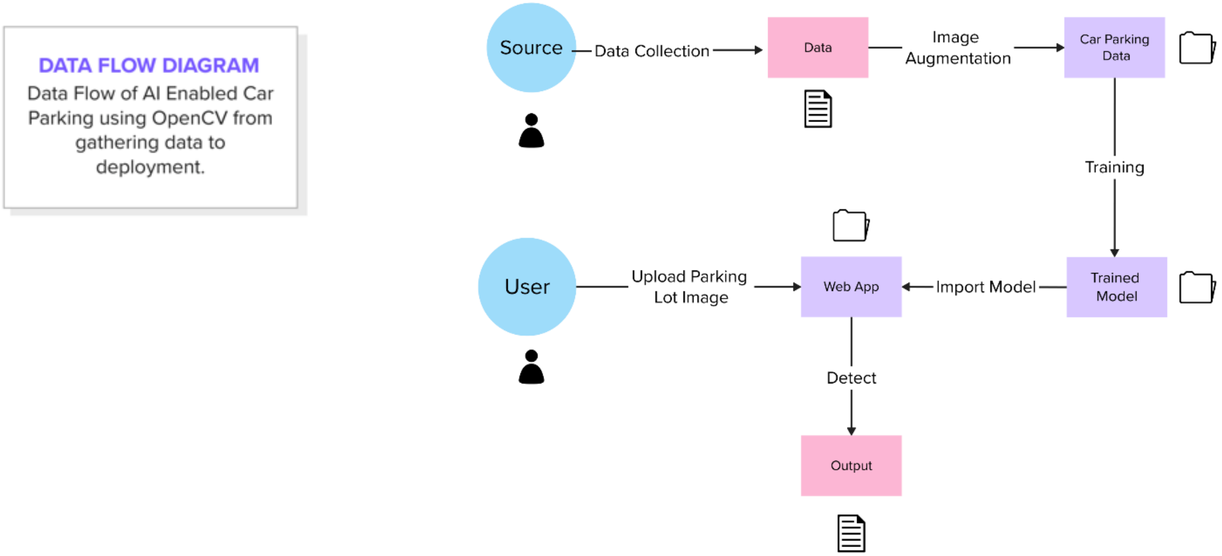
Project Design Phase-II

Data Flow Diagram & User Stories

Date	23-10-2023
Team ID	Team-593009
Project Name	AI Enable car parking using OpenCV
Maximum Marks	4 Marks

Data Flow Diagram

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.



User Stories

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance Criteria	Priority	Release
Car Parking Operators and Service Providers	Project setup & Infrastructure	USN-1	**Set up the development environment** with the required tools and frameworks to develop and deploy the AI-enabled car parking solution using OpenCV.	Successfully configure the development environment with all necessary tools and frameworks.	High	Sprint 1
Municipalities and Local Governments	Data collection	USN-2	**Gather a diverse dataset** of parking lot images captured via cameras in various urban settings to train the AI model effectively.	Collect a diverse dataset with images of different parking scenarios, including crowded lots, empty lots, and various lighting conditions.	High	Sprint 1
Project team	Data preprocessing	USN-3	**Preprocess the collected dataset** by resizing images, normalizing pixel values, and splitting it into training and validation sets.	Successfully preprocess the dataset, ensuring it's ready for model training.	High	Sprint 2

Project team	Model development	USN-4	**Explore and evaluate different computer vision models** using OpenCV for parking spot detection and classification to determine the most suitable model for the project.	Experiment with various OpenCV-based models to choose the most accurate and efficient one.	High	Sprint 2
Project team	Model development	USN-5	**Train the selected model** using the preprocessed dataset and monitor its performance on the validation set.	Train the model and verify its accuracy and effectiveness in detecting empty parking spots.	High	Sprint 3
Project team	Model development	USN-6	**Implement real-time video processing** for continuous parking spot detection and tracking using OpenCV.	Successfully process live video footage to identify and count available parking spots.	Medium	Sprint 3
Project team	Model deployment & Integration	USN-7	**Develop a Flask-based web application** to deploy the trained model. Integrate the model's output into the web app, allowing users to access the available parking spot count	Successfully develop and deploy a web application using Flask that integrates the trained model and provides parking spot information to users.	Medium	Sprint 4

			through a user-friendly interface.			
Testing & quality assurance	Testing & quality assurance	USN-8	**Conduct extensive testing and quality assurance** of the model and the web application to identify and report any issues, bugs, or inaccuracies. Optimize model hyperparameters based on user feedback and testing results.	Conduct thorough testing, ensure the model's accuracy, and fine-tune it based on user feedback and testing results.	Medium	Sprint 5