NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

School of Computer Science and Engineering
College of Engineering

Data Analysis and Visualization

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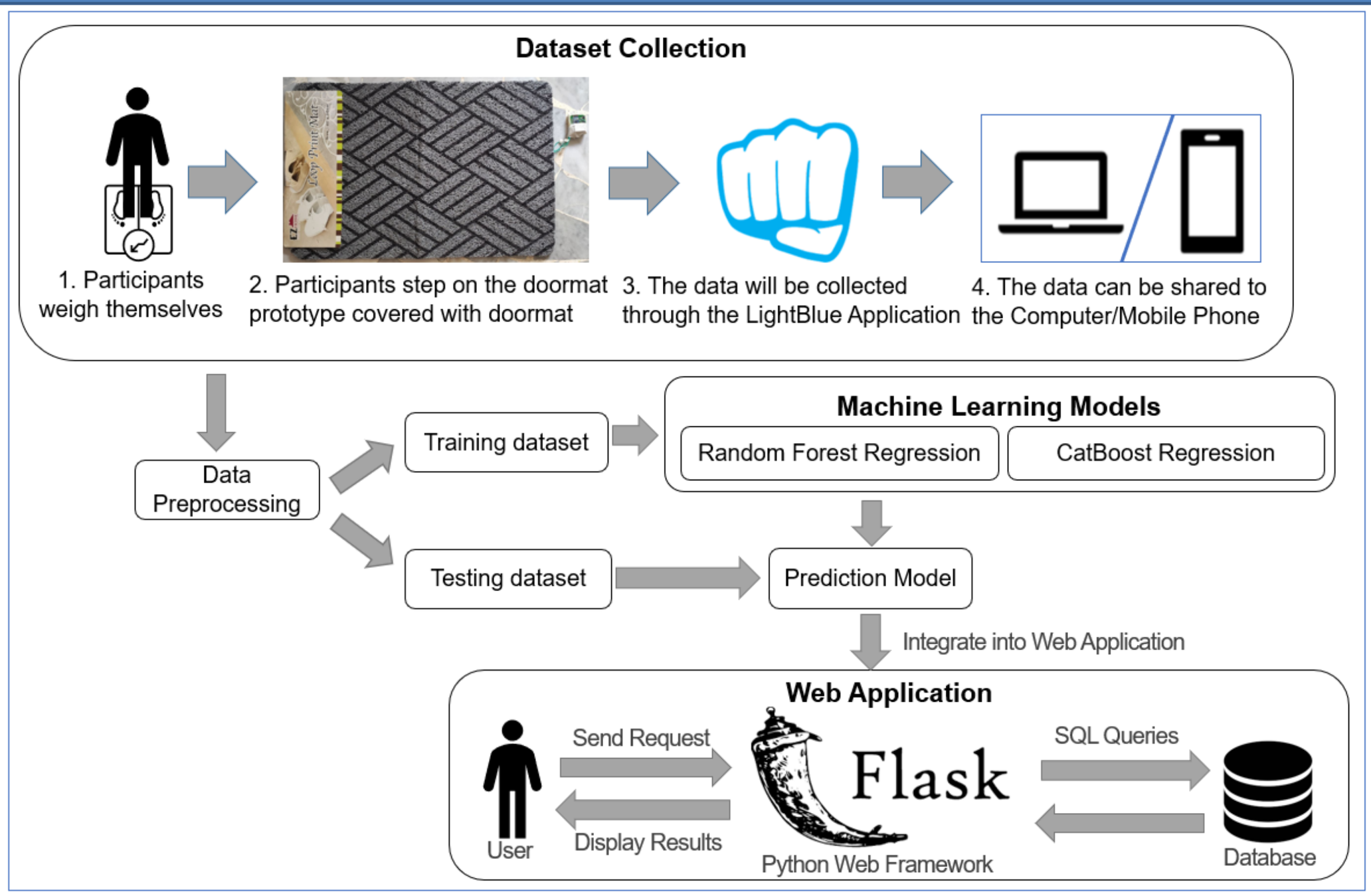
Project Objectives

This project aims to develop a web application that uses a prediction model using machine learning models to determine a person's weight when they step over the doormat prototype. The web application can send a warning notification to alert the user whenever unintentional weight loss is detected.

System Architecture Overview



Experimental Results

Dataset	Model	R-Squared	MAE	RMSE	MAPE
Sum	**RandomForestRegressor**	**0.9936**	**0.5121**	**0.7501**	**0.7034**
Sum	**CatBoostRegressor**	**0.9907**	**0.6700**	**0.9048**	**0.9325**
AB	RandomForestRegressor	0.9415	1.6203	2.2735	2.2164
AB	CatBoostRegressor	0.9643	1.4133	1.7764	1.9575
BA	RandomForestRegressor	0.9401	1.6130	2.3015	2.1980
BA	CatBoostRegressor	0.9639	1.3535	1.7850	1.8714

Using GridsearchCV method on the sum dataset:

Dataset	Model	R-Squared	MAE	RMSE	MAPE
Sum	RandomForestRegressor	0.9936	0.5121	0.7501	0.7034
Sum	**RandomForestRegressor_GridSearchCV**	**0.9938**	**0.5030**	**0.7420**	**0.6910**
Sum	CatBoostRegressor	0.9907	0.6700	0.9048	0.9325
Sum	CatBoostRegressor_GridSearchCV	0.9919	0.6279	0.8459	0.8709

User Interface