Network Nexus

Smart Sleep Detection

Code Pipeline

Create Dataset

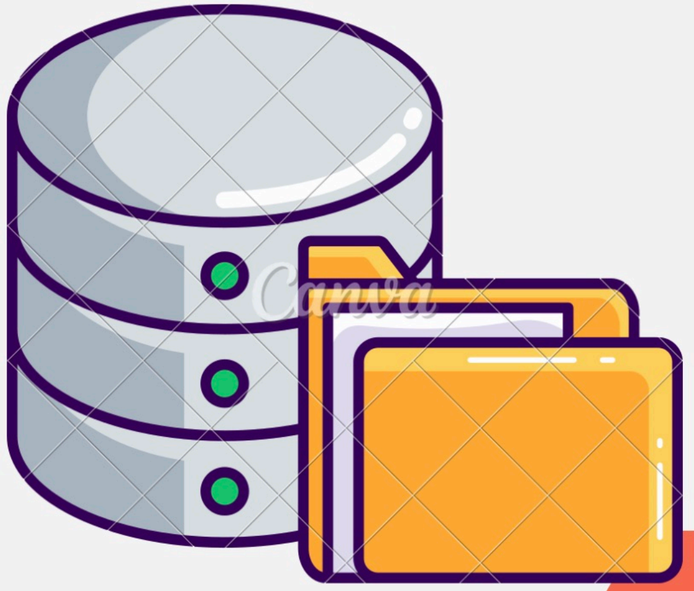
Training Model

Model Quantisation

Live Detection

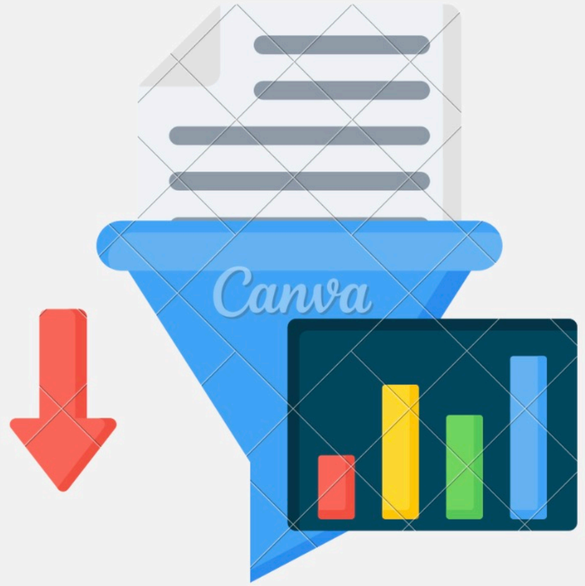
Dataset Creation

- We capture the user’s video in both drowsy and normal states
- Then break these videos into frames for further processing



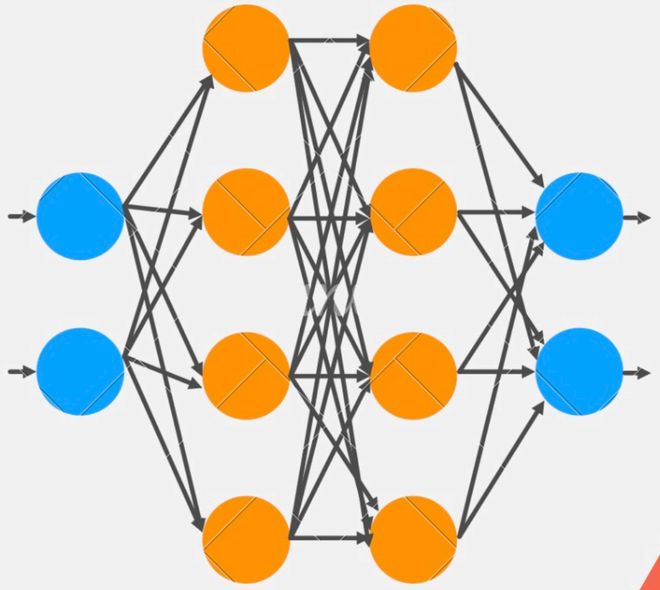
Feature Extraction

- We then extract data from each frame
- Using opencv, we extract information like EAR and MAR ratios and save them to csv



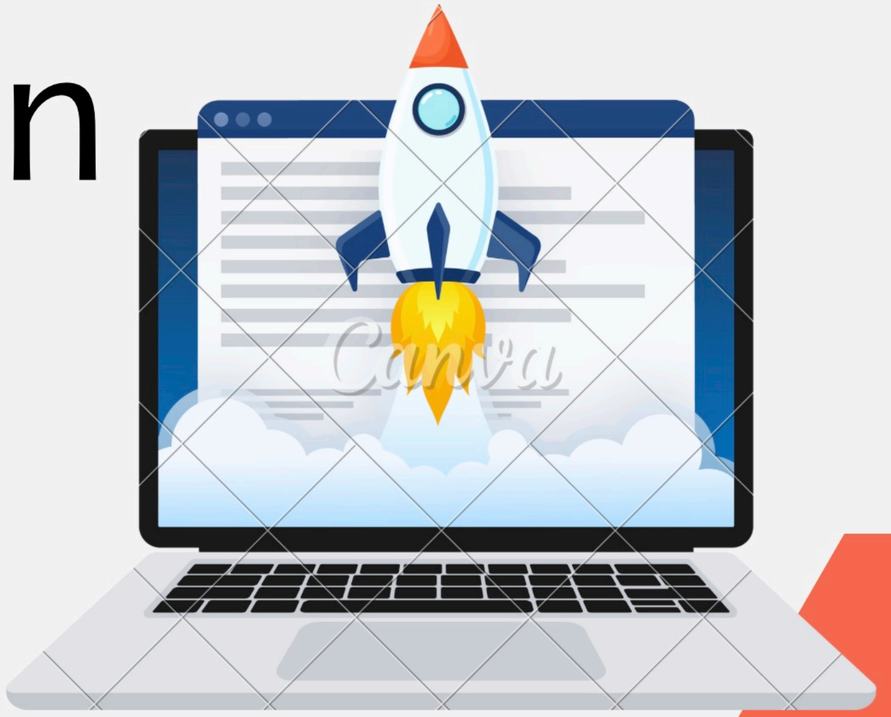
Model Creation

- We create a neural network model and train the model to learn driver states
- Also we set drop out layer so that model does not overfit on any datapoint



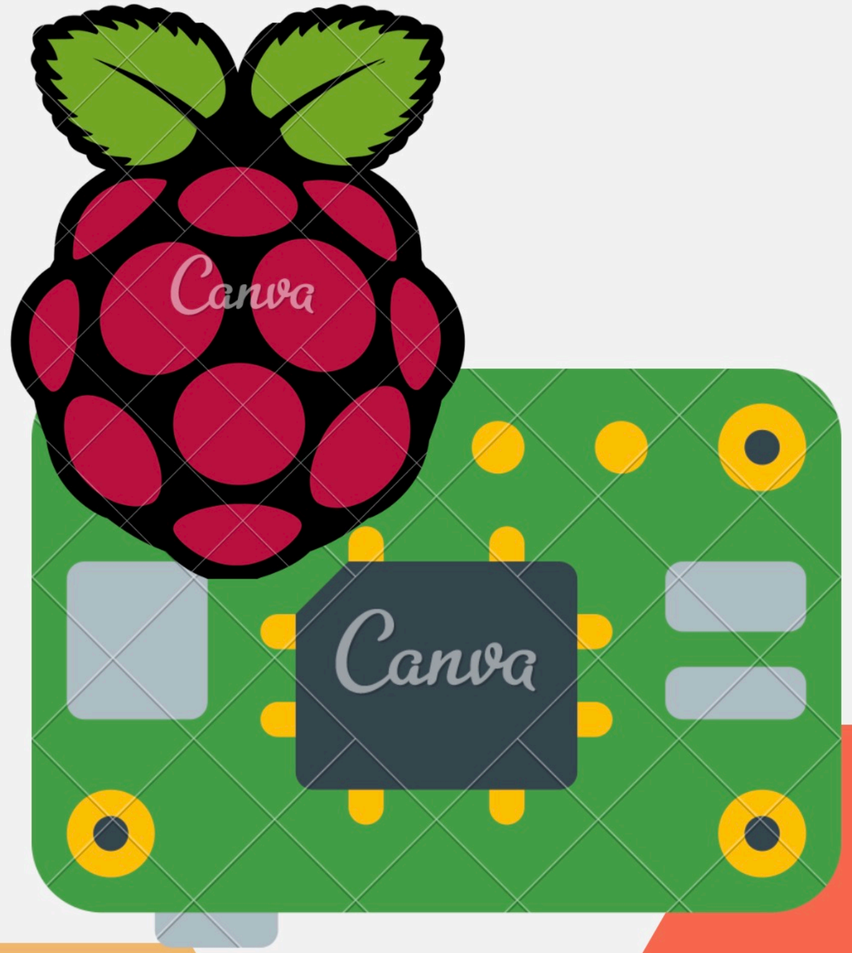
Model Optimisation

- We optimise the newly created model and quantise it weights to reduce the model size
- The reduced model requires less computation allowing it to run to edge devices



Real Time Detection

- Finally we run the program on the raspberry pi for live detection with webcam



Team Contibution

Mridul Gupta

Contribution: 35 %

Research Paper Analysis,
Model Optimisation, Coding

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Contribution: 35 %

Research Paper Analysis,
Model Optimisation, Coding

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Contribution: 30 %

Research Paper Analysis,
Report Preparation

Thank You!!!

- **Questions?**