Predicting Transmission Patterns in vehicles with Manual, AMT and iMT gear shift using Deep Learning

Project Proposal Presentation

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Project Guide

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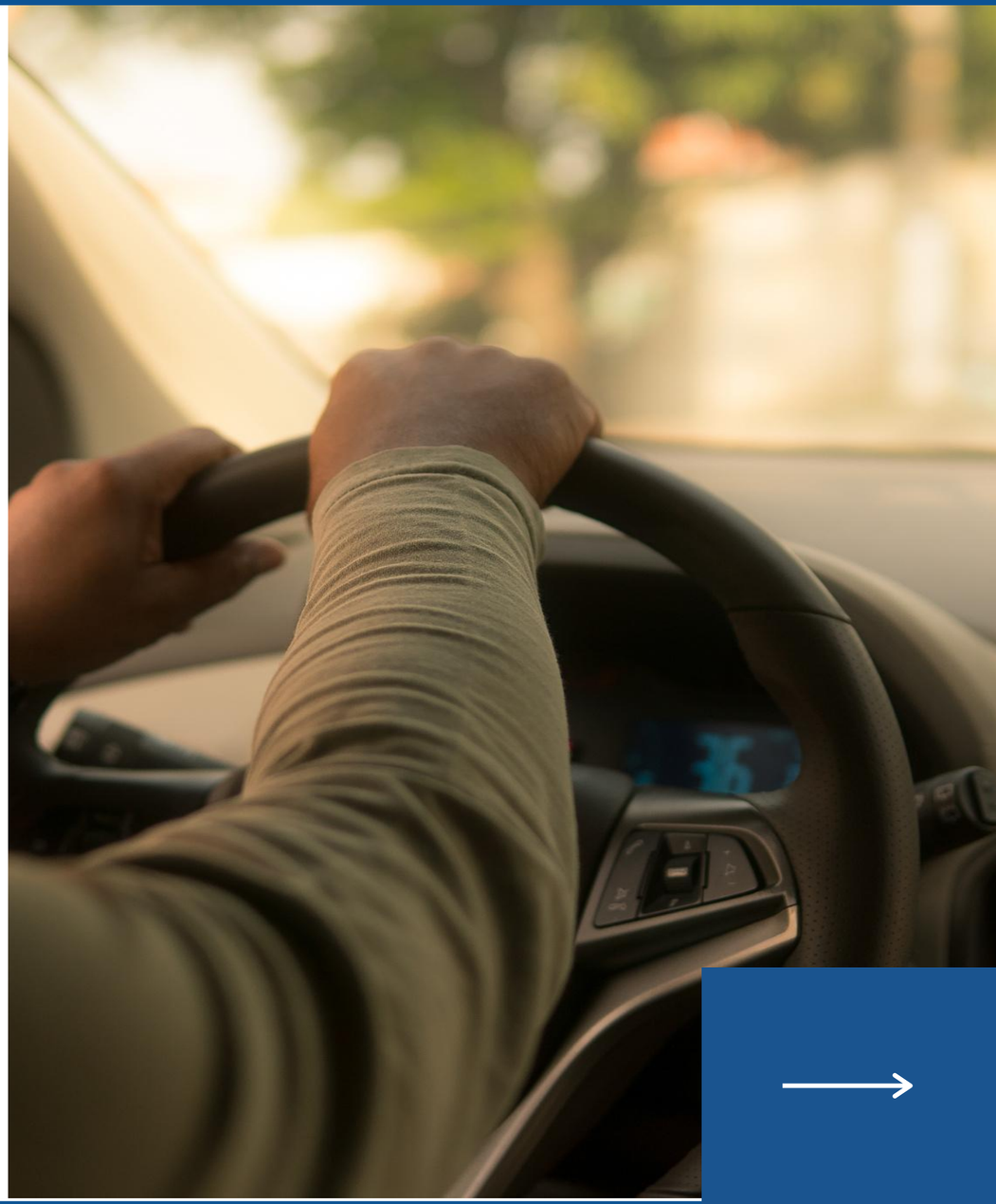
Agenda

1. Problem Statement
2. Dataset description
3. Approach
4. Computer Vision
5. Machine Learning Models
6. Goals

Do we drive in the right way???

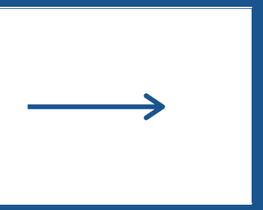


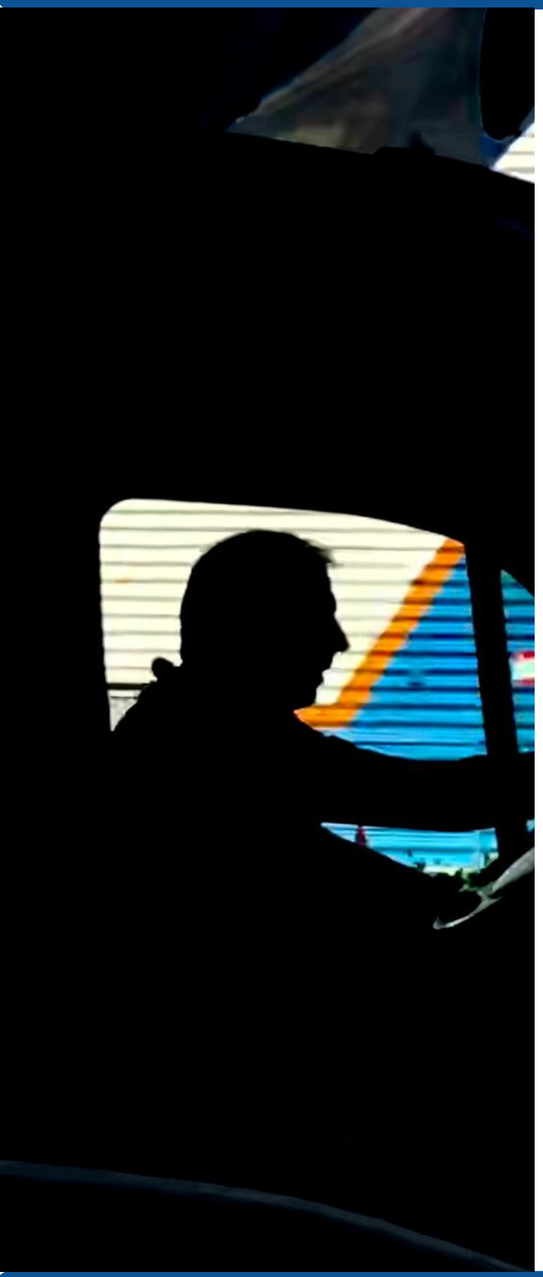
What your car feels?

- Wrong gear
- Too much RPM
- Low mileage

Whats the solution?

Deep learning and computer vision to predict the optimum gear



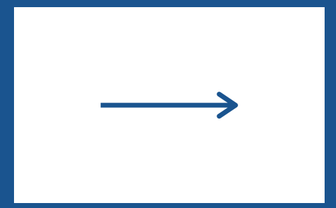


LET'S GET TO KNOW HOW YOUR CAR FEELS

DATASET CONTENTS

ECU and TCU Data
• RPM • THROTTLE POSITION • ENGINE TEMPERATURE • GEAR SHIFT (CLASS LABEL) • TORQUE

OUR APPROACH



COMPUTER VISION

DETECTING SLOPES - USING OPEN CV

Find slopes in the road and inform the algorithm

OBJECT DETECTION - USING YOLOV5

Send prompts to the system if any objects are there in front of the vehicle

Machine Learning

RANDOM FOREST

The dataset is trained with Random Forest algorithm

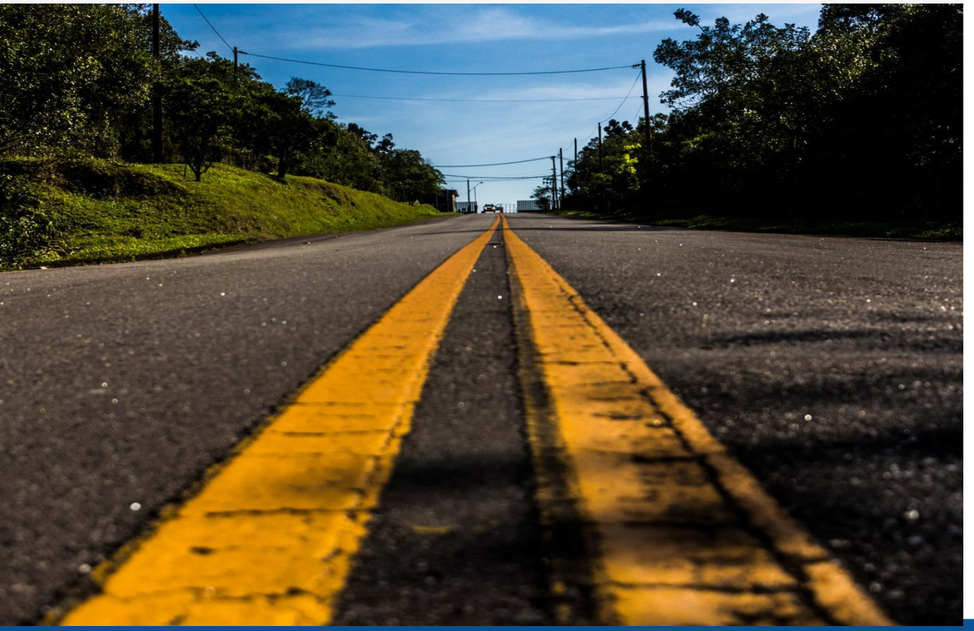
DEEP NEURAL DECISION FORESTS

A novel approach that unifies classification trees with the representation learning functionality known from neural decision forests, by training them in an end-to-end manner

TRADITIONAL CLASSIFICATION ALGORITHMS

knn, svm, naive bayes, decision tree classifier, logistic regression

GOALS



01 OPTIMUM GEAR PREDICTION

Users will be recommended with the optimum gear for a wide range parameters based on their ECU data

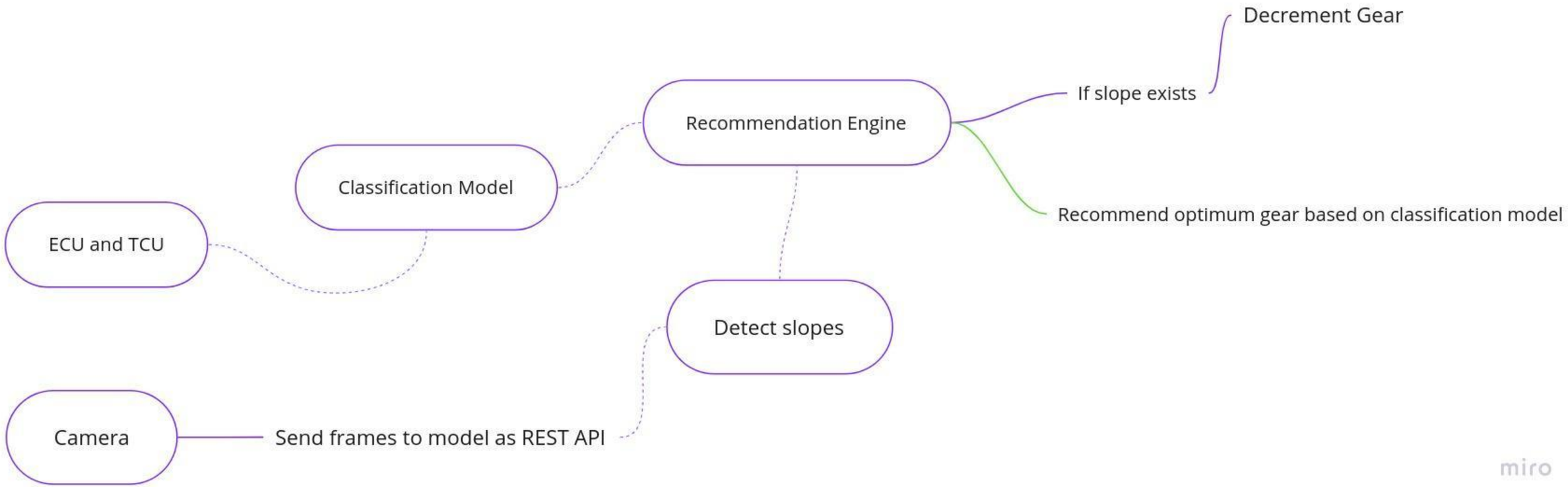
02 BETTER MILEAGE

Vehicles can save a fuel by travelling with the optimum mileage

03 SAFE DRIVING

Since vehicles are intended to use the optimum gear, issues such as over heating, low engine power are eliminated to an extend

Diagram


Decrement Gear
If slope exists
Recommendation Engine
Recommend optimum gear based on classification model
Classification Model
ECU and TCU
Detect slopes
Camera
Send frames to model as REST API
miro

Thankyou