**TRIP BASED MODELLING OF FUEL CONSUMPTION IN MODERN FLEET VEHICLES**

**IDEATION 1:**

* Providing data and research analysis of fuel economy potential by country and region.
* Supporting national and regional policy makers.
* Raising awareness among stakeholders (e.g. vehicle manufacturers) through outreach and campaigns.

**IDEATION 2:**

* Creating a database with data collected using PEMS devices during on-road testing of modern heavy-duty vehicles.
* Eliminating test trips that are less than 5 min duration as the trips may not capture information sufficient for the model to generalize well.
* Selecting the parameters that affect the fuel consumption based on parameters collected and domain knowledge.

**IDEATION 3:**

* Performing correlation analysis on the input parameters selected to eliminate multi-collinear variables.
* Developing the neural networks and identifying the network with best-performing hyper parameters. The hyper parameters include the number of hidden layers, number of hidden neurons per layer, learning rate, and optimization function.
* Calculating the correlation co-efficient on the reduced database using the best-performing model selected.

**IDEATION 4:**

* **Monitor fuel costs**. They incorporate data about fuel transactions into analytics and learn what brands of fuel bring better economy, compare fuel usage across vehicles, break down fuel spend, and generally improve your fuel buying behaviour.
* **Incorporate good driving habits**. By collecting information about unnecessary speeding, harsh braking, and excessive engine idling, you can support efficient drivers with incentives and provide training for drivers who have inefficient driving habits.
* **Capture and prevent fuel theft and leakage**. Fuel monitoring and anti-siphoning devices can update you on fuel amounts in trucks and on-site tanks and send alerts about fuel levels.