**Background**

- Various sensors installed on an electric vehicle record different road condition parameters as shown in the Fig. 1. The AI/ML model predicts the velocity and acceleration of the car \((t_0 + N)\) seconds into the future, where \(t_0\) represents the current time and \(N\) represents the time-span of prediction. This data is commonly known as the future mission profile.

**Tasks**

- **Development of Car Model**
  - Development of a model which takes the predicted future mission profile as the input and then evaluates in real time the mechanical power loss \(P_{\text{mech}}(t_0 + N)\) of an electric car.
  - **Software to be used**: MATLAB and Simulink.

- **Development of Electric Drive Model**
  - Development of a model which simulates the drive train of an electric vehicle. This model should translate the mechanical power loss obtained in the previous step to the 3-phase load current \(I_{\text{UVW}}(t_0 + N)\) consumed by a 3-phase electric motor within the car in real time.
  - **Software to be used**: MATLAB and Simulink.

**Skills**

- Knowledge of MATLAB and Simulink.
- Knowledge of vehicle dynamics to evaluate \(P_{\text{mech}}(t_0 + N)\).
- Knowledge of 3-phase electric motors to evaluate \(I_{\text{UVW}}(t_0 + N)\).

**HiWi Contract Information:**

- **Working Hours**: 40 hours per month.
- Initial contract duration will be of 1 month, which can be extended further.