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**Date of Joining:** 18.01.2016

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**Laboratory:** E-mobility Research Laboratory

**Area of research:** Vehicular Electronics

**Title/Topic:** Some aspects of Eco-routing System in Electric Vehicles (Tentative)

**Summary:** The calamitous effect of the industrial revolution has had severe consequences on the environment. The development and use of electric vehicles have become almost a necessary alternative. The work emphasizes on the use of electric vehicles and their potential in minimizing energy consumption. The proposed system will consist of a road load model which shall enable estimation of tractive effort of the vehicle, thereby calculating the energy consumption of the vehicle during a specific trip. The model shall take into account various factors which affect energy consumption in an EV. They include vehicle dynamics, rolling resistance, aerodynamic drag, etc. Analysis will be based on road grade, a factor which has been neglected in most fuel consumption models and not been considered in any eco-routing systems. A test EV has been developed in the laboratory for validation of results.

**Experimental set-up:**



A battery driven electric vehicle has been designed and developed in the laboratory. It is a rear wheel driven neighborhood EV. Sensors for analysis of various parameters like force, speed, acceleration, road grade, current, etc. has been attached to the EV. This test EV uses two separate 24 Volts-350 Watt Permanent magnet DC motors (PMDC) placed at the rear end of the vehicle. These motors are used to drive the rear wheels of the EV which in turn propel the vehicle forward. The EV uses dedicated drive circuits which help in running the motors. 24 Volt Lead acid batteries have been used as the power source for propulsion. Simulations have been performed on MATLAB environment.

