Master Thesis Project at CEVT

Title: Adapt functionality to next generation vehicle users

CEVT
China-Euro Vehicle Technology CEVT is a joint engineering and development center for future C-segment cars, addressing the needs of both Volvo Cars and Geely Auto.

Background
Today we are in the beginning of a new era when it comes to the propulsion systems in vehicles. Electricity is evolving into the automotive market and will in a foreseeable future overtake the position as the number one source of energy in vehicles. With this a new generation users will enter the market with new expectations which are not based on the conventional vehicles, they are also coming from an always connected society. We believe this will cause the automotive industry to adapt and face a major change in expectations, maybe the largest in decades.

As of today the major technical challenge to win over the customer is to win over the conventional car expectations. This is often expressed in that there is very little energy carried onboard the car which makes the flexibility for uncertainties in the travel the major obstacle. The approach we would like to tackle this with is to make sure that we use the energy in an intelligent way meeting all customer demands.

Scope
The task is to investigate the market expectations for future vehicles when it comes to functionality in relation to the propulsion system. Charging will be central in the customer interaction and will need to be utilized in a way that satisfy the customer, the expectation of the customer when interacting with the vehicle to be able to use it as wanted need to be evaluated.

The other part of the thesis work focus is to increase the energy efficiency in a given route by utilizing that the route is known. The part we want to focus on here is to fill up the energy reserves in the vehicle in the most efficient way. The parameters that will effect this the most shall be identified and a model on how to incorporate them into a model to be able to prepare (fill up the energy reserves) a vehicle to complete the defined mission.

Thesis overview
- Definition of project
- Future customer interviews and information scan
- Literature study and experiments to find out parameters influencing energy efficiency (energy consumption)
- Simulations to prove the benefits of the known route
- Create a model of energy management strategy for a given route
- Documentation and final presentation

Prerequisites
- Social skills and an interest in interaction between human and machines
- Good knowledge in mathematical models, optimization, simulation and control strategies

The duration of the thesis work is 20 weeks and the work will be carried out at CEVT headquarters in Lindholmen.

Suitable Student Background
We believe you are a Masters student within:
- Automotive Engineering
- Software Engineering and Technology
CEVT is a joint engineering and development centre for future C-segment cars, addressing the needs of both Volvo Cars and Geely Auto. CEVT covers vital aspects of passenger car development – from the joint architecture, to power train and drive line components, to top hat engineering as well as the vehicles’ exterior design.

The modular strategy will deliver on the premium aspects that Volvo Cars requires, as well as on Geely Auto’s demands, in order to compete in the automotive market.

- Computer Science – algorithms, languages and logic

Other areas of education combined with an interest in electrified vehicles is also interesting.

**Starting date**
January 2018

**Number of students**
1 or 2

**Contact person**
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