Reducing Fuel Consumption by Providing In-situ Feedback on the Impact of Current Driving Actions

Reducing CO_2 production by changing driver's behavior

User interfaces can increase the awareness of energy consumption by using persuasive technologies

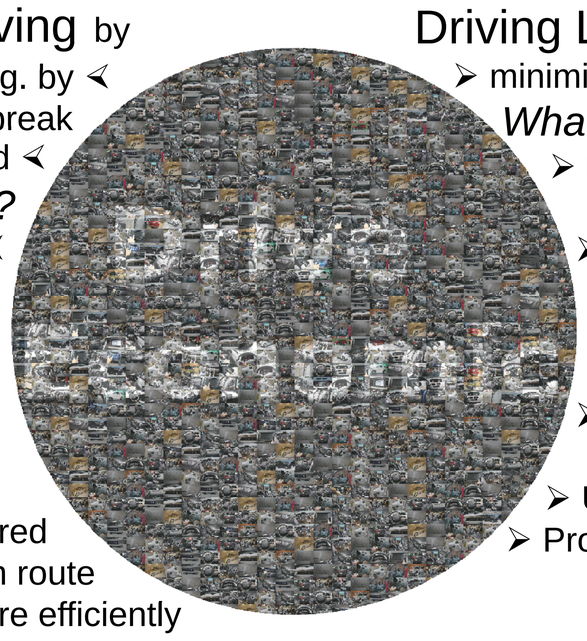
Potential for Saving Energy

More efficient driving by

minimizing fuel-expensive actions e.g. by ➢
reducing the need to accelerate and then break
reducing average speed ➢

What do we need for that?

Information about projected state (e.g. slower traffic ahead) ➢
Predictions about how much fuel will be used when driving at ➢
certain speeds to a specific destination



Driving Less by

➢ minimizing driving time

What do we need for that?

➢ Reducing time drivers are looking for a parking spot
by providing additional information on free parking spaces
➢ Exact up-to-date information e.g. "If you happen to see a parking space now – take it! You will only have to walk *X minutes and it potentially saves you* driving another *Y minutes."*
➢ Reduce number of trips e.g. by suggesting merging trips based on recent behavior
➢ Using alternative means of transport
➢ Providing community platforms for mobile and ad-hoc ridesharing

Design Proposal - Personal Best:

Visual representation of the current fuel consumption compared to the best fuel consumption at any point of a frequently driven route
Idea: Beat the best fuel consumption and drive more efficiently

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Focus Group Results

(7 drivers, 3 female, age 26-31)

Awareness of Energy Usage

Awareness of cost is limited ➢
„How much does a trip by car to your workspace cost?" ➢
It took people a long time to answer the question
„How much does a trip by bus/train to your workspace cost?" ➢
The responses came very quickly
Higher awareness to price per liter of gas ➢
than actual driving cost

Personal Best

The idea was generally considered interesting by the focus group but several issues were raised:

➢ Could incur additional stress for the driver
➢ There are many external factors influencing driving behavior like heavy traffic
➢ After a certain time, one will achieve a score that is hard to beat
→ goal achieved the driver found his most efficient way to drive

Suggestions

➢ Comparing fuel efficiency scores between different driving environments such as on the highway versus in the city instead of for overall driving
➢ Visual presentation must be easy to interpret and unobtrusive
➢ Extension of "Personal Best" to a community of drivers to see how one compares to others driving the same or a similar route

Summary

There are two dominant ways to save energy: ➢
1) more efficient driving and 2) driving less
Create awareness of economical and environmentally-friendly driving behavior ➢
in a pleasant and potentially playful way
The driver should be able to make an informed decision about whether or ➢
not it is worthwhile to consume more fuel (and save time) or not

➢ Much of the functionality can be integrated as extra features in navigational aids
➢ It is important not to impair the driving experience when trying to reduce the fuel consumption
➢ Community opportunities
- mobile and ad-hoc ridesharing
- Compare fuel consumption with other drivers

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