



FROM THE FORD “SCI LAB”

May 10, 2011: FORD USING GOOGLE API TO OPTIMIZE VEHICLE PERFORMANCE

FROM THE LABS OF FORD MOTOR COMPANY researchers are harnessing the power of cloud computing, analytics and Google innovation to identify technologies that could make tomorrow’s vehicles smart enough to independently change their behavior and work with the driver as a team to deliver optimal driveability and fuel efficiency.

HOW IT WORKS: Putting Ford’s open-source business model into action, Ford researchers are taking and applying Google’s Prediction API tool to more than two years of their own predictive driver behavior research and analysis. The Google API can convert information such as historical driving data – where a driver has traveled and at what time of day for example – into useful real-time predictions, such as where a driver is headed at the time of departure.

Ford is hoping to use this type of cloud-stored data to enable a vehicle to essentially optimize itself to perform in the best manner determined by the predicted route. How? Consider this hypothetical situation where the driver of a plug-in hybrid electric vehicle (PHEV) opts to use the service:

- An encrypted driver data usage profile is built based on routes and time of travel
- Upon starting the vehicle, Google Prediction will use historical driving behavior to evaluate against the current time of day and location to develop a prediction of the most likely destination and how to optimize driving to and from that location
- An onboard computer might say, “Good morning, are you going to work?” If the driver is in fact going to work, the response would be, “Yes,” and then an optimized powertrain control strategy would be created for the trip. A predicted route of travel could include an area limited by electric-only driving. Therefore, the plug-in hybrid could program itself to optimize energy usage over the total distance of the route in order to preserve enough battery power to switch to all-electric mode when traveling within the EV-only zone

“The Google API allows us to utilize information that an individual driver creates over time and make it actionable,” said Ryan McGee, technical expert, Vehicle Controls Architecture and Algorithm Design, Ford Research and Innovation. “Between Google Prediction and our own research, we’re discovering ways to make information work for the driver and help deliver optimal performance.”

POTENTIAL CONSUMER BENEFIT: Driver behavior directly correlates to fuel economy. Understanding this behavior and developing accurate protocols to predict it can help Ford optimize vehicle control systems so car and driver can work better to deliver higher mpg.

WHAT’S NEXT: Ford researchers are presenting a hypothetical case of how the Google API could alter performance of a PHEV at the 2011 Google I/O developer conference. Work is under way to study the feasibility of incorporating variables like driver style and habits in the optimization process.

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