

Extended Abstract

Traffic safety has traditionally been addressed through discrete improvements to the car by manufacturers; improvements to the driver through education and enforcement; and, improvements to the infrastructure by government. While none of these approaches is incorrect, they are incomplete. We believe that further opportunities for enhancing safety are to be found in employing ambient intelligence concepts and pervasive computing technologies to creatively exploit the overlapping and interactive nature of the role of the vehicle, driver, and driving environment in accident prevention and mitigation. We also apply wellness, as developed in the fields of health behavior and sports psychology, as an integrating framework to envision driver performance as dynamic and improvable. From this perspective, we have proposed the development of an AwareCar. This conception of an aware vehicle includes detection of driver state (fatigue or stress); display of that information to the driver to improve the driver's situational awareness in relation to road conditions and their own 'normal' driving behaviors; and support for in-vehicle systems to refresh the driver and thereby improve performance and safety. Progress in the development of this concept is discussed in the context of the ongoing research, testing, and validation of the MIT AwareCar platform.

Coughlin, J.F., Reimer, B., & Mehler, B. (2011). Monitoring, managing, and motivating driver safety and wellbeing. *IEEE Pervasive Computing*, 10(3), 14-21.