Automated Driving and Autonomous Functions on
Road Vehicles

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abstract

In recent years, road vehicle automation has become an important and popular topic for research and development in both academic and industrial spheres. New developments have received extensive coverage in the popular press, and it may be said that the topic has captured the public imagination. While this follows a similar surge of interest - and subsequent hiatus - of Automated Highway Systems in the 1990s, the current level of interest is substantially greater, and current expectations are high. It is common to frame the new technologies under the banner of self-driving cars robotic systems potentially taking over the entire role of the human driver, a capability that does not fully exist at present. However, this single vision leads one to ignore the existing range of automated systems that are both feasible and useful. In this presentation, a review is given of the evolution of the intelligent vehicle and the supporting technologies with a focus on the progress and key challenges for vehicle system dynamics. A number of relevant themes around driving automation are also explored. One conclusion is that increased precision is needed in sensing and controlling vehicle motions, a trend that can mimic that of the aerospace industry, and similarly benefit from increased use of redundant by-wire actuators.