

Architecture d'un Organe de Survie pour la Conception de Véhicules Autonomes Agiles et Sûrs

Driving automation is often presented as a viable solution to the prevailing challenges of sustainable mobility. It has the potential to create a paradigm shift in transportation technology, by providing a medium for cleaner, safer and more efficient means of transportation, while providing a better user experience overall. However, designing a dependable Automated Driving System is a challenge in itself. Current systems lack common sense and have trouble behaving in a truly cautionary manner, which is why a fallback-ready user is expected to take over in the event of a performance-relevant system failure affecting the dynamic driving task. Yet it seems unwise to rely on human drivers to act as a safety net for the purpose of offsetting the lack of maturity of Automated Driving Systems, for automation changes their active involvement into a monitoring role and creates new challenges, such as complacency, automation dependency, lack of understanding and misuse. This work places emphasis on the design of dependable and adaptable Automated Driving Systems. In particular, the thesis addresses the problem of designing a new ADS primary subsystem, whose role it is to monitor the state of the ADS, supervise its actions and respond as needed to guarantee the safety of its occupants and of others.

Mots-clés : Véhicule autonome, sécurité, architecture, modes dégradés, stratégie de repli

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