

UNIVERSITY OF SOUTH FLORIDA

Major Research Area Paper Presentation

Autonomous Driving Frameworks – A Literature Survey

by

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For the Ph.D. degree in Computer Science and Engineering

Tremendous progress in the Automated Driving System (ADS) technology has been made since it was first introduced in the DARPA challenge. The general architecture of ADS has evolved into modular and hierarchical, helping the researchers worldwide to work on individual problems independently and in parallel. More and more researchers, as well as industry experts, are contributing to ADS development. Open-sourcing their research is leading to rapid development in ADS technology with higher levels of autonomy. Yet, there is no single vehicle on the road with a Society of Automotive Engineers (SAE) defined level 5 autonomy (i.e., complete autonomy with no human intervention) as there are still several open challenges that need to be met. In this major area presentation, we will first introduce ADS technology, define the five levels of autonomy, and identify the major technical challenges. Secondly, we will review the high-level ADS architectures implemented by Intelligent and Autonomous Robotic Automobile (IARA) and Autoware frameworks followed by a generic architecture. Thirdly, we will present a wide range of sensors currently in use by autonomous vehicles. Fourthly, we will discuss in detail the core functionalities of ADS, namely, localization, object detection and tracking, planning, and control. Finally, we will survey the open-source frameworks and simulators available to implement and test an ADS.

Thursday, April 22nd, 2021

10:00 am

Online (Microsoft Teams)

Please email omkardokur@mail.usf.edu for more information

THE PUBLIC IS INVITED

Examining Committee

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