

MASTER THESIS

DYNAMIC ARCHITECTURE DESCRIPTION LANGUAGE

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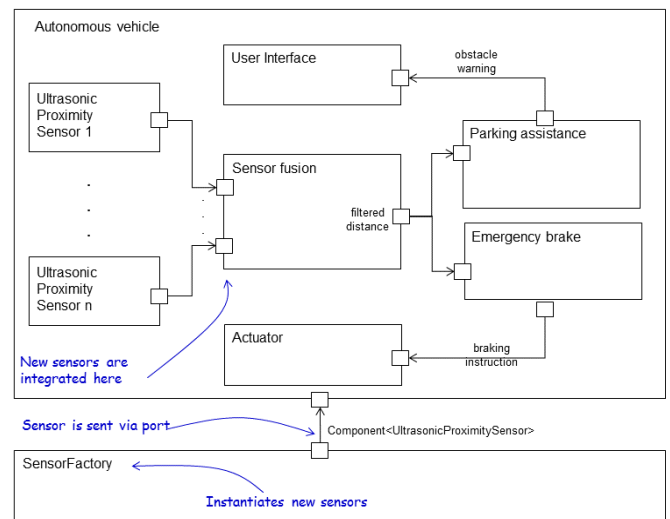
Task

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MOTIVATION

MontiArc is an Architecture Description Language (ADL) used for the design of complex software architectures, such as controllers for autonomous vehicles, robots, ubiquitous software, or distributed systems. While ADLs tend to be static, real world scenarios often require dynamic reconfigurations of software systems. In MontiArc architectures are described by defining functional components and interconnecting them statically via strongly typed interfaces and connectors (cf. picture below). In scenarios where the world is constantly changing new components may appear and old ones may disappear at any time. It is therefore necessary to have language constructs allowing for the description of such dynamic models.

The aim of this thesis is to develop an extension for the MontiArc ADL allowing for dynamic creation and exchange of new components and their integration into existing ones to achieve truly **dynamic software architectures**. Therefore, the necessary MontiArc language elements, e.g., its syntax, have to be designed, implemented and tested. Furthermore, research questions concerning the dynamic configuration of the new components need to be answered. The results will be evaluated by using the language to design models in the domain of autonomous vehicles collaborating with each other to improve traffic throughput and safety.



REQUIRED SKILLS

- Highly Motivated
- Object-oriented development
- Java

DESIRABLE SKILLS

- Model Driven Engineering
- Attended the Generative Software Engineering Course

For further information of the concrete Master thesis please make an appointment with E. Kusmenko or K.Adam.