

Analysis of AMDs Versal System on Chip for mixed criticality applications

Research Project or Bachelor/Master Thesis

Research field

Mixed-criticality systems are hugely important for all applications in the fields of aviation, autonomous driving and medical technology. Broadly speaking, they refer to software applications in which the individual components are classified as having different levels of importance (criticality). To ensure the necessary level of safety, these components are distributed across different hardware units (ECUs). However, this is highly inefficient, as the individual ECUs are usually significantly more powerful. In more modern approaches, all or most of the components are executed on a central processing unit. The challenge here is, on the one hand, to identify the hardware that is suitable for the application in question and, on the other hand, to ensure that the necessary safety measures are complied with.

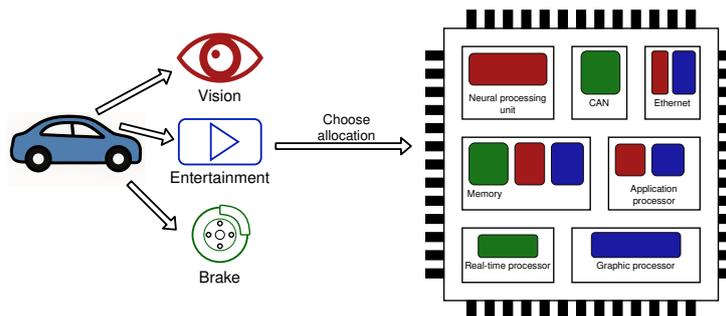


Figure 1: Example of a mixed-criticality system

Research topics

This field of research offers exciting opportunities for bachelor's and master's theses as well as research projects. With Versal, AMD has developed an extremely powerful system-on-chip (SoC) that is particularly suitable for real-time AI applications and signal processing. In order for this chip to be used effectively in mixed-criticality systems, various components must be implemented and tested in practical scenarios. A concrete example of this is the analysis and behaviour of the Versal Network-on-Chip (NoC) – a central communication network. If you are interested in working at the interface between hardware, AI and real-time systems and exploring the latest technologies first-hand, this is the perfect opportunity. If you are interested, please feel free to contact me for a more detailed discussion!

Skills

Required:

- Knowledge in Verilog or VHDL
- Knowledge in C++

Desired:

- Basic knowledge of Vivado
- Advanced knowledge of NoCs

Contact



Vincent Sprave
vincent.sprave@ovgu.de
G03-318



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