Implementation of a Pedestrian Detection Algorithm for a Fail-Operational Demonstrator System
Enabled by ever decreasing structure sizes, modern System on Chips (SoC) integrate a large amount of different processing elements, making them Multi-Processor System on Chips (MPSoC). If these MPSoCs are used in safety-critical environments it is crucial to ensure that the critical tasks executed on these systems are fail-operational, meaning that they continue to provide a certain level of safety even in case of a failure in the system.

To demonstrate such a fail-operational system an application is needed to act as critical task. A typical safety-critical task from the automotive domain is a pedestrian detection, especially when considering autonomous driving.

**Goal**

The goal of this work is to implement a pedestrian detection algorithm in software that runs on the soft-cores of an MPSoC demonstrator system on an FPGA and to integrate the software in the existing demonstrator environment.

**Prerequisites**

To successfully complete this project, you should already have the following skills and experiences:

- Very good programming skills in C
- Experience in embedded programming
- At least basic Python programming skills
- Self-motivated and structured work style

**Learning Objectives**

By completing this project, you will be able to:

- Understand the concepts of a pedestrian detection algorithm
- Understand the basic architecture of an MPSoC
- Design and implement embedded software
- Document your work in form of a scientific report and a presentation

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