

RISCV-V based AI computing platform for autonomous driving

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Abstract

The sensors used in autonomous driving such as LiDAR, radar or camera are collecting huge amounts of data. Processing these amounts of data is costly, especially as reliability and power constraints are also important factors in autonomous driving. For these reasons a RISC-V based computing platform with redundant AI accelerators is currently developed as part of the BMBF funded project KI-PRO. In this computing platform a RISC-V processor is coupled with the NVIDIA Deep Learning Accelerator (NVDLA) as a digital AI accelerator and a RRAM based crossbar as an analog AI accelerator. The computing platform is currently implemented on two different FPGA boards for testing and further development. Currently additional fault-tolerance mechanisms are added to the computing platform to further harden it against faults.

Biography



Raphael Klink holds a M.Sc in Computer Science from the Universität zu Lübeck. He currently works as a Research Assitant at the Institute for Computer Engineering of the Universität zu Lübeck for the KI-PRO Project. His main research focus is the application of the RISC-V architecture in various application domains. He has particular experience with RISC-V ISA extensions such as e.g. adding a vector extension to the CVA6 processor.

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