

Report from industry visits at CC-Systems in Alfta

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Introduction

CC-Systems supplies control systems and computers for industrial applications with the main focus on onboard computers for heavy vehicles. During 2005 and 2006 I have made regular visits to CC-Systems in Alfta. The purpose of the visits has been to discuss the possibilities of using FPGA-technology in the CC-pilot vehicle computers and display units, and to present results related to this work.

The Project

The CC-pilot is a line of onboard computers for industrial vehicles and other rough environments. With a wide range of deployment platforms ranging from transport vehicles to forestry machines and military vehicles, the CC-Pilot computers are required to provide many different communication interfaces and other connection possibilities for external devices. In addition to the interfaces found on normal personal computers the CC-Pilot provide CAN-bus interfaces and analog video inputs.

The work conducted with CC-Systems has focused on using FPGA-technology to implement some of the communication and peripheral devices used in the CC-Pilot systems. During 2006 the work has mainly focused on the design of an FPGA based pre-processor and display controller for real-time video. The purpose of the video pre-processor is to allow display of multiple real-time video sources together with information provided by the CPU.

The work started with a design space exploration of the pre-processor, where the memory requirements for different implementation alternatives were investigated [1]. Recently the project has resulted in a video pre-processor implementation with limited support for scaling of the output video frame[2]. Future plans for the project involves design and implementation of a FPGA-based video enabled display unit for applications with relatively low computational requirements.

References

- [1] N. Lepistö, B. Thörnberg, M. O’Nils “Design Exploration of a Video Pre-Processor for an FPGA Based SoC”, Workshop on Applied Reconfigurable Computing , Delft , The Netherlands, March 2006
- [2] N. Lepistö, N. Lawal, M. O’Nils “Implementation of a Video Pre-Processor for an FPGA based SoC, **Submitted** to Workshop on Rapid System Prototyping 2007