

PhD Project Proposal

School of Electronics, Electrical Engineering and Computer Science

Proposed Project Title: FPGA acceleration in the Cloud

Principal Supervisor: : Prof R Woods

Second Supervisor: Dr Georgios Karakonstantis

Project Description:

Cloud computing providers such as Amazon, offers users ubiquitous access to a shared pool of resources, through centralized data centres. With the need for improved power efficiency and computing power, there has been an increased interest in recent times to integrate Field Programmable Gate Arrays (FPGAs) in data centres; examples include the Amazon EC2 and Microsoft's Azure cloud services. Whilst this offers considerable potential, FPGA resources offer challenges from a programming perspectives as their architecture and programming environment present a different resource sharing model when compared to software programmable accelerators. The challenge lies in sharing the device space by accommodating multiple heterogeneous tasks at one instance of time.

The purpose of this PhD is to create models for programming FPGAs in the cloud. This needs to be done in such a way that it is seamless and appears to the user like programming any other programmable platform. In order to achieve this, this needs development of innovative methods of sharing the FPGA resource and programming it in an effective manner. The student will work with researchers from a number of international companies including Xilinx, the world's largest everyday company and Allstate, a large financial institution interested in employing this technology in the finance domain.

Contact details

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