PhD Project Proposal

School of Electronics, Electrical Engineering and Computer Science

Proposed Project Title: FPGA Inspired Acceleration for Genomics Applications

Principal Supervisor: : Prof R Woods **Second Supervisor:** Dr Darragh McArt

Project Description:

The introduction of commercial Next Generation Sequencing (NGS) in 2005 has led to an unprecedented increase in the quantities of genomic data being produced by research laboratories. The data varies from transcriptomics to proteomics and thus provides a more holistic view of cancer. However, the amount of data and the increased complexity for analysis requires additional computation which presents key challenges for computing platforms. The computational requirements, however, are ideally suited to Field Programmable Gate Arrays (FPGAs) platforms which offer considerable potential for parallel processing and thus enhancing the genomics computational pipeline.

This PhD programme is part of a cross-Faculty initiative which is looking to work with Xilinx, the major FPGA company in the area, in accelerating bioinformatics applications. The company have already dedicated an advanced computing platform to the university which will be used for this research. The work will look to accelerate core functions identified by the Centre for Cancer Research and Cell Biology (CCRCB) with the aim of providing enhanced performance and thus dramatically reduce the time to undertake analyse for actual analytical algorithms. The prospective candidate will work between both the CCRCB and Systems and Sensors cluster in the School of Electronics, Electrical Engineering and Computer Science.

Contact details

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