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Dataflow Supercomputing
Mean Filter, Matrix Multiplication, & Perceptron
Stephan French & Veljko Milutinović

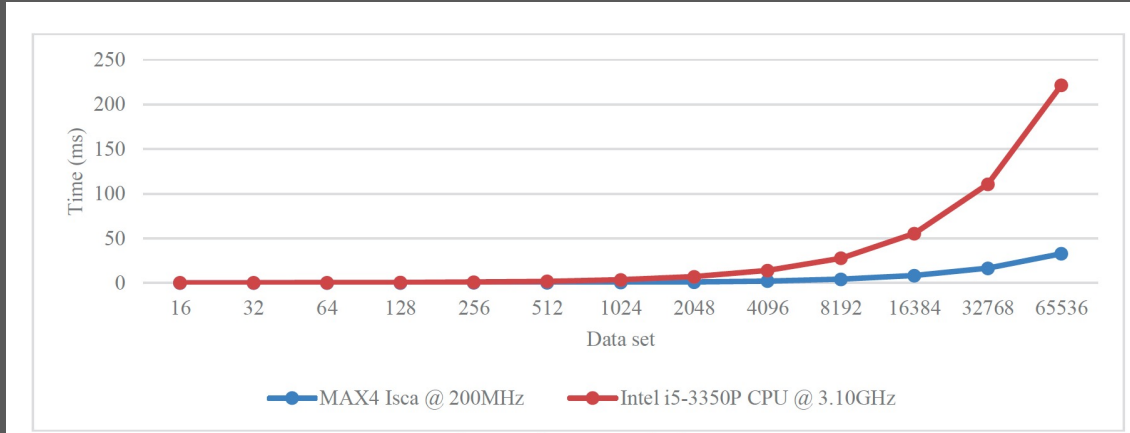UROC, Luddy School of Informatics, Computing, and Engineering

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Figure 2: Implementation analysis of perceptron algorithm

Figure 1: Matrix Multiplication Execution Graph

During this research process, three programs were implemented via the - Maxeler IDE which is a simulated environment of Dataflow Supercomputing. All three implementations were developed through the Dataflow Computing - paradigm. Dataflow computing is method of coding which much more efficient for the processing of big data because it "computes in space" rather - than "computing in time". This allows for multiple operations to take place at the same time. This gives computations the advantage in processing speed, power, and time. Through the dataflow approach, all three programs that - have Controlflow algorithms were successfully accelerated. The Maxeler IDE, - will generate an execution graph upon each successful compilation. Figure 1 is - the execution graph which displays the operations in graphical form of Matrix Multiplication. Figure 2 is a graph comparing the speed of the Control Flow - Perceptron algorithm(red) to the Dataflow algorithm(blue). -