University of Warwick
MSc Dissertation Registration Form

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Student Name: ...... Thomas ARCHBOLD ....

Degree Course: ...... COMPUTER SCIENCE ~~MSc~~ ....

Dissertation Title: ...... Towards Distributed Mechanisms for Combinatorial Auctions ....

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Abstract:

It is well known that computing an optimal allocation of items in a combinatorial auction using the Vickrey-Clarke-Groves mechanism is NP-hard, motivating the study of approximately optimal mechanism design. This project firstly explores approximation mechanisms for various instances of combinatorial auctions, from the single-item case to multi-unit two-sided exchanges, and provides a platform on which to host such markets. Furthermore, we look towards implementing these auctions in a more distributed manner, where we use the agents themselves to execute the mechanism, compared to traditional mechanism design which relies on a centralised authority to carry out the computation, which is not always desirable. While a distributed approach introduces additional complexity with regards to ensuring the agents act truthfully, it can greatly reduce the computational burden of the mechanism since the cost is shared among all agents.

Name of primary supervisor: ...... Matthias Englert ....

Signature of supervisor: .... Date: ....

Name of secondary supervisor: .... (optional)

Signature of secondary supervisor: .... (optional) Date: .... (optional)

Signature of Student ...... JArchbold .... Date ...... 16/01/2020 ....