2018 YCCSA SUMMER SCHOLARSHIP PROJECT SUBMISSION

This form is for prospective project supervisors to submit their projects to be included in the YCCSA Summer Scholarships Programme for 2018.

It is the purpose of the YCCSA Summer School that any projects submitted are novel and interdisciplinary in nature.

Date	18 January 2018
Supervisors' Names and Departments / Affiliation and Contact Email	Philip Garnett - School of Management philip.garnett@York.ac.uk Jacco Thijssen - School of Management jacco.thijssen@york.ac.uk A.Jamie Wood - Departments of Biology and Mathematics jamie.wood@york.ac.uk
Project Title	*Diffusion of Financial Rewards from Technological Investments*
Project Description	It is well known that the wealth distribution in many countries follows approximately a Pareto distribution (see, e.g., Mandelbrot and Hudson, 2004). Agent-based modeling has been used to show that such a wealth distribution can arise from agents interacting in trades on financial markets (see, e.g., Chakraborti and Chakrabarti, 2000). It has been argued recently (Atkinson, 2015) that in today's economy wealth inequality is probably due more to the unequal diffusion of (ICT) technology through an economy via the varying ability of its population to adjust to and productively employ these technologies. We propose to build an agent-based model to investigate how new technologies spread through an economy and how it impacts on its population (the agents) who are endowed with differing levels of ability in adjusting to new technologies and, consequently, differ in their ability to appropriate rents from the productive capacity of an economy.
Required Skills	(Background knowledge) Interest in Complex Systems; (Skills) experience of some basic computer programming/scripting; some Java experience would be desirable.
Supervision and Collaboration Arrangements	The main supervisory team (Garnett and Thijssen) envisage a weekly progress meeting, with additional meetings as required (inc. Wood). Principal areas of supervisory support are: Garnett -- agent based modelling/programming, Thijssen -- finance and stochastic control, Wood -- modelling, computational and statistical methods, mathematics.
Project Dates	*The summer school runs for 9 weeks, starting on Monday, 09 July 2018 and finishing on Friday, 07 September 2018.*
Other Information	*Anything that doesn't easily fit above.*

References	Atkinson, A.B. (2015), *Inequality*, Harvard University Press.
	Chakraborti, A. and B.K. Chakrabarti (2000), "Statistical Mechanics of Money: How Savings Propensity Affects its Distribution", *Eur. Phys. J. B.*, **17**, 167-170.
	Garnett, P. (2015). A tipping point in 300 years of banking? A conceptual simulation of the British banking system. Natural Computing, 14(1), 25–37. doi:10.1007/s11047-014-9467-0
	Mandelbrot, B. and R.L. Hudson (2004), The (mis)Behaviour of Markets: A fractal view of risk, ruin and reward, Basic Books.

When complete, please email the form to sarah.christmas@york.ac.uk