2016 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 2016.

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

Date	*14/1/2016*
Supervisors' Names and Departments	*Dr Mark R Johnson,* Sociology *Dr Sam Devlin,* Computer Science *Dr Gareth Beale,* Archaeology
Project Title	*Algorithmic Generation of Social Architecture*
Project Description	Procedural content generation (PCG) has been applied to a wide range of areas in the design of games and simulations, ranging from creating maps, planets and solar systems to creating species of flora and fauna, religious beliefs, and aesthetic styles. This project would seek to develop innovative PCG methods for generating a particular category of building – those that have strict and explicit social rules to their layouts and their use by different categories of human actors. The initial focus would be on the generation of religious buildings (which tend to have strict rules for layout and use), but would seek to develop a rules framework that could be adjusted and applied to other comparable tightly-regulated structures like hospitals, police stations, prisons, airports, military bases, etc. These should be generated according to a set of architectural rules that are not just concerned with the "optimization" or "efficiency" of the layout, but also with following more abstract cultural necessities. The architecture should also be fluid enough that it can still function adequately if the social rules for AI actor behaviour are subsequently changed (for example, the use of the same physical churches in the UK varied significantly between medieval and early-twentieth century eras). This project therefore has two components – the generation of buildings with explicit social rules for room layouts, and subsequently populating these buildings with various classes of AI actors who behave according to differing sets of norms and expectations. The precise emphasize on the first or second component could be altered if a particularly strong candidate was recruited in one of those two areas. We would seek two students for this project – one focused primary on programming, and the other focused on design, visuals, or both.
Required Skills	This project is appropriate for a student with a strong computer science background, ideally with previous experience of procedural generation, AI, or both, and for a second student ideally with artistic or design skills, or a background in digital heritage, digital humanities, or digital archaeology. A willingness to converse with a range of interests across a very interdisciplinary team of researchers is also essential, and a general knowledge of existing games and software packages that use procedural generation techniques is desirable.

Project Dates	The project will start on Monday, 11 July 2016 and finish on Friday, 9 September 2016.
Other Information	
References	Johnson, M. R. (2015) "Modelling Cultural, Religious and Political Affiliation in Artificial Intelligence Decision-Making". *Proceedings of 2015 AISB Games Conference*, available at http://www.cs.kent.ac.uk/events/2015/AISB2015/proceedings/aiAndGames/AI-games-15_submission_01--MarkJohnson-modelling.pdf Gruenwoldt, L and Katchabaw, M. (2005), "Creating reactive Non Player Character Müller, Pascal, et a,l (2006), "Procedural modeling of buildings". *Acm Transactions On Graphics (Tog)* 25.3: 614-623. Noor, S. Togelius, J. & Nelson, M. J. (2015), *Procedural Content Generation in Games: A Textbook and Overview of Current Research*. Available at http://pcgbook.com/ Russell, S. & Norvig, P. (2013), *Artificial Intelligence: A Modern Approach*. Edinburgh: Pearson Education Limited.

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