2013 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 2013.

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

Date	*2013*
Main Supervisor's Name	*Dr Fiona Polack*
Main Supervisor's Department	*Computer Science*
Co-supervisors' name(s) and Departments	*Each project needs at least one co-supervisor, as it is important that students have access to a supervisor or co-supervisor at all times during their project, and the duration of the projects is over the summer vacation.* *Prof. Norman Maitland, Biology* *Prof. Susan Stepney, Computer Science*
Project Title	*Building and calibrating a cell division and differentiation simulator, from an existing design.*
Project Description	*Please aim for around 2 paragraphs. Remember that this must be pitched at prospective project scholarship students.* *Fiona, Norman and Susan have been working together for some years to create a computer simulator that can be used to test hypotheses related to prostate cell division and differentiation. We have a software engineering design, validated with Norman's laboratory staff, but we do not yet have a full working implementation.* *The goal of the internship is to create a fit-for-purpose simulator that meets our design, that is usable by non-experts (biologists), and is flexible enough for division and differentiation pathways and probabilities to be changed without any new coding. The starting point is the published design (see http://www-users.cs.york.ac.uk/~susan/bib/ss/nonstd/cosmos11-pmodel.htm) plus subsequent work by an intern and a project student, which have produced a textual input language and a prototype implementation in Erlang. (There are also incomplete/flawed implementations in Java-JCSP which could be developed on.)* *The internship is paired with an internship (not part of the Summer School) in the Biology Department, which will be working on prostate cell counts, ultimately to provide data for simulation experiments. We will meet regularly with the biologists.*
Required skills	*A short synopsis of the necessary skills for the summer student. Please be careful to specify the skills rather than requiring students to have followed a particular degree programme.* *The project needs a competent programmer, with a good understanding of software*

	development and validation. The language is not as important as the ability to create well-engineered fit-for-purpose software that demonstrably matches the design. The successful applicant can expect guidance in software engineering and on the biology, but not on the programming itself!
Project dates	*To create a cohort of students who can work and learn together, ideally all projects would run for 9 weeks, starting on Monday, 15 July 2013 and finishing on Friday, 13 September. If you have any special requirements regarding the dates of your project, please indicate these here.*
Other information	*Anything that doesn't easily fit above.*
References	*Please include at least one relevant journal reference.* *The papers on the simulator, and related research activities are:* *Alastair Droop, Philip Garnett, Fiona A. C. Polack, Susan Stepney.* *Multiple model simulation: modelling cell division and differentiation in the prostate.* *CoSMoS workshop, Paris, France, August 2011, pp.79-111. Luniver Press 2011* *http://www-users.cs.york.ac.uk/~susan/bib/ss/nonstd/cosmos11-pmodel.htm* *Fiona A. C. Polack, Alastair Droop, Philip Garnett, Teodor Ghetiu, Susan Stepney.* *Simulation validation: exploring the suitability of a simulation of cell division and differentiation in the prostate.* *CoSMoS workshop, Paris, France, August 2011, pp.113-133. Luniver Press 2011* *http://www-users.cs.york.ac.uk/~susan/bib/ss/nonstd/cosmos11-pvalid.htm* *F. Polack. Choosing and adapting design notations in the principled development of complex systems simulations for research. Workshop, Modelling the Physical World at Models 2012, October 2012. Workshop at MODELS 2012, Innsbruck, Austria. October, 2012. To appear in ACM Digitial Library.* *https://sites.google.com/site/motpw2012/motpw2012-pre-polack.pdf?attredirects=0*

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