Static Verification of Robotic Applications

University of York

**Qualification type:** PhD
**Location:** York
**Funding for:** UK/EU students
**Duration:** Funding is available for 3 years
**Funding amount:** Full coverage of tuition fees and annual stipend at RCUK rate, that is, £14,777 for 2018/19
**Hours:** Full Time

**NOTE:** Applications are processed as soon as they are received.

### The project

Robotics is a very exciting area of application; not only it is fun, but it also has potential for huge economic and social impact. A lot has been achieved, and a lot is expect to happen in the next decade or so. Software engineering techniques that provide appropriate and specific support for robot engineers, however, are few and far between.

This project will identify how robot engineers can use diagrammatic notations for verification of properties of robots. It will adopt and extend a domain-specific notation for mobile and autonomous robots called RoboChart. It is being developed under a five-year project involving a team of seven researchers in York, and collaborators worldwide (https://www.cs.york.ac.uk/circus/RoboCalc/).

RoboChart is supported by RoboTool (https://www.cs.york.ac.uk/circus/RoboCalc/robotool/), which enables the creation of diagrams, and automatic generation of code for verification using a specific tool. Following feedback from the robotics community, this project will explore the use of different tools suitable for verification of different properties, possibly involving time. It will also ensure that the verification is consistent with those already possible using RoboTool.

Applications and examples are available from https://www.cs.york.ac.uk/circus/RoboCalc/ and the York Robotics Laboratory.
Recent publications on RoboChart are as follows:


3. Examples of tools that might be considered are SPIN (http://spinroot.com/spin/whatispin.html), nuSMV (http://nusmv.fbk.eu/), and PRISM (https://www.prismmodelchecker.org/).

Research supervision


Award funding

If successful, you will be supported for three years. Funding includes:

- £14,777 (2018/19 rate) per year stipend
- Home/EU tuition fees
- RTSG (training/consumables/travel) provision

Funding requirements

To be considered for this funding you must:

- meet the entrance requirements for a PhD in Computer Science
- be eligible to pay home/EU fees

We will look favourably on applicants that can demonstrate knowledge of verification techniques and who have strong programming and mathematical skills.

Apply for this studentship

1. Apply to study
   - You must apply online for a full-time PhD in Computer Science.
2. Provide a personal statement. As part of your application please provide a personal statement of 500-1,000 words with your initial thoughts on the research topic.

Deadlines
Applications are processed as soon as they are received.

Informal enquiries

Project enquiries
Professor Ana Cavalcanti: https://www-users.cs.york.ac.uk/~alcc/

Application enquiries
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