Natural Language Processing for Automated Program Repair - PhD studentship University of York

Qualification type: PhD
Location: York
Funding for: UK citizens and EU citizens who have resided in the UK for the past three years (EPSRC eligibility requirements apply)
Duration: Funding is available for a minimum of 3 years
Funding amount: Full coverage of tuition fees and annual stipend at RCUK rate ie £14,777 for 2018/19
Hours: Full Time

Placed on: 17 August 2018
Closes: 28 Sept. 2018

The project

Fixing software defects is a time-consuming and costly activity. One of the main reasons why software debugging is so expensive is that it still remains mainly a manual activity. Fixing a bug is a complex process, which consists of many different steps including finding and understanding the underlying cause of the bug, identifying a set of changes that address the bug correctly, and finally verifying that those changes are correct. Automating this process (or parts of it) can potentially reduce the time, cost and effort it takes to fix bugs, and therefore the quality of the produced software.

The aim of this project is to design and implement methods and tools that are capable of automatically diagnosing and fixing software bugs. While there is previous work on automated program repair (APR), there are still limitations, which hinder the adoption of APR techniques by the industry, such as correctness of generated software patches and scalability. This project will attempt to overcome these limitations by combining existing techniques with machine learning and natural language processing algorithms.
Research supervision

If successful, you will conduct your research under the supervision of:

- Dr Nicholas Matragkas, Lecturer in Software Engineering

You will be part of large and internationally leading team who specialise in Software Engineering and Software Analytics. The team have a substantial track record in Software Analytics research, and in the past have been very successful at delivering research results as part of big, collaborative research projects (e.g. OSSMETER, CROSSMINER, etc.). The team includes five permanent members of academic staff, five research associates, and around 20 PhD/EngD students. The team is highly supportive and encourages cross-project collaboration, especially on joint publications and developing new research projects. In this project, you will collaborate closely with a research associate working on the EPSRC-funded project titled “Automatic Repair of Natural Source Code” (MANATEE). MANATEE is in collaboration with IBM UK.

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

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 and meet EPSRC funding eligibility requirements

We will look favourably on applicants that can demonstrate knowledge of machine learning and natural language processing, and who have excellent programming skills.
Apply for this studentship

1. Apply to study
You must apply online for a full-time PhD in Computer Science at:

https://www.york.ac.uk/study/postgraduate/courses/apply?course=DRPCOMSSCI3&level=postgraduate

You must quote the project title (Natural Language Processing for Automated Program Repair) in your application.

There is no need to write a full formal research proposal in your application to study as this studentship is for a specific project.

2. Provide a personal statement
As part of your application please provide a personal statement of 1,000-1,500 words with your initial thoughts on the research topic.

Deadlines
The closing date for the receipt of applications is Friday, 28 September 2018. Applications may close earlier than the advertised deadline if a suitable candidate is found.

The studentship must begin in January 2019.

Informal enquiries

Project enquiries
Dr Nicholas Matragkas
cs-pg-admissions@york.ac.uk

Application enquiries
cs-pg-admissions@york.ac.uk
+44 (0)1904 325404