

Research Assistant in Serverless Edge Computing

REQ230253

As part of the University's ongoing commitment to redeployment, please note that this vacancy may be withdrawn at any stage of the recruitment process if a suitable redeployee is identified.

Project Description

The role involves working on a research and development project funded by the Innovate UK in close collaboration with industry project partner as well as researchers within the School of Science. The project aims to research and develop a novel serverless edge Function as a Service (FaaS) engine to optimise existing edge routers to enable connected edge devices to operate on-site in real-time in traditionally low connectivity environments without the need to deploy and support additional on-site IT infrastructure or centralised services.

The appointee will be based in the [Department of Computer Science](#) at Loughborough University.

Job Description

Job Grade: Specialist and Supporting Academic Grade 5

Job Purpose

To conduct collaborative and independent research in the area of serverless edge computing for supporting applications and services by deploying them optimally in the decentralised loosely-coupled service architecture, taking into account the service and application requirements related to e.g. maximum latency, scope of availability, required computational capacity, the location of data sources and user mobility across networks.

To provide support for development of an open source, a novel serverless edge service architecture model and applying content caching principles to serverless edge functions.

Job Duties

To conduct research on the project described above. This will involve a combination of individual work and collaborative work.

- To carry out research according to the objectives stated in the research proposal.
- Help with preparing the project deliverables.
- Contribute to writing scientific papers.
- Comply with University Health and Safety Policy.
- Comply with University Rules and Regulations.

Points To Note

The purpose of this job description is to indicate the general level of duties and responsibility of the post. The detailed duties may vary from time to time without changing the general character or level of responsibility entailed.

Special Conditions

All staff have a statutory responsibility to take reasonable care of themselves, others and the environment and to prevent harm by their acts or omissions. All staff are therefore required to adhere to the University's Health, Safety and Environmental Policy & Procedures.

All staff should hold a duty and commitment to observing the University's Equality & Diversity policy and procedures at all times. Duties must be carried out in accordance with relevant Equality & Diversity legislation and University policies/procedures.

Successful completion of probation will be dependent on attendance at the University's mandatory courses which include Respecting Diversity and, where appropriate, Recruitment and Selection.

Organisational Responsibility

Reports to Dr Posco Tso

Person Specification

Your application will be reviewed with respect to meeting the essential and desirable criteria listed below. Your application will be reviewed against the essential and desirable criteria listed below. Applicants are strongly advised to explicitly state and evidence how they meet each of the essential (and desirable) criteria in their application. Stages of assessment are as follows:

1 – Application

2 – Interview

Essential Criteria

| Area | Criteria | Stage |
|----------------------|---|-------|
| Experience | Background in Computer Science or <i>relevant disciplines</i> | 1, |
| | Problem solving using computer science techniques | 1, 2, |
| | Software development on Linux/Unix platforms | 1, 2 |
| Skills and abilities | Good programming skills in any programming language | 2, |
| | Excellent written and oral communication skills | 1, 2 |
| | Self-motivated with ability to meet deadlines | 2, |
| | Excellent interpersonal, and organisational skills | 2, |
| | Working knowledge of open-source software packages | 2, |
| Qualifications | Holding or working towards a postgraduate degree in computer science or <i>relevant disciplines</i> | 1 |
| Other | Commitment to observing the University's Equal Opportunities policy at all times | 1 |

Desirable Criteria

| Area | Criteria | Stage |
|----------------------|--|-------|
| Experience | Research experience in one or more of the following areas: Network management, edge computing, serverless computing, AI and machine learning | 1, 2 |
| | Software development in Kubernetes /Docker/WebAssembly or similar tools | 1, 2 |
| Skills and abilities | Agile software development, validation and evaluation | 1, 2 |
| Qualifications | Holding or working towards a PhD in computer science or <i>relevant disciplines</i> | 1 |

Conditions of Service

The position is full time and fixed term for 15 months, starting 1 March 2023 or thereafter. Salary will be on research grade 5, £27,396- 32,411 per annum, at a starting salary to be confirmed on offer of appointment.

The appointment will be subject to the University's Terms and Conditions of Employment for staff grades 5 and above, details of which can be found [here](#).

The University is committed to enabling staff to maintain a healthy work-home balance and has a number of family-friendly policies which can be found [here](#).

The University offers a wide range of employee benefits which can be found [here](#).

We also offer an on-campus nursery with subsidised places, subsidised places at local holiday clubs and a childcare voucher scheme (further details are available at: <http://www.lboro.ac.uk/services/hr/a-z/childcare-information---page.html>)

In addition, the University is supportive, wherever possible, of flexible working arrangements.

We also strive to create a culture that supports equality and celebrates diversity throughout the campus. The University holds a Bronze Athena SWAN award which recognises the importance of support for women at all stages of their academic career. For further information on Athena SWAN see <http://www.lboro.ac.uk/services/hr/athena-swan/>

Research Associate in Serverless Edge Computing

Fixed Term until 31 May 2024

REQ230253

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Project Description

The role involves working on a research and development project funded by the Innovate UK in close collaboration with industry project partner as well as researchers within the School of Science. The project aims to research and develop a novel serverless edge Function as a Service (FaaS) engine to optimise existing edge routers to enable connected edge devices to operate on-site in real-time in traditionally low connectivity environments without the need to deploy and support additional on-site IT infrastructure or centralised services.

The appointee will be based in the [Department of Computer Science](#) at Loughborough University.

Job Description

Job Grade: Specialist and Supporting Academic Grade 6

Job Purpose

To conduct collaborative and independent research in the area of edge computing, serverless computing and network service composition for supporting applications and services by deploying them optimally in the decentralised loosely-coupled service architecture, taking into account the service and application requirements related to e.g. maximum latency, scope of availability, required computational capacity, the location of data sources and user mobility across networks.

To be responsible for development of an open source, a novel serverless edge service architecture model and applying content caching principles to serverless edge functions.

Job Duties

To conduct research on the project described above. This will involve a combination of individual work and collaborative work.

- To undertake a literature review and produce a taxonomy of state-of-the-art serverless edge resource framework.
- To evaluate the efficiency of serverless framework in edge computing settings.
- To research and develop a novel serverless edge framework.
- To conduct research on optimising the latency and resource usage for the serverless edge framework.
- To prepare research publications of results arising from the project.
- To take part in relevant research related activities within the Department of Computer Science. This may include both taking part and delivering research seminars.

- To participate in appropriate international conferences and, to contribute to the dissemination strategy of the project, present research findings. This may include giving a talk, presenting a poster, as well as holding discussions with other conference participants.
- To meet regularly with the PI, to discuss the progress of the project, and to report the findings of research undertaken individually.
- Be responsible for conducting the day to day running of the project.
- To formulate detailed plans for the project based on broad guidance from the PI.
- To feed back to the PI on progress, to make recommendations for next steps.
- To maintain confidentiality at all times and ensure that intellectual property (IPR) agreements are not violated.
- To assist the academic staff in the project team with the supervision of undergraduate MSc and PhD project work and day to day supervision and support of other researchers.
- To engage in training programmes in the University (or elsewhere) that are consistent with the needs and aspirations of the project and those of the Department.
- To undertake other duties as may be reasonably requested and that are commensurate with the nature and grade of the post.

Points To Note

The purpose of this job description is to indicate the general level of duties and responsibility of the post. The detailed duties may vary from time to time without changing the general character or level of responsibility entailed.

Special Conditions

All staff have a statutory responsibility to take reasonable care of themselves, others and the environment and to prevent harm by their acts or omissions. All staff are therefore required to adhere to the University's Health, Safety and Environmental Policy & Procedures.

All staff should hold a duty and commitment to observing the University's Equality & Diversity policy and procedures at all times. Duties must be carried out in accordance with relevant Equality & Diversity legislation and University policies/procedures.

Successful completion of probation will be dependent on attendance at the University's mandatory courses which include Respecting Diversity and, where appropriate, Recruitment and Selection.

Organisational Responsibility

Reports to Dr Posco Tso

Person Specification

Your application will be reviewed with respect to meeting the essential and desirable criteria listed below. Your application will be reviewed against the essential and desirable criteria listed below. Applicants are strongly advised to explicitly state and evidence how they meet each of the essential (and desirable) criteria in their application. Stages of assessment are as follows:

- 1 – Application
- 2 – Test/Assessment Centre/Presentation
- 3 – Interview

Essential Criteria

| Area | Criteria | Stage |
|----------------------|--|---------|
| Experience | Background in Computer Science or <i>relevant disciplines</i> | 1, 3 |
| | Problem solving using computer science techniques | 1, 2, 3 |
| | Software development on Linux/Unix platforms | 1, 2, 3 |
| | Developing software for Distributed/Networked systems | 1, 2, 3 |
| | Authoring original work for academic journal papers, conference papers or technical reports | 1 |
| | | |
| Skills and abilities | Good analytical research skills | 2, 3 |
| | Good programming skills in C/C++, Python, Java, etc. | 2, 3 |
| | Excellent written and oral communication skills | 1, 2, 3 |
| | Self-motivated with ability to meet deadlines | 2, 3 |
| | Excellent interpersonal, and organisational skills | 2, 3 |
| | Working knowledge of open-source software packages | 2, 3 |
| | Working knowledge of specific optimisation methods/algorithms | 2, 3 |
| | Ability to write project reports and make technical presentations to industrial and academic research groups | 2, 3 |
| | Knowledge of relevant Health & Safety issues | 3 |
| | | |
| Training | Demonstrate evidence of having undertaken further training | 1 |
| | | |
| Qualifications | PhD (or near completion) in computer science or <i>relevant disciplines</i> | 1 |
| | | |
| Other | Commitment to observing the University's Equal Opportunities policy at all times. | 3 |

Desirable Criteria

| Area | Criteria | Stage |
|------------|---|---------|
| Experience | Research experience in one or more of the following areas: Network management, edge computing, serverless computing, AI and machine learning. | 1, 2, 3 |
| | Software development in Kubernetes /Docker/ WebAssembly or similar tools | 1, 2, 3 |
| | Developing proposals for funding from external agencies | 1, 2, 3 |

| | | |
|----------------------|--|---------|
| | Working in a high quality academic research environment | 1, 2, 3 |
| | Experience of teaching and/or supervision of students in relevant areas | 1, 3 |
| | | |
| Skills and abilities | Authoring original work, in the highest quality refereed academic journals | 1, 2, 3 |
| | A strong publication track record | 1 |
| | Agile software development, validation and evaluation | 1, 2, 3 |
| | | |
| Qualifications | PhD (or near completion) in computer science | 1 |
| | | |
| Other | Able to travel Independently | 1, 2, 3 |

Conditions of Service

The position is full time and fixed term until 31 May 2024, starting 1 March 2023 or soon thereafter. Salary will be on a Specialist and Supporting Academic Grade 6 (£33,348 - £43,155 per annum) at a starting salary to be confirmed on offer of appointment.

The appointment will be subject to the University's Terms and Conditions of Employment for staff grades 6 and above, details of which can be found [here](#).

The University is committed to enabling staff to maintain a healthy work-home balance and has a number of family-friendly policies which can be found [here](#).

The University offers a wide range of employee benefits which can be found [here](#).

We also offer an on-campus nursery with subsidised places, subsidised places at local holiday clubs and a childcare voucher scheme (further details are available at: <http://www.lboro.ac.uk/services/hr/a-z/childcare-information---page.html>)

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