



Candidate Information

Position:	Research Fellow - Digital Twin & Blockchain for Business Decision Modelling
School/Department:	School of Electronics, Electrical Engineering and Computer Science
Reference:	22/110053
Closing Date:	Monday 15 August 2022
Salary:	£34,304 per annum.
Anticipated Interview Date:	Thursday 8 & Friday 9 September 2022
Duration:	Fixed term for 3 Years

JOB PURPOSE:

To be a highly productive, ambitious, and collaborative member of the Advanced Research and Engineering centre within Northern Ireland. This Centre will drive future technological innovations and enhance our capabilities in critical research areas such as robotic process automation (RPA), workflow automation, visualisation, data analytics and artificial intelligence (AI). The Centre combines expertise from PwC, the University of Ulster, and Queen's University Belfast. This research project aligns with the workflow and AI streams within the Centre.

The Research Fellow will focus on the digital twins and blockchain to accelerate the business decision modelling and make it sustainable, removing the barriers of the virtual-physical worlds. The Research Fellow is required to resolve tasks involving a series of simulated application case studies followed by practical testing in different phases of this project. The expectations are that the combination of intelligent decision-making via DT facilitated by blockchain, and formal modelling will enable businesses to further explore and use this research and prototypes to further enhance the engineering aspects or identify additional directions to explore and develop.

The post is a critical role, and as such, successful applicants will have responsibilities in independent research, planning, outreach, and collaboration both internally and externally. You will need to engage with research topics and apply high standards to the research code and systems you develop.

MAJOR DUTIES:

1. To be actively involved in the research programme as directed by the line manager/project supervisor and focus on developing an enterprise-level solution for business decision modelling with blockchain and digital twins backed by strong research on the subject-matter.
2. Carry out research on business decision automation and its assistive technologies and report on the findings in discussions with the project supervisor and any associated partners of the project.
3. Carry out routine administrative tasks associated with the research project/s to ensure that projects are completed on time.
4. Developing proof-of-concept wherever applicable to justify the research.
5. Carry out appropriate analysis and write up results of own work and lead a new direction as the project progresses.
6. Present regular progress reports on research to members of the research group or external audiences to disseminate and publicise research findings.
7. Contribute to the production of research reports, publications, and proposals.
8. Carry out occasional educational supervision, demonstrating or lecturing duties within the post holder's area of expertise and under the direct guidance of a member of academic staff.
9. Undertake supplementary duties relevant to the success of the project including administrative duties, presentation of regular progress reports and additional training and development activities as required.

ESSENTIAL CRITERIA:

1. 2.1 Honours Degree (or equivalent) in Applied Mathematics, Computer Science, Electronics, Electrical Engineering, or a closely related discipline.

2. Have or be about to obtain a PhD in Computer Science, Applied Mathematics, Electronics, Electrical Engineering, Physics.
3. Relevant experience to include:
 - At least 3 years research experience in at least one of the following: blockchain systems, digital twins, or business decision modelling.
 - 1-3+ years of experience developing Digital twins and blockchain systems.
 - Demonstrable experience of: - software development at the systems or embedded level (preferably (but not limited to) C/C++/Python/Java).
 - Working effectively as part of a research team in the development and promotion of the research theme.
4. Strong publication record, commensurate with stage of career.
5. Sufficient breadth and depth of specialist knowledge in the discipline and of research methods and techniques.
6. Ability to contribute to broader management and administrative processes.
7. Contribute to the School's outreach programme by links with industry, community groups etc.
8. Practical problem-solving skills, independence of thought and initiative.
9. Ability to assess and organise resources.
10. Ability to communicate complex information in English effectively in oral and written format to technical and non-technical audiences.
11. Ability to build relationships with a wide range of people and roles at different levels of seniority and to influence decision making.
12. Ability to manage self and prioritise workload.
13. A pro-active approach to work and team development.
14. Commitment to continuous professional development.
15. Ability to meet the mobility requirements of the post including the travel to project partners as required by the role.

DESIRABLE CRITERIA:

1. Strong background in digital twin-based development or blockchain systems.
2. Experience of the application of dashboards for multidisciplinary activities.
3. Experience of developing and testing novel algorithms.
4. Mathematical skills for conceptualisation, modelling, optimisation, and analysis of problems.