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| Last updated: | 17 July 2024 |

# JOB DESCRIPTION

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| Post title: | **Research Engineer – AI Risk** | | |
| Standard Occupation Code: (UKVI SOC CODE) | 2134 – Software Engineer | | |
| School/Department: | Electronics and Computer Science | | |
| Faculty: | Engineering and Physical Sciences | | |
| Career Pathway: | Education, Research and Enterprise (ERE) | Level: | 4 |
| \*ERE category: | Enterprise pathway | | |
| Posts responsible to: | Steve Taylor | | |
| Posts responsible for: | N/A | | |
| Post base: | Office-based | | |

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| Job purpose |
| This post is to support the successful delivery of research projects within the IT Innovation Centre, part of the Digital Health and Biological Engineering (DHBE) Group. The context is within IT Innovation’s Spyderisk tool ((<https://github.com/SPYDERISK>), which is an open source knowledge-based risk assessment toolkit, initially focused on cybersecurity. The purpose of this post is to help broaden the Spyderisk tool’s scope to Artificial Intelligence (AI) threats, risks, harms and mitigations.  This entails undertaking multiple research methods (e.g. literature survey, consultations with domain experts, others to be decided) to understand the vulnerabilities, threats, risks, harms, mitigating controls associated with AI and its use in social technical systems, modelling this knowledge, and encoding the modelled knowledge into the Spyderisk toolkit’s knowledge base.  This work will be a within a cluster of EU funded projects around risk modelling. These projects are multi-disciplinary and, as such, require close collaboration with domain experts across various fields in biology, medicine, and social sciences as well as AI and computer science in general. In all of these, there are interesting and challenging technical questions to be answered and gaps to be bridged between theory and practice. |

| Key accountabilities/primary responsibilities | | % Time |
| --- | --- | --- |
|  | Carry out Enterprise activities such as consulting, applied research, service provision, facilitating spin-offs, trials and testing or other evaluation work (often under supervision of a project leader). | 10 % |
|  | Consult effectively on own specialism directly with clients or other stakeholders external to the University; develop an area of specialism; may be responsible for peer-to-peer relationship management with client staff. | 35 % |
|  | Propose specifications/solutions to meet client and other stakeholder need, including pricing considerations. This can include taking a lead on specific technical offerings within a facility for enterprise clients. | 5 % |
|  | Contribute to income generation e.g. through contribution to developing and winning enterprise projects. | 5 % |
|  | Write and edit reports. | 20 % |
|  | Design, construct, and evaluate products/ prototypes, models, tests or experiments. | 10 % |
|  | Supervise others, e.g. technicians, casual staff, to achieve end result. | 5 % |
|  | Participate in impact and public engagement activities. | 5 % |
|  | Any other duties as allocated by the line manager following consultation with the post holder. | 5 % |

| Internal and external relationships |
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| Collaboration with colleagues at other institutions in the UK, the rest of Europe, and North America. |

| Special Requirements |
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| The successful candidate will have a strong background in research methods and a knowledge of AI methods, tools and techniques. The post involves working closely with domain experts in AI, literature survey, plus other research methods to be decided and (separately) risk modelling with an AI focus. The multi-disciplinary nature of these projects means that the candidate must be comfortable working and collaborating with experts outside computer science and engineering. |

**PERSON SPECIFICATION**

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| Criteria | Essential | Desirable | How to be assessed |
| Qualifications, knowledge and experience | PhD or equivalent experience in computer science or software engineering or a related discipline (e.g. physics/maths).  Detailed understanding of AI types, tools, methods and risks.  Experience of knowledge modelling technologies.  Experience of one or more programming language, and software engineering practices.  Ability and willingness to work within an interdisciplinary team. | PhD in Information Modelling or Systems Simulation  Knowledge of risk assessment / management (e.g., ISO 27000 series)  Experience of knowledge gathering, via methods such as literature review, consultation, surveys, etc. |  |
| Planning and organising | Able to organise own research/ consultancy activities to deadline and quality standards |  |  |
| Problem solving and initiative | Able to develop understanding of complex problems and apply in-depth knowledge to address them  Able to develop original techniques/methods |  |  |
| Management and teamwork | Able to supervise work of junior staff, delegating effectively  Able to contribute to School/Department management and administrative processes  Work effectively in a multi-disciplinary team, understanding the strengths and weaknesses of others to help teamwork development  Work effectively with domain experts from other fields. |  |  |
| Communicating and influencing | Communicate new and complex information effectively, both verbally and in writing, engaging the interest and enthusiasm of the target audience  Able to present research results at group meetings and conferences  Able to write up research results for publication in leading peer-viewed journals  Work proactively with colleagues in other work areas/institutions, contributing specialist knowledge to achieve outcomes |  |  |
| Other skills and behaviours | Understanding of relevant Health & Safety issues  Positive attitude to colleagues and students |  |  |
| Special requirements | Able to attend national and international conferences to present research results |  |  |

**JOB HAZARD ANALYSIS**

**Is this an office-based post?**

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| Yes | If this post is an office-based job with routine office hazards (eg: use of VDU), no further information needs to be supplied. Do not complete the section below. |
| No | If this post is not office-based or has some hazards other than routine office (eg: more than use of VDU) please complete the analysis below.  Hiring managers are asked to complete this section as accurately as possible to ensure the safety of the post-holder. |

## - HR will send a full PEHQ to all applicants for this position. Please note, if full health clearance is required for a role, this will apply to all individuals, including existing members of staff.

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| **ENVIRONMENTAL EXPOSURES** | **Occasionally**  (<30% of time) | **Frequently**  (30-60% of time) | **Constantly**  (> 60% of time) |
| Outside work |  |  |  |
| Extremes of temperature (eg: fridge/ furnace) |  |  |  |
| ## Potential for exposure to body fluids |  |  |  |
| ## Noise (greater than 80 dba - 8 hrs twa) |  |  |  |
| ## Exposure to hazardous substances (eg: solvents, liquids, dust, fumes, biohazards). Specify below: |  |  |  |
| Frequent hand washing |  |  |  |
| Ionising radiation |  |  |  |
| **EQUIPMENT/TOOLS/MACHINES USED** | | | |
| ## Food handling |  |  |  |
| ## Driving university vehicles(eg: car/van/LGV/PCV) |  |  |  |
| ## Use of latex gloves (prohibited unless specific clinical necessity) |  |  |  |
| ## Vibrating tools (eg: strimmers, hammer drill, lawnmowers) |  |  |  |
| **PHYSICAL ABILITIES** | | | |
| Load manual handling |  |  |  |
| Repetitive crouching/kneeling/stooping |  |  |  |
| Repetitive pulling/pushing |  |  |  |
| Repetitive lifting |  |  |  |
| Standing for prolonged periods |  |  |  |
| Repetitive climbing (ie: steps, stools, ladders, stairs) |  |  |  |
| Fine motor grips (eg: pipetting) |  |  |  |
| Gross motor grips |  |  |  |
| Repetitive reaching below shoulder height |  |  |  |
| Repetitive reaching at shoulder height |  |  |  |
| Repetitive reaching above shoulder height |  |  |  |
| **PSYCHOSOCIAL ISSUES** | | | |
| Face to face contact with public |  |  |  |
| Lone working |  |  |  |
| ## Shift work/night work/on call duties |  |  |  |