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**Job Description**

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| **Job title:** | **Data Engineer / Research Software Engineer** |
| **Department/School:** | Centre of Excellence in Water Based Early Warning Systems |
| **Grade:** | **7** |
| **Location:** | University of Bath premises |

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| **Job purpose** |
| The Data Engineer will join recently awarded E3 Centre of Excellence in Water Based Early Warning Systems for Health Protection encompassing both research and doctoral training.  This role has responsibility for delivering data/software support in the Centre. The Data Engineer will be in charge of architecting, building, testing, and maintaining the data infrastructure for the Centre. This will require working closely with the Centre researchers and students, as well with academic and industrial partners. Operationally, the Data Engineer will oversee and contribute to the development of a new Digital Water-Based Early Warning System Platform capability in the Centre ensuring key deliverables are realised and associated research projects delivered. This will include:   1. Designing the architecture of a data platform, data pipeline maintenance and testing, data management. 2. Using programming skills to build, customize and manage integration tools, databases, warehouses, and analytical systems. 3. Application of machine learning algorithms 4. Developing custom data mining and data analysis pipelines for heterogeneous datasets (mass spectrometry, sequencing, sensors and wider demographic, environmental and public health data), in close collaboration with Centre researchers and partners. 5. Developing data visualisation tools including setting up data dashboards. 6. Data curation, setting up data repositories in close collaboration with Bath Research Data Team. 7. Close collaboration with other members of staff in the centre, including data/software specialist technicians, postdoctoral researchers and PhD students. |

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| **Source and nature of management provided** |
| Line-managed by the Centre Manager.  Report to Academic Directors (technical aspects) |

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| **Staff management responsibility** |
| *N/A* |

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| **Special conditions** |
| N/A |

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| **Main duties and responsibilities** | |
| **Analysis** | * Build and maintain good relationships with our research communities. Through outreach, maintain a good understanding of the Centre needs in relation to data analysis, software development and use of software. Identify opportunities which could enrich the research experience and could lead to improving research productivity and the quality of outputs. * Use domain knowledge or acquire new knowledge to understand computational algorithms, technological requirements and training needs for a research software project. * Use technical knowledge to identify appropriate solutions for projects. * Work with researchers to define and document requirements for research computing solutions, suitable for inclusion in funding bids. |
| **Development** | * Provide scientific and technical software development and data management solutions for researchers across the Centre. * Design, construct, test and document well-architected, sustainable software solutions to meet the requirements of the projects (data models / data analytics / data visualisation). * Deploy and maintain technological solutions for projects. * Support researchers with porting codes and understanding their performance characteristics. * Contribute to promoting and raising the awareness of the related activities and impacts. * Provide support and development expertise for researchers using the University’s new cloud based HPC infrastructure, as well as contributing to the development of new cloud infrastructure tailored to researchers’ requirements. |
| **Project Management** | * Take responsibility for the definition, documentation and delivery of collaborative software projects, to include defining requirements, timescales, priorities, milestones and managing risks. * Ability to prioritise tasks across multiple projects, meeting objectives within agreed time and resource constraints, and provide regular communication through reports to project leads as appropriate. * Maintain a portfolio of collaborative software projects, code documentation, release notes and manuals. * Be accountable for technical aspects of research projects and take responsibility for their successful delivery. |
| **Teaching** | * Engage with researchers at all development stages and disseminate best practices in the development, sustainability and use of research software. * Contribute to the development and delivery of research software skills courses and knowledge sharing and skills development activities. * Provide specialist support in the methods, tools and solutions deployed to meet research objectives. |

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| **Personal Research** | * Contribute to conferences and research papers to be published in academic literature. * Maintain a research activity based on personal interest and in response to research software projects. |
| **Professional Development** | * Maintain an awareness of technical developments, tools, techniques and ideas in research computing and in software engineering, including where appropriate attending seminars, technical briefings, conferences and technical groups. |
| **Additional duties** | * You will from time to time be required to undertake other duties of a similar nature as reasonably required by your line manager. You are required to follow all University policies and procedures at all times and take account of University guidance. * Some occasional travelling may be required, for example to community events, workshops or conferences for a variety of software engineering and research computing fields. |

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**Person Specification**

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| **Criteria** | | |
| **Qualifications and training** | **Essential** | **Desirable** |
| A PhD degree in a computational field or equivalent significant relevant experience and professional qualification | ü |  |
| Professional project management qualification, e.g. Agile foundation or equivalent (or commit to training to achieve qualification) |  | ü |
| **Experience/Knowledge** | **Essential** | **Desirable** |
| Demonstrated significant depth and breadth of specialist knowledge of subject matter and the ability to contribute to research programmes across a range of disciplines. | ü |  |
| Have experience of creation, maintenance and automation of a full scientific data focussed computing program lifecycle using principles in Open Science | ü |  |
| Experience in using and developing research software / working with datasets / developing data analytics dashboards / data curation. | ü |  |
| Knowledge of and commitment to best practices in software development: documentation, issue tracking, unit testing, continuous integration. | ü |  |
| Advanced skills in at least one programming language such as R or Python. | ü |  |
| Experience of Machine Learning, artificial intelligence, probabilistic modelling. |  | ü |
| Research experience of at least one technical specialism e.g. parallel programming, Machine Learning, control/instrumentation, imaging. | ü |  |
| Knowledge and experience of build automation and continuous integration |  | ü |
| Experience in designing and the delivery of training courses | ü |  |
| Experience of working in a service orientated environment |  | ü |
| Experience of working in the Higher Education sector as a researcher and contributing to research through software development |  | ü |