Coventry University

FACULTY OF ENGINEERING, ENVIRONMENT AND COMPUTING

RESEARCH CENTRE FOR DATA SCIENCE (CDS)

JOB DESCRIPTION & PERSON SPECIFICATION for RESEARCH FELLOW

1.   JOB INFORMATION

Post Title:	**Research Fellow (DEWCAD Project)**
Grade:	**7**
Salary:	**£32,823 to £41,536 per annum**
Mode:	**Full Time, Funded for 3 Years Fixed Term**
Ref No:	**REQ007843**

For informal discussions prior to application please contact Dr Matthew England: Matthew.England@coventry.ac.uk

2.   JOB DESCRIPTION

.1   Job Purpose

To undertake and play a lead role in the development of impactful research within the Coventry University Research Centre for Data Science (CDS).

The position is sponsored by an EPSRC Standard Grant entitled "*Pushing Back the Doubly-Exponential Wall of Cylindrical Algebraic Decomposition*" which runs jointly at the University of Bath and Coventry University. This position is based in the Coventry University Centre for Data Science (CDS) working with project Principal Investigator (PI) Dr Matthew England. The project's objectives include the development of research software, the invention of new theoretical algorithms; and the application of both to bio-chemical network analysis and economic reasoning. The appointee would contribute to all of these, and take a lead in the software development.

.2   Duties and Responsibilities

1.   Plan and manage fundamental research activity, including the following:
- Improving, extending, optimising, and the development of new algorithms for symbolic computation and satisfiability checking.
- Implementing theoretical algorithms in computer algebra software including the integration of SAT/SMT solvers.
- Design and conduct experiments to evaluate the quality of new algorithms and implementations.
- Record and analyse the results of such experiments.
- Ensure adherence to good practice on data quality, storage and open access.

2.   Work with project partners in application domains to apply fundamental research.

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3. Disseminate research results through peer-reviewed papers for high ranking journals, and presentation at respected conferences.

4. Coordinate research meetings and travel to meet other project members at Bath, and project partners and collaborators internationally.

5. Contribute to impact activities as relevant for the project, including collaboration with industrial partner Maplesoft, creation of software documentation and tutorials, the curation of open data sets, and public engagement activities.

6. Communicate complex and technical research information using a range of methods and media, including to both experts, students and the public.

7. Contribute to teaching and learning programmes where appropriate, in particular is the transfer of research findings to inform curriculum development in both Computer Science and the application domains of economics and biology.

8. Supervise and assess relevant student projects (undergraduate and postgraduate); assist in the development of student research skills.

9. Identify new areas for research, develop new research approaches, apply innovative research methods and help prepare relevant grant proposals for external funding.

10. Build internal and external contacts, participate in networks, internal and external, for the exchange of information, building of relationships for future collaboration and identification of potential sources of funds.

11. Continually update knowledge and understanding in the discipline and develop new research techniques and approaches to enable new research contributions.

    AND other such duties as are within the scope and spirit of the job purpose, the title of the post and its grading.

3.   PERSON SPECIFICATION - RESEARCH FELLOW

ATTRIBUTES	ESSENTIAL	ADVANTAGEOUS
Education and Qualifications	PhD awarded (or awarded subject to minor corrections) in either Mathematics or Computer Science. If PhD is Computer Science then: first class equivalent grades in mathematics modules in undergraduate degree. If PhD is Mathematics then: first class equivalent grades in computational modules in undergraduate degree.	Masters qualification in an appropriate subject Post-doctoral experience in a Higher Education environment.
Experience (Paid and Unpaid)	Expert knowledge of a discipline in mathematics and/or computer science of relevance to the project.	Experience of collaborative, interdisciplinary or cross-disciplinary research Support of teaching and project supervision in a Higher Education Institution*.* Participated in applications for research funding.
Research Communication / Publications	Written communication skills including the ability to publish research high quality peer-reviewed journals. Spoken communication skills including the ability to present technical research findings. Ability to lead and take responsibility for identified parts of a research project.	Strong research publication track record. Record of participation in respectable academic conferences. Collaborated with researchers outside immediate host research group. Taken part activates to engage the public in science.

ATTRIBUTES	ESSENTIAL	ADVANTAGEOUS
Special Interests	An interest in and enthusiasm for the subject matter of the project.	Prior experience working with computer algebra systems. Prior experience developing algorithms for symbolic computation. Prior experience working with SAT-solvers or SMT-solvers. Prior experience with either bio-chemical network analysis or automated economic reasoning.
Job-related skills / Aptitudes	Proven programming ability in a high-level programming language. Ability to explain complex ideas clearly in person. Adherence to regulations, e.g. ethics, open access, and open data requirements. Ability to manage time and work to strict deadlines. IT skills to include: literature search; appropriate e-mail etiquette, familiarity with MS Office and also appropriate word processing software for the domain (i.e. LaTeX).	Ability to work with functional / symbolic / logical programming languages. Experience using a version control system for software development. Good formal presentation skills. Research project management skills. Ability to manage a research project including supervision of the work of others and/or provision of expert advice and guidance to teams
Interpersonal Skills	Excellent interpersonal and communication skills. Highly self-motivated and organised. Flexible and creative thinker. Capable of working both in a team and independently. Flexible and professional approach to work.	
Other Requirements	Willingness to travel internationally when required. Willingness to work out of hours when required.	