1 Advertisement

**Post Title:** Research Fellow in Genetic Algorithms for Fractal Evolution  
**School/department:** School of Engineering and Informatics, Department of Engineering and Design  
**Hours:** part time or full time hours considered up to a maximum of 1.0 FTE. Requests for flexible working options will be considered (subject to business need).  
**Contract:** Fixed term for 2 years  
**Reference:** 3114  
**Salary:** starting at £33,797 and rising to £40,322 per annum.  
**Closing date:** 20 February 2020. Applications must be received by midnight of the closing date.  
**Expected Interview date:** TBC  
**Expected start date:** 01 April 2020 (TBC)

The School of Engineering and Informatics is seeking a Postdoctoral Research Fellow in the field of genetic algorithms to control iterative function systems to produce structures of biological and engineering interest. The successful candidate will join the Industrial Informatics and Signal Processing group.

The Leverhulme Trust funded project will research and develop algorithms for the application of genetic algorithms to the evolution of iterated function systems in order to generate fractal structures of biological importance with possible application to the synthesis of engineering structures and devices.

Thus the candidate should have some interest in the following topics:

- Genetic and evolutionary algorithms
- Fractal structures present in plant and animal systems
- Evolutionary developmental biology and the control of phenotype through the developmental process

Candidates should normally hold a PhD in a numerate subject such as, for example: Computational Biology, Biophysics, Bioengineering, Physics, Computer Science or other appropriate subject. Candidates must have good programming skills in a simulation language such as Matlab with additional skills in programming languages such as C++/Python being helpful.

For full details and how to apply see our [vacancies page](#)

*The University of Sussex values the diversity of its staff and students and we welcome applicants from all backgrounds.*
2. The School / Division

Please find further information regarding the school/division at http://www.sussex.ac.uk/engineering/ and http://www.sussex.ac.uk/iisp/

3. Job Description

Job Title:

Research Fellow in Genetic Algorithms applied to Iterated Function Systems

Department: Engineering and Design

Section/Unit/School: Engineering and Informatics

Location: Shawcross Building

Grade: Research Fellow, Grade 7

Responsible to: Principal Investigator through to Head of School

Role description:
Research Fellow I is an early career-grade research position. Post-holders will expected to contribute to the work of the research team, and also to develop their research skills with support from more experienced members of staff.

PRINCIPAL ACCOUNTABILITIES

1. To engage in collaborative research activity resulting in high-quality publications; and to develop research funding and knowledge exchange income in collaboration with others, as appropriate.

2. To contribute to School teaching activities.

KEY RESPONSIBILITIES

1. Research, Scholarship & Enterprise

1.1 Help develop research objectives, at acceptable levels, with assistance if required.

1.2 Conduct research project in collaboration with others.

1.3 Analyse and interpret research findings and draw conclusions on the outcomes.

1.4 Produce high-quality research outputs for publication in monographs or recognised high-quality journals, or performance/exhibition, as appropriate, and
contribute to the School’s REF submission at acceptable levels of volume and academic excellence.

1.5 Contribute to the preparation of proposals and applications to external bodies, for example for funding purposes.

1.6 Build internal contacts and participate in internal networks and relevant external networks in order to form relationships and collaborations.

1.7 Continually update knowledge and understanding in field or specialism, and engage in continuous professional development.

2. Teaching & Student Support

2.1 Undertake teaching duties, if required.

2.2 Assist in the assessment of student knowledge and supervision of student projects if required.

2.3 Assist in the development of student research skills, for example as part of a postgraduate supervision team.

3. Contribution to School & University

3.1 Attend and contribute to relevant School and project meetings.

3.2 Undertake additional duties, as required by the Principal Investigator and/or Head of School.

4. Role-specific duties

1. Design and develop algorithms in the field of genetic algorithms in order to optimise iterative function parameters.

2. Develop methods for the selection of generated fractal structures to assess environmental fitness.

3. Assist in the fabrication of fractal structures and their physical testing.

This Job Description sets out current duties of the post that may vary from time to time without changing the general character of the post or level of responsibility entailed.
INDICATIVE PERFORMANCE CRITERIA

- A PhD or equivalent scholarly or relevant professional activity
- Pursuing a line of independent research within a research group.
- Publishing research (either from a recently completed PhD or new original research).
- Other forms of externally recognised professional practice of creative output of a standing equivalent to regular publication of original research.
- Initiating, developing or participating in links between the University and external bodies such as business and industry, the professions, community organisations and policy-makers.
- Evidence of successful engagement in teaching or supervision

4. Person Specification

ESSENTIAL CRITERIA

1. Normally educated to doctoral level, or other equivalent qualification, or appropriate level of experience, as appropriate to the discipline (see role-specific criteria below).

2. Evidence of engagement in high-quality research activity.

3. Excellent presentation skills, with the ability to communicate effectively, both orally and in writing, with students, colleagues and external audiences.

4. Ability to work individually on own initiative and without close supervision, and as part of a team.

5. Ability to exercise a degree of innovation and creative problem-solving.

6. Excellent organisational and administrative skills.

7. Ability to prioritise and meet deadlines.

8. Excellent IT skills.

ESSENTIAL ROLE-SPECIFIC CRITERIA

1. Research experience in the simulation of physical systems
2. Research interest in mathematical biology
3. Proficient in suitable programming languages such as Matlab, C++/Python
DESIRABLE CRITERIA

1. Emerging track record of high-quality publications in reputable journals and other appropriate media of similar standing.

2. Experience of generating research or knowledge exchange income.

The University is committed to equality and valuing diversity, and applications are particularly welcomed from women and black and minority ethnic candidates, who are under-represented in academic posts in Science, Technology, Engineering, Medicine and Mathematics (STEMM) at Sussex.