THE UNIVERSITY OF MANCHESTER

PARTICULARS OF APPOINTMENT

FACULTY OF SCIENCE & ENGINEERING

SCHOOL OF ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE

RESEARCH ASSISTANT / RESEARCH ASSOCIATE / RESEARCH FELLOW IN THE ADVANCED PROCESSOR TECHNOLOGIES GROUP (3+ POSTS)

VACANCY REF: S&E-0000

Salary:	Research Assistant Grade 5 £27,025 to £31,302 per annum, Research Associate Grade 6 £ £32,236 to £39,609 per annum, Research Fellow Grade 7 £40,792 to £50,132 per annum, depending on experience
Hours:	Full time positions – flexible and blended working arrangements will be considered
Duration:	Fixed term from ASAP until 31 March 2023
Location:	Oxford Road, Manchester
Responsible to:	Professor Steve Furber

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Enquiries about the vacancy, shortlisting and interviews:
Manager: Prof Steve Furber
Email: steve.furber@manchester.ac.uk

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Overall Purpose of the Job:

Background:

Applications are invited for positions of Research Assistant/Associate/Fellow to work within the SpiNNaker Project: a neuromorphic computing platform comprising 1 million mobile phone processors and a unique multicast routing fabric. The SpiNNaker architecture is optimised to support the simulation of simple (point-like) neurons and their synaptic connections. This architecture has a world-wide user base, drawn to a reliable and flexible platform for real-time spiking neural network simulation. This community comprises traditional neuroscientists, together with scientists and engineers from application areas such as AI and robotics.

The position is funded by the EU H2020 Flagship Human Brain Project (HBP-SGA3), which aims to provide researchers with ICT tools and mathematical models to assist with understanding how the human brain works, and for emulating its computational capabilities. The Human Brain Project

brings together many of the most respected world-leading teams in Genomics, Neuroscience, Cognitive Neuroscience, Data Analytics, Theoretical Neuroscience, High Performance Computing, Neural Simulation, Neuromorphic Engineering, Neurorobotics, and Ethics. A key part of the group's strategy is to maintain and develop fruitful collaborations with the other parts of the overall project; this will necessarily involve international travel.

The position will be based in the IT Building, Oxford Road, Manchester. The successful applicants will join the SpiNNaker team, part of the Advanced Processor Technologies (APT) group within the Department of Computer Science at Manchester. The APT group is a world-leading research centre, continuing the long and distinguished record of the University of Manchester in the field of Computer Architecture. This record includes the development of the world's first stored program computer, the invention of virtual memory and the building of the first practical Dataflow computer.

More information can be found at:

http://apt.cs.manchester.ac.uk
http://apt.cs.manchester.ac.uk/projects/SpiNNaker/
http://www.humanbrainproject.eu/

The University of Manchester values a diverse workforce and welcomes applications from all sections of the community.

Job Description:

The positions will start as soon as possible and run to 31st March 2023. The successful candidates will get the opportunity to work within a multidisciplinary team, incorporating aspects of neuroscience, mathematical modelling, and neuromorphic computing.

Key Responsibilities, Accountabilities or Duties:

The role will involve creation and testing of new models and SpiNNaker software. The post will therefore entail the following:
- Design and development of software for the SpiNNaker platform: Python based pre-processing software, and C based software for execution on the SpiNNaker machine.
- Porting of existing, and integration of new, models within the high level SNN modelling language PyNN.
- Development of testing and validation processes to monitor performance and correctness.
- Documentation of methods and results in the form of written publications and/or conference presentations.

PERSON SPECIFICATION

Research Assistant

Essential Qualifications, Skills & Experience

- Applicants should have, or be about to obtain, an MSc/PhD or equivalent in computer science, computational neuroscience, mathematics or a related discipline; and/or relevant postgraduate research or industrial experience.
- Good first degree or equivalent in computer science, computational neuroscience, mathematics or a related discipline.
- Experience in computational neuroscience (in particular, experience in the simulation of cortical networks and new learning rules is advantageous).
- Proven programming skills, including Python and C.
- Ability to work collaboratively as part of an international team.
- Ability to prioritise and manage own workload, and work to strict deadlines.
- Excellent interpersonal and communication skills (written and oral).

Desirable Qualifications, Skills & Experience
- Knowledge of event-based operating systems, and embedded systems software development.
- Experience developing numerical software, and knowledge of fixed-point and low-precision arithmetic.
- Experience working with and/or developing neuromorphic hardware.
- Knowledge of neuroscience and brain modelling.

Research Associate

To be considered for the position of Research Associate, applicants must fulfil the essential requirements of the Research Assistant role, and:
- Hold, or be about to obtain, a PhD or equivalent in computer science, computational neuroscience, mathematics or a related discipline; and/or relevant postgraduate research or industrial experience.
- Demonstrate experience in at least two of the *desirable* 'qualifications, skills and experience' domains of the Research Assistant role.

Research Fellow

To be considered for the position of Research Fellow, applicants must fulfil the essential requirements of the Research Associate role, and:
- Have over 5 years' experience in research in relevant areas,
- Have a significant record of publication or equivalent industrial output.