

**THE UNIVERSITY OF MANCHESTER**  
**PARTICULARS OF APPOINTMENT**  
**FACULTY OF SCIENCE & ENGINEERING**  
**SCHOOL OF ENGINEERING**  
**DEPARTMENT OF COMPUTER SCIENCE**  
**RESEARCH ASSOCIATE IN NEUROMORPHIC COMPUTING**  
**VACANCY REF: SAE-025561**

**Salary:** Grade 6 £36,024 to £44,263 per annum, depending on relevant experience

**Hours:** 1 FTE

**Duration:** Fixed term for 18 months

**Location:** Oxford Road, Manchester

---

**Enquiries about the vacancy, shortlisting and interviews:**

Name: Dr Oliver Rhodes

Email: [oliver.rhodes@manchester.ac.uk](mailto:oliver.rhodes@manchester.ac.uk)

---

**BACKGROUND**

The successful applicant will join the University of Manchester as part of the Horizon Europe research project NimbleAI. The project brings together 19 partners from across Europe, to research and develop next-generation integrated sensing-processing neuromorphic devices. The consortium will leverage key principles of energy-efficient visual sensing and processing in biological eyes, and harness the latest advances in 3D stacked silicon integration, to create an integral sensing-processing neuromorphic architecture that efficiently and accurately runs computer vision algorithms in resource- and area-constrained endpoint chips.

The University of Manchester has a long and distinguished track record in the research and teaching of core Computer Science, and across interfaces to adjacent disciplines. Founded upon the pioneering work of Williams, Kilburn and Turing, the Department was the first academic Department of Computer Science in the UK and one of the first to run an undergraduate programme. The research strength of the Department is reflected in consistently strong returns in UK research assessment exercises (5\* in RAE 2000, 2nd in Research Power in RAE 2008, and ranked equal 1st for research environment in REF2014 and REF2021).

### **Overall Purpose of the Job**

A key responsibility of the University of Manchester within the NimbleAI project is the development of a spiking neural network engine, which will form part of the early sensing and perception pipeline within the integrated system. This will act as a pre-processor for the event-based visual stream, facilitating operations such as: foveation through identification of regions of interest, initial classification of moving objects, removal of noise and unimportant features, and configuration/selection of downstream processing engines and/or resource requirements such as DVFS.

The successful candidate will be responsible for the development and mapping to hardware of SNN-based vision algorithms for the above tasks, and the development of tools and techniques to tailor system performance to specific applications (e.g. autonomous driving).

### **Key Responsibilities, Accountabilities and Duties**

- Conduct individual and collaborative research projects as part of the NimbleAI team, publishing findings in suitable research outlets.
- Continually update knowledge and understanding of neuromorphic computing, translating knowledge of advances in the subject area into research activity.
- Deal with routine communication using a range of media, and communicate complex information, orally, in writing and electronically.
- Liaise with project team and partners, building internal contacts and developing external networks to promote research activity.
- Manage own research and administrative activities, with guidance if required.
- Use creativity to analyse and interpret research data and draw conclusions on the outcomes.
- Contribute to collaborative decision making with colleagues in other areas of research.
- Use research resources, laboratories and workshops as appropriate.
- Balance with help the competing pressures of research and administrative demands and deadlines.
- Be aware of the risks in the work environment and their potential impact on their own work and that of others.

### **PERSON SPECIFICATION**

#### **Essential Qualifications, Skills & Experience**

- Applicants should have, 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.

- Good first degree (or equivalent) in computer science, computational neuroscience, mathematics or a related discipline.
- Experience in real-time operating systems and simulation of complex spiking neural networks in real time.
- Experience training spiking neural networks for AI applications, using techniques inspired by biology and/or machine learning.
- Ability to work collaboratively as part of an international team, and willingness to travel.
- Experience working with and/or developing neuromorphic hardware.
- Ability to prioritise and manage own workload, and work to strict deadlines.
- Excellent interpersonal and communication skills (written and oral), and a track record of making significant contributions to high-quality research publications.
- Excellent time management and organisational skills, and the ability to work to deadlines.
- Ability to work independently and as part of a team, with a willingness to learn and develop.
- Strong publication record commensurate with career stage

#### **Desirable Qualifications, Skills & Experience**

- Knowledge of event-based operating systems, and embedded systems software development.
- Experience developing numerical software, and knowledge of fixed-point/limited-precision arithmetic.
- Experience with characterization and optimal mapping of spiking neural network algorithms to neuromorphic hardware.