

Pump-Prime Funding Call 2 for Observatory for Human Machine Collaboration

Observatory for Human Machine Collaboration (OHMC) seeks to fund collaborative research projects in the areas of Human-Machine Collaboration. A total of £150k is available for this funding round to fund 3 to 6 projects.

1. Background

Our vision is to put people at the centre of the machine intelligence revolution, to create disruptive solutions for our societal challenges by transforming the fundamental understanding of human-machine collaboration. Human-machine collaboration technologies are urgently required for many high-impact societal challenges, e.g. social distancing in schools/offices, replacement and enhancement of medics/carers in hospitals, and manual labourers in food supply chains, triggered by natural disasters (Covid-19 pandemic), geopolitical issues (Brexit), and global megatrends (Global Warming and Food Crisis). This revolution must be founded on collaborative experimental space with high-resolution and multi-modal experimental data, in which interdisciplinary researchers (in robotics, computer science, neuroscience, psychology, education, philosophy etc.) and industry sectors (manufacturing, agriculture, healthcare, domestic consumer market etc.) need to work together. Understanding of complex embodied interactions between humans, machines, and environment without compromising experimental space, sensing resolutions, scale and interact-ability, is an utmost urgent need, not only in engineering and natural sciences, but also in humanity and social sciences. Multi-scale analysis of human behaviours from micro-scales (physiological, psychological, machine-assisted mechanisms) to large-scales (social, historical, and philosophical landscapes) can be holistically investigated in the OHMC facility. The collaborations will also impact industry directly: understanding of human-machine collaborations will lead to innovations in manual task automation (agriculture, hospitals, supply chains), remote work and communication (social distancing, extreme environment jobs), home automation (elderly care, rehabilitation).

The central feature of Observatory is the open-lab space approximately 150m² in the Engineering Department Main site (Trumpington Street). The experimental space will be equipped with audio-visual equipment as well as a motion capture system, brain activity monitoring headset, eye tracking system, physiological measurement, Augmented/Virtual reality glasses, and various robot platforms. The Observatory will be managed by the Small Research Facility scheme for renting the space, but the prices are negotiable depending on the user/project circumstances.

OHMC Website: <https://www.ohmc.group.cam.ac.uk/>

We are organising **the 2nd OHMC Workshop on Friday 24th September 2021 (2pm)**, to introduce the OHMC facility and this funding opportunity with more detailed information. Please contact Veronica Egorova (ve223@cam.ac.uk) for registration and more information about this event.

2. Scope of Call and Funding Criteria

The management board of OHMC plans to install four pump-prime funding calls in the duration of this project, and this is the second of this programme. The second call solicits research proposals that facilitate collaborations of inter-disciplinary and cross-sectorial collaborations that make use of space and facilities in the OHMC, with the plans that enable collaborative research in long timescales.

This call aims to support initial collaborative research proposals fulfilling the following criteria (more than one point should be envisioned):

- Interdisciplinary collaborative research in line with the OHMC vision and the other existing university strategic initiatives, networks, and centres
- Research projects that make use of the space and equipment of OHMC
- Research projects that attract additional research funding for a long-term sustainability and promote industry collaborations, early-stage academics, postdocs and students
- Research projects that are difficult to fund by other means (e.g. UKRI funding)

This is a restricted call only for the academics of the University of Cambridge to be the main applicant, but collaborations with external partners are encouraged. The following types of research projects are anticipated, but not limited to:

- Externally funded projects (e.g. UKRI, Industry, UROP) that requires large space and shared equipment
- Replicate environment of industrial partners, consumers or end-users (factories, households, hospitals, schools etc.) to conduct feasibility experiments
- Equipment for teaching and training of student projects
- Problem-driven experimental research projects motivated by Brexit, COVID-19, Aging Society, Global Food Crisis.

Some of the previous OHMC project examples include:

- Brain activity monitoring for healthcare applications
- Human behaviour observation for augmented/virtual reality and holography
- Domestic kitchen appliances assisted by autonomous cooking/cleaning robots for elderly and handicapped cares
- Computer vision research for automated recognition of human motions, gestures, and interactions
- Novel automation technologies for factory/warehouse operations

3. Application Process and Evaluation

Applicants should submit a proposal based on the form attached below.

The following information should be provided in the application form in the space provided:

- Name and contact details
- Collaborators details (optional)
- Project title
- Expected start date and durations
- Project outline (max 500 words)
- Project justification in the context of OHMC (max 250 words)
- Details of project budget (no word limit)
- Any additional funding support (optional, no word limit)
- Plan of OHMC use (no word limit)
- Future implications and long-term plan (max 250 words)

The closing date for this call is **Friday 22nd October 2021**. A single PDF document should be sent via email to Veronica Egorova (ve223@cam.ac.uk). The Review Panel, chaired by Dr Fumiya Iida, Department of Engineering, will review all applications and shortlist projects that could potentially be funded. Shortlisted projects will be invited to a review meeting to introduce their projects briefly, followed by a Q&A session. Projects which are not shortlisted will be given feedback and suggestions. The review meeting will be at

Friday 5th November 2021. Final decisions will be informed shortly after the review meeting. The assessment is based on the criteria below.

The Review Panel will evaluate all submitted proposals with respect to the following criteria.

- Strength of the proposal in terms of research excellence, importance/impact of research outcome, new directions of research and collaborations, interdisciplinary collaborations, values for money, long-term plans perspectives. (50%)
- Relevance to the OHMC strategic aims with respect to overall alignment with the OHMC vision, long-term contributions to OHMC, outreach and promotional values of the facility. (50%)

The Review Panel encourages applicants to highlight the criteria mentioned in Section 2 above, as well as the terms and conditions below.

4. Terms and Conditions

- Total budget requested in each proposal should not exceed £50k, but we expect to fund more projects with smaller budget.
- The procurement and installation of requested equipment, if any, will be conducted by the OHMC management team in collaboration with the original applicants.
- The requested equipment, if applicable, will be owned and managed by the OHMC for the equipment sharing purposes, but the priority is given to the original applicants.
- A brief half-year progress report will be requested within 6 months from the start of projects, describing the progress of the project and activities to date; impacts to date; and planned activities in the next 6 months. A final report should be completed within 12 months of receiving funding, detailing the results, outputs and outcomes from the projects, the impact on all stakeholders, and the future plans.
- All activities must be completed within 12 months from the day the project is started, but an extension of deadline can be granted in special circumstances (e.g. affected by COVID-19 access restrictions).

5. Questions

If you have any questions about the funding scheme please contact:

Veronica Egorova (ve223@cam.ac.uk) and/or Fumiya Iida (fi224@cam.ac.uk)

OHMC Small Equipment Funding Proposal

1. Applicant Details

Main Applicant Name (incl. CRSID/Email)	
Department/Faculty/Division	
Collaborators (optional, academic/industry, incl. affiliation details, and CRSID or emails)	

2. Proposed project

Project title	
Expected start date and durations	
Project Outline (max 500 words)	
Project justification in the context of OHMC (max 250 words)	
Details of project budget (no word limit)	
Any additional funding support (optional, no word limit)	
Plan of OHMC use (no word limit)	
Future implications and long-term plan (max 250 words)	