Role profile

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<tr>
<th>Job title</th>
<th>Research Associate/Fellow</th>
<th>Job family and level</th>
<th>Research and Teaching Level 4 (Appointment will be Level 4 Career training grade where an appointment is made before PhD has been completed)</th>
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<tbody>
<tr>
<td>School/Department</td>
<td>School of Computer Science</td>
<td>Location</td>
<td>Jubilee Campus</td>
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Purpose of role

We are looking to recruit an exceptional postdoctoral researcher to join our robotics research team in the School of Computer Science at the University of Nottingham. Successful applicants will undertake research in the context of EU CHIST-ERA project HEAP (https://heap-chist-era.github.io) on benchmarking for robotic grasping and manipulation and human-in-the-loop learning in the first year and later will integrate their developments within Horizon 2020 project METRICS (https://metricsproject.eu/) for extending robotic benchmarking activities.

HEAP is a European consortium that investigates robotic sorting of unstructured heaps of unknown objects. The applicant will develop benchmarking scenarios for shared control teleoperation to integrate autonomous robot manipulation and grasping abilities with motion planning, as well as learning from human demonstrations and switching the control responsibilities between the robot and the operator, e.g. changing robot autonomy level between manual control and full autonomy. The successful applicant will take a leading role in the research, development, integration and orchestration of the overall system, with a focus on algorithm and software development, as well as conducting and analysing human-subjects studies.

METRICS aims to develop an evaluation and benchmarking framework based on metrological principles. The postdoc will work in line with their development within the HEAP project to contribute to research and the organisation of challenge-led robotics benchmarking competitions in the Healthcare priority area and will have the opportunity to collaborate with researchers on the other Inspection and Maintenance, Agri-Food, and Agile Production challenge areas.

We offer an excellent working environment within one of the world’s top research universities, as well as opportunities to develop a strong individual research portfolio while being engaged in impactful and exciting research solving real-world problems of great societal need. The postdoc will also benefit from strong networking and career development opportunities provided by the EPSRC Healthcare Technologies NetworkPlus grants held by the PIs, **EMERGENCE** and **RehabTech**. They will be part of the Cyber-physical Health and Assistive Robotics Technologies (CHART) research group and have access to state-of-the-art research facilities within Cobot Maker Space(https://cobotmakerspace.org), including research space and robot arms (Franka Emika Panda, UR3, Kinova), haptic interfaces (Haption Virtuose 6D TAO, Geomagic Touch X), computer vision equipment, physiological sensors, as well as dedicated data storage, and access to GPU cluster and 3D printing facilities.

Evidence of authorship of research outputs of international standing is essential, as is the ability to work collaboratively as part of a team, including excellent written and spoken communication skills. Opportunities to mentor and co-supervise MSc and PhD students working in the project team will also be available to outstanding candidates. Applicants should have, or expect to soon obtain, a PhD in a relevant area. You must have excellent mathematical and coding skills (C++/Python, ROS). Research experience and/or keen interest in collaborative robotics, shared control, machine learning,
human state estimation, and assistive technologies is desirable. The post is available immediately.

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<th>Main responsibilities</th>
<th>% time per year</th>
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| **1**  To plan and undertake research on a day-to-day basis under the direction of the Principal Investigator, demonstrating a significant level of autonomy.  
Research activities will include:  
1. Undertake literature surveys and other investigations of the state of the art, and prepare reports as required.  
2. Design and develop software to develop assisted teleoperation paradigms for human-guided heap manipulation  
3. Software integration on robots, including, but not limited to, computer vision and control through interaction interfaces (e.g., haptics, AR).  
4. Design and development of models for shared control  
5. Experimental validation of developed techniques  
6. Design and development of user studies for testing the paradigms with human participants | 70% |
| **2**  To manage own work and share and integrate developments with consortium partners; to participate in team and project meetings. | 10% |
| **3**  To lead in the production of high-quality research outputs, including reports, papers and other publications of national/international standing; To present research outputs in relevant venues. | 10% |
| **4**  To perform project management activities, planning, scheduling, monitoring, and reporting on progress of the research project. To identify and liaise with internal and external collaborators, and with colleagues in the School, maintaining positive and effective working relationships. To participate in and help to organise internal and external research activities, including seminars, research meetings and conferences. | 10% |
### Person specification

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<th>Essential</th>
<th>Desirable</th>
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| **Skills**               | ▪ Excellent programming experience in relevant languages such as Python or C++  
 ▪ Authorship of research outputs of national/international standing.  
 ▪ Ability to build relationships and collaborate with others, internally and externally  
 ▪ Proven general research skills – problem solving, creativity and ability to progress work  
 ▪ Ability to prioritise own workload and work to specified deadlines under pressure | ▪ Specialisation in shared control, human-robot interaction, teleoperation or a related area  
 ▪ Experience in designing and conducting human factors studies  
 ▪ Experience in haptics and use of haptic libraries |
| **Knowledge and experience** | ▪ Experience working with robotic hardware, using robotic simulations and tools  
 ▪ Knowledge of robot control, motion planning and/or machine learning approaches for learning from humans  
 ▪ Experience in robotics and autonomous systems  
 ▪ Strong record of research publications in relevant area (commensurate with experience) | |
| **Qualifications, certification and training (relevant to role)** | ▪ PhD degree (or near completion) in a relevant area or equivalent relevant experience | |

The University of Nottingham is focused on embedding equality, diversity and inclusion in all that we do. As part of this, we welcome a diverse population to join our workforce and therefore encourage applicants from all communities, particularly those with protected characteristics under the Equality Act 2010.
Expectations and behaviours

The University has developed a clear set of core expectations and behaviours that our people should be demonstrating in their work, and as ambassadors of the University's strategy, vision and values. The following are essential to the role:

**Valuing people**  Is friendly, engaging and receptive, putting others at ease. Actively listens to others and goes out of way to ensure people feel valued, developed and supported.

**Taking ownership**  Is clear on what needs to be done encouraging others to take ownership. Takes action when required, being mindful of important aspects such as Health & Safety, Equality, Diversity & Inclusion, and other considerations.

**Forward thinking**  Drives the development, sharing and implementation of new ideas and improvements to support strategic objectives. Engages others in the improvement process.

**Professional pride**  Is professional in approach and style, setting an example to others; strives to demonstrate excellence through development of self, others and effective working practices.

**Always inclusive**  Builds effective working relationships, recognising and including the contribution of others; promotes inclusion and inclusive practices within own work area.

Key relationships with others