

Post doc in virtual reality for multi-agent behaviour

The [Hertz Chair for Artificial Intelligence and Neuroscience at University of Bonn](#) is looking to recruit a **postdoctoral fellow** to undertake high quality research and produce high-impact publications in a collaborative research project at the crossroads of behavioural economics and computational neuroscience with computer science/computer graphics.

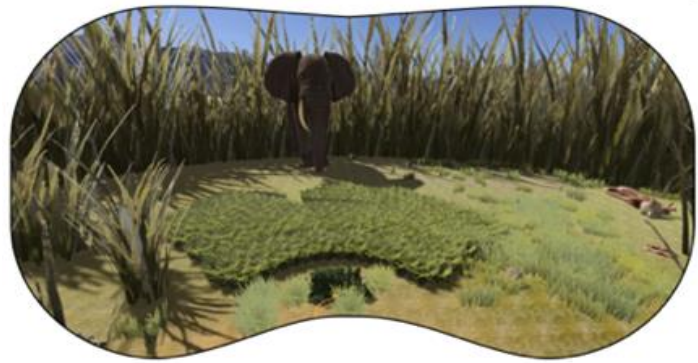
The long-term aim of our research is to understand the computational neurobiology of human threat avoidance, i.e., acute escape as well as medium- and long-term threat forecasting. We believe this understanding is important to **deliver better treatment for mental health conditions such as anxiety and trauma-related disorders**. Our research strongly builds on computational modelling of behaviour and neural systems, theories of artificial agents, machine-learning methods such as pose estimation and motion sequencing, and research automation by software design and by self-learning data analysis methods. Our team culture is collaborative, agile, and shaped by technical sophistication. We believe in open, reproducible, and sustainable precision science. We host a state-of-the-art virtual reality and motion capture lab, and have access to human neuroimaging facilities (3 T and 7 T MRI, OPM-MEG).

The goal of the advertised positions is to understand human multi-agent behaviour in the framework of mathematical game theory, using adaptable digital twins in an **immersive virtual reality (VR) environment**. The role includes

- conceptual design of classical game-theoretic dilemmata in naturalistic VR scenarios with experimentally controlled non-verbal information channels
- development of a multi-agent system within the existing VR experiment framework
- building and integrating robust systems within a multi-disciplinary team for real-time operation in experimental contexts
- conducting and analysing experiments using motion capture data
- publication of research and development results

See [here](#) for an example of our previous research with single-player games.

Applicants should have (or be close to obtaining) a PhD in computer science with focus on computer graphics, behavioural economics with focus on game theory, or behavioural science with a focus on virtual reality, or a related area by the agreed start date of



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the position. Experience with Unity and C# as well as either R/tidyverse or Python is essential. Experience with digital twin development is a plus. The successful candidates will have ample experience in programming and a good publication record.

The successful candidate will be based at the [University of Bonn, Campus Endenich](#), in direct vicinity to natural and computer science departments including computer graphics. The University of Bonn is an internationally leading research university, providing an intellectually stimulating environment. At University of Bonn, postdoctoral salaries start at around 55'000 €/year and can be substantially higher, depending on prior post-doctoral experience. The positions are available from Oktober 2024 for an initial appointment of two years with potential for extension, depending on successful performance of research and publications. University of Bonn is committed to diversity and encourages applications from underrepresented groups.

The **city of Bonn** is a thriving university city with high quality of life. Bonn is the former capital of West Germany, and today hosts many government agencies as well as various international organisations, including 20 United Nations institutions, and multinational enterprises. Almost every local speaks English. Bonn hosts the headquarters of the [German Centre for Neurodegenerative Diseases](#), [4 Max Planck Institutes](#), and several Fraunhofer Institutes in computer science-related topics. Bonn is scenically located at the entrance to the middle Rhine Valley, with ancient hilltop castles bordering its southern suburbs.

Applicants should submit a **current CV, a personal statement describing their experience and interests, and contact information for three referees** by **August 31st, 2024** to caian.office@uni-bonn.de.

Enquiries can be directed to Prof. Dominik Bach, d.bach@uni-bonn.de.