

23rd November 2021**Letter of support for Bradley Love's ESRC open call proposal****To Members of the ESRC Panel:**

I write in my role, Adrian Weller (Programme Director for the AI programme) at The Alan Turing Institute, the national institute for Data Science and Artificial Intelligence in the UK, to endorse Bradley Love's ESRC proposal.

The Alan Turing Institute is committed to supporting the key aims of the proposed scheme, as some of our core principles are:

- Broker and convene research capability at scale through a federated network, building on the strengths and strategies of partners across the UK
- Use the Turing's trusted brand to lever research relationships and resources across local, national and international organisations
- Provide leadership across the national skills agenda in data science and AI

In addition, a key aim of the Turing's AI programme is to establish a centre of excellence for the study of technical aspects of safe and ethical AI and integrate this with interdisciplinary work with stakeholders and policymakers, in line with the government's Industrial Strategy and in step with global demand for research and guidance in this domain. This will be achieved by conducting deep theoretical research and pushing the state-of-the-art frontiers, to enable trustworthy deployment of AI systems across society. Key themes include:

- Advancing appropriate AI transparency and explainability
- Improving fairness of algorithmic systems, including ways to measure and mitigate bias
- Developing robust systems which adapt well to new environments, secure from attack and respecting privacy
- Developing systems that work effectively together with humans, maintaining appropriate human control and preventing undue influence

I am writing to offer my support for Professor Brad Love's proposal "Next Generation Psychological Embeddings" that he submitted to the ESRC.

Recently, I asked Brad to lead a new theme within my programme on Human-Machine Teaming, which he accepted and is now in post. Human-machine teaming is of increasing importance as it becomes clear that alignment between human and machine understanding is necessary for robust systems that are transparent, fair, and trustworthy. We need people like Brad who combine expertise in both Psychology and Computer Science to address these importance scientific and societal issues.

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Brad's proposed ESRC proposal is ambitious and dovetails with these teaming objectives. Already, in his pilot work with Brett Roads published at CVPR, the premier outlet for computer vision research, he derived an embedding space for images more than an order of magnitude larger than the previous state-of-the-art using a fraction of the human judgments required by previous work. In his ESRC proposal, he would develop and deploy methods to go another order of magnitude larger, which would provide embeddings for machine systems to learn to align their understanding of objects with that of humans. This is high impact work that represents very good value for money as it would provide datasets that would be reused and methods that greatly reduce future data collection costs. Indeed, in a paper under review, we made use of the embeddings from Brad's CVPR paper. Although very ambitious, given Brad's lab's previous successes in this area and solid plan I am optimistic he would succeed and deliver this high impact project, which would find use at the Turing and with its partners.

Because his project dovetails with the AI's programmes objectives, as well as the specific objectives the new Human-Machine Teaming theme that Brad leads, I could see this funded ESRC project serving as a catalyst for related projects and extensions, drawing on the Turing's expertise and resources. For example, Brad mentioned a citizen-science extension to the proposed work that would gamify the data collection to drive down those costs. That could provide an alternative in the future to paying people to complete surveys on Amazon Mechanical Turk (AMT). The Turing has a number of research software engineers that could potentially contribute to such an effort, which would increase the already considerable impacts that this ESRC project would delivery.

We wish you every success with your application and look forward to working with you if it is successful.

Yours sincerely,

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