

Monday 23 June 2025

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Dear ProbAI Management Committee,

I am writing in my role of Head of the School of Mathematics in Bristol to provide support for Dr Farhad Babaee and Dr Joseph Najnudel's application to the Prob AI Discipline Hopping Award.

The University of Bristol is a leading national player in the AI space, having been awarded the title of AI University of the Year 2024, and hosting the new national ISAMBARD-AI supercomputer backed by a £225 million investment from the UK Government. As you know, the University participates in three of the EPSRC-funded AI Hubs, including Prob AI, and the Faculty of Science and Engineering is in the process of developing new interdisciplinary postgraduate degrees in AI, as well as promoting research collaboration opportunities between Maths, Engineering Maths and Computer Science.

However, a critical bottleneck in this space is the need for high-quality staff who can develop novel AI methodology and a greater theoretical understanding of AI algorithms. In that sense, I greatly welcome Farhad and Joseph's plan to work on these problems using this Discipline Hopping Award. Dr Najnudel's expertise includes probability (as well as a broad range of mathematical topics), which he seeks to combine in a novel way with tropicalisation ideas of Dr Babaee and others to understand the geometry underpinning the ReLU activation function. The two have not previously published together and I am very pleased to see them developing these collaboration ideas and support their proposal to use this funding.

While this relatively short-term funding would not enable us to hire staff to provide direct teaching relief, I would look to use mechanisms available to me to maximise Farhad and Joseph's time on the project, should their application be successful. This includes the offer of some reduction in lecturing load through our Pathway 2 Teaching Scheme (which enables other research-active staff to gain experience by taking over part of a unit, while providing relief to the usual lecturer), a reduction in tutorial load roughly equivalent to a total of three tutorial groups, and minimising requests to them for additional exam marking during the period of the award.

Should there not be direct mentoring available on this project from members of the core Prob AI hub team themselves, I would also seek to provide an additional mentor from the Institute for

Statistical Science, to ensure that Drs Babaee and Najnudel are well connected to AI work across the Faculty and wider University, and are aware of opportunities to disseminate their results.

I would like to confirm my support for this proposal, and look forward to hearing about the research outputs from this collaboration.

Yours faithfully

A handwritten signature in blue ink that reads "Oliver Johnson". The signature is written in a cursive style with a horizontal line underneath the name.

Oliver Johnson
Professor of Information Theory and Head of School