AVIVA-CAMBRIDGE STRATEGIC PARTNERSHIP

ANNUAL REPORT

2022-23

UNIVERSITY OF CAMBRIDGE

AVIVA

INTRODUCTION

It is my pleasure to introduce the 2022-23 annual report of the partnership between Aviva and the University of Cambridge. As we reflect on the achievements and successes of this partnership, we are filled with gratitude for the collaboration that has brought us to this point.

Over the years, our partnership has grown and flourished, bringing together the best of both worlds: the academic thought leadership of the University of Cambridge and the market-leading insurance and investment expertise of Aviva. Together, we have driven the impact of data science, advancing research and education in this fast-moving field.

As the first phase of our partnership draws to a close, we are proud of all that we have accomplished together since its inception. Notably, the significant progress and discoveries through our PhD sponsorships, the development of a placement program for neurodiverse students, and the increased focus on development opportunities for our people. We are particularly proud of the progress made on research projects supporting Aviva's climate action agenda, including the delivery of the Grand Challenges report on building resilient communities in the face of climate change. More recently, we have collaborated with the University's Judge Business School to deliver an Executive Programme on data-enabled decision-making, which has helped Aviva further unlock the power of data driven discovery. There's so much for us to reflect on and be proud of!

We are grateful for the opportunity to have worked together and for the legacy that this partnership leaves behind. As we look to the future, we are confident that the foundation we have built will continue to drive innovation and progress in the field of data science.

Thank you all for your support and for joining us on this journey.

Sincerely,

Alessia Kosagowsky
Chief Data Officer, Chair of Aviva Quantum

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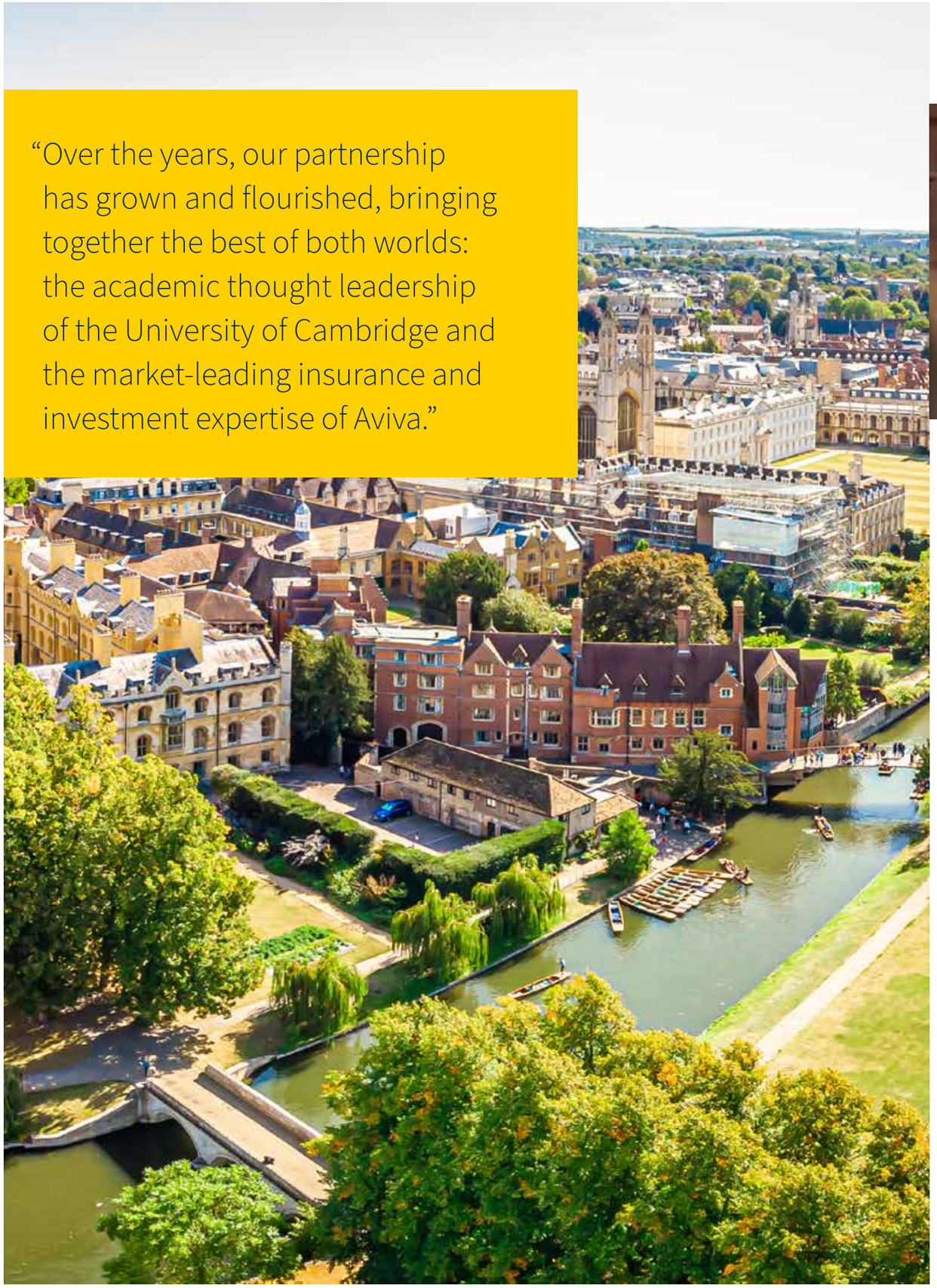

EXPLAINABILITY IN NATURAL LANGUAGE PROCESSING

PhD student: Paulius Rauba

Academic supervisor: Mihaela van der Schaar

Aviva project sponsor: Danny Hoskin

PhD student Paulius Raubus is focused on improving how machine learning (ML) models and large language models (LLMs) are tested, both before and after their deployment in real-world settings. This aspect of his work is crucial, as it's common for models to face performance issues once they are operational in production environments. By contributing to a more robust, end-to-end testing paradigm, Paulius aims to enhance the performance of ML models in practical applications.

More recently, Paulius has been working on improving the reliability and robustness of LLM systems in the context of high-stakes applications. One way he has approached this is by building quantifiable metrics which can be used by practitioners to assess the dependability of an answer provided by an LLM system.

As the sponsor of Paulius' research, I am excited to share that his work on NLP has the potential to greatly impact Aviva's pricing models. By creating an explainability pipeline, we hope to enhance our understanding and improve our decision-making processes for the benefit of both our customers and Aviva. I am confident that with the collaboration between our team and Paulius, we will see significant advancements in this area.

Danny Hoskin
Principal Data Scientist for Artificial Intelligence and Automation, Aviva

DATA ENABLED DECISION MAKING

A course for Aviva's senior leadership provided by the Judge Business School

The Cambridge Judge Business School Data-Enabled Decision Making Programme was a custom-designed Executive Education programme for Aviva, aimed at growing the understanding of data and enhancing the ability of senior leaders to make better data-driven decisions. Led by Prof David Stillwell, the programme's goals included building and advancing the capability to confidently lead in a data-enabled organisation, fostering a data-inquisitive and data-first growth mindset, and revealing the 'art of the possible' in data.

Covering a diverse curriculum, topics ranged from the fundamentals of data and AI to creating a culture and mindset for innovation and growth, addressing security and ethical concerns, and envisioning the future of data beyond Aviva. The well-received program concluded with participants applying their knowledge to real-life projects at the London St Helens Head Office. These projects spanned automation of common demands, healthcare treatment plan decisioning, and noteworthy discoveries in vulnerable customer detection. The project work left a lasting positive impact on colleagues.

Delivered over nine months in both face-to-face and online formats, the programme was a unique opportunity to bring Aviva's executives together to share their experiences, explore Cambridge thought leadership, and to plan for their futures as data leaders.

I found it incredibly practical and learned lots about my own particular biases, incredibly thought-provoking and beneficial for me. The presentation on data-driven cultures and the ensuing conversations were superb and the physical symbol of the partnering with University of Cambridge indicated that the programme was special and unique.

Gordon Rutherford
Head of Marketing, Aviva

PARTNERSHIP ANNUAL EVENT

Our annual partnership event took place on October 30th in the beautiful surroundings of Sidney Sussex College, Cambridge. The event celebrated five years of collaborative research and featured talks on large language models and the use of AI in assessing climate change risks.

PhD student Paulius Rauba presented a guide to whether the results of large language models such as ChatGPT can be trusted. Developing the theme of natural language processing, Helen Jackson of Cambridge-based startup ClimateNode explained how they are analysing unstructured text from news reports, scientific articles and papers for new insights on potential or actual climate-related risk to infrastructure, companies and supply chains.

Savvas Gkantonas from the Department of Engineering gave a compelling account of his work modelling the propagation of wildfires in urban environments. Following this Brian Sheil, also from the Department of Engineering, explained the background to the Future of the Built Environment doctoral training programme where PhD students are creating the innovative, resilient infrastructure that will be needed to mitigate the effects of climate change.

The event concluded with a panel discussion featuring Helen Jackson, Colm Caulfield, Ewan Mitchell and Oliver Henderson, moderated by David Hepworth. A provocative discussion explored the use of AI in modelling the effects of climate change, how this is likely to impact the insurance industry and how academic partnerships can provide broader perspectives on this for both the short and longer term.

CLOSING THOUGHTS

It's been both a privilege and a pleasure to chair the Aviva-Cambridge partnership executive committee. The partnership has always been particularly broad in its reach across Cambridge, crossing traditional disciplinary boundaries from computer science to psychology and the social sciences. It has involved senior leader in both organisations, data science researchers and practitioners as well as undergraduate students. Education has always been a strong part of our joint mission, with the provision of courses on the nuts and bolts of data science to the senior leadership programme run recently by the Judge Business School. The governance of the partnership, with single points of contact on both sides and frequent meetings of two highly engaged management committees has been a model for how we run other industry partnerships.

As we look to the future, the single overarching priority for us all is how we create a more sustainable future and deal with the increasingly extreme effects of climate change. This permeates many areas of research at Cambridge and is of primary importance to the future of the insurance industry. This year's annual partnership event offered a glimpse of the possible work we can do together to address the effects of the climate crisis. The past five years of collaborative research forms a solid platform on which to build our partnership into the future.

Karen Kennedy
Director, Strategic Partnership Office
University of Cambridge

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