

SPRING-SUMMER 2026

cdt-aimlac.org/ @AimlaCommunity

PROFESSOR GERT AARTS
DIRECTOR OF AIMLAC



Dear AIMLAC students, supervisors, partners and alumni,

I am writing this preface with mixed feelings. AIMLAC has been one of the most rewarding and enjoyable initiatives I have had the privilege to lead at Swansea University. But, as we all know, all good things must come to an end.* At the end of July I will not only be leaving Swansea, Wales and the UK, but I will re-enter the European Union to take up a professorship at Bielefeld University in Germany.**

Supported by an Advanced Professorship from the Wübben Foundation, I will continue my research on Quantum Chromodynamics under extreme conditions, alongside the development of AI and machine learning methods for lattice field theory. The support is extremely generous. Unfortunately, it does not include a sea view, but I have decided to accept this minor downgrade.

One of the ambitions of my new position is to bring the type of doctoral training we have in AIMLAC to Germany. If all goes well, I hope there will be a sequel in due course, naturally entitled *AIMLAC Zwei*.

I would like to thank everyone who has contributed to AIMLAC over the past years. Thank you for your enthusiasm, support and hard work; for the outstanding research, theses and publications; and for helping to create such a vibrant and welcoming community through the many events and activities. AIMLAC has been a tremendous success because of your collective efforts, and it has been a pleasure to be part of it.

Alles Gute,
Gert

* AI informs me that this phrase originates from Geoffrey Chaucer's "Troilus and Criseyde" (14th century). Who knew?

** Claims that Bielefeld does not exist are greatly exaggerated
(https://en.wikipedia.org/wiki/Bielefeld_conspiracy).

STAFF NEWS

A fond farewell to Professor Gert Aarts - Director of AIMLAC



We would like to extend our sincere thanks and best wishes to Professor Gert Aarts as he steps down from his role as Director AIMLAC.

Since becoming the Director of AIMLAC in 2019, Professor Aarts has played a pivotal role in shaping AIMLAC into the thriving, collaborative programme it is today. His leadership has helped establish a strong interdisciplinary foundation, bringing together expertise across physics, computing, and data science to deliver world-class doctoral training and research.

A Professor of Theoretical Physics at Swansea University, Professor Aarts' work sits at the intersection of cutting-edge science and advanced computing which is an alignment that has greatly influenced AIMLAC's vision and direction. Beyond AIMLAC, Professor Aarts has held a number of significant leadership roles, including Head of the Particle Physics and Cosmology Theory group and Deputy Pro-Vice-Chancellor for Postgraduate Research at Swansea University. He is also a Fellow of the Learned Society of Wales and a recipient of prestigious awards such as the Royal Society Wolfson Research Merit Award.

On behalf of the AIMLAC community, we thank Professor Aarts for his outstanding leadership and dedication, and we wish him every success in his future endeavours.

Welcome Professor Chris Allton – New Head of AIMLAC



We are delighted to announce Professor Chris Allton as the new Head of AIMLAC. Professor Allton brings a wealth of academic expertise and leadership experience to the role. A Professor of Theoretical Physics at Swansea University, his research focuses on understanding the fundamental building blocks of the universe, using advanced computational techniques to explore the behaviour of quarks, protons and other particles under extreme conditions. This deep engagement with high-performance computing and complex data-driven modelling aligns closely with AIMLAC's mission.

Originally from Australia, Professor Allton has built an international academic career spanning institutions in the UK, Italy before joining Swansea University.

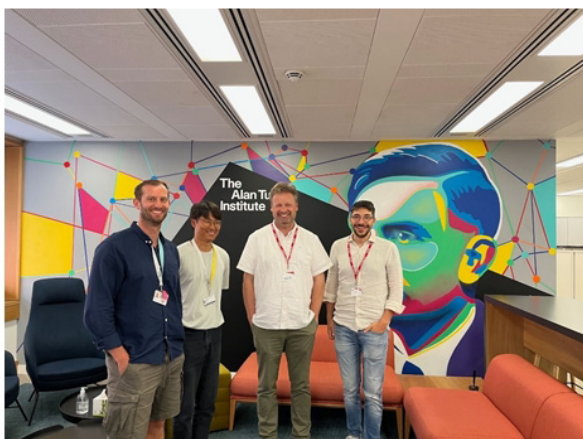
He is the founder of Oriel Science, an initiative dedicated to bringing interactive research experiences into accessible community spaces and inspiring wider audiences to engage with science and innovation. Through this work, Oriel Science has engaged large and diverse audiences, showcasing the impact and accessibility of cutting-edge research.

We warmly welcome Professor Allton to AIMLAC and look forward to benefiting from his vision, experience and passion for both research and outreach to further strengthen AIMLAC's impact across academia, industry and society.

STUDENT UPDATES

Chanju Park

Alan Turing Institute



Chanju Park, a PhD student with the AIMLAC CDT based in the Department of Physics, recently organised a workshop at the Alan Turing Institute in London.

As part of his Enrichment Placement at the Turing, which runs from September 2024 to July 2025, Chanju brought together researchers for an informal workshop on June 20th to explore the "theory of hyperparameter tuning from neural network training dynamics".

The event featured talks by Antonio Sclocchi (Gatsby Unit, UCL Theory of Learning Lab) and Gert Aarts (Swansea), along with a tutorial by Diego Granziol (Mathematical Institute, Oxford).

Discussions focused on the stochastic nature of learning and its parallels with non-equilibrium physical systems involving many fluctuating degrees of freedom. A key insight that emerged was the concept of a phase diagram for neural networks, located in the space of hyperparameters. This phase diagram helps practitioners in selecting parameter regimes where learning is most effective.

[Visit the workshop website for more information](#)

Preben Vangberg

Language technology researcher Preben Vangberg was featured in a report by French television regarding his work on AI speech recognition for the Breton language. The news coverage highlighted how Vangberg's team used a dubbed video studio to train machine learning models, helping the Breton language overcome common resource limitations.

Watch the interview here:

<https://www.youtube.com/watch?v=NP83nwOpjD0>

Read the article here:

<https://hal.science/hal-05545733v1/document>

Glory Ogbonda

What's next: Now the real work begins! We have until August 21st to prepare our camera-ready submission. Then we are off to present at the world's most prestigious visualization conference!

This journey from concept to IEEE VIS has been incredible, and I can't wait to share our visual approach to making justice more accessible with the global visualization community.

To God be all the glory for making the impossible possible! 🙏

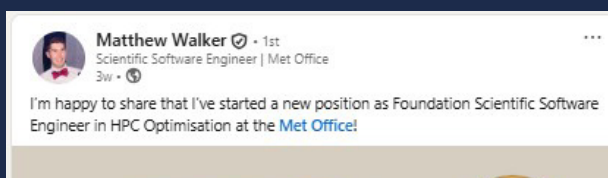
Who else is excited about the intersection of AI, visualization, and social good? Drop your thoughts below! 💡

#IEEEVIS2025 #Visualization #LegalTech #AI #AccessToJustice #Research #EmploymentLaw #ExplainableAI #VisualAnalytics #Gratitude #ToGodBeTheGlory #BangorUniversity #PhD

P.S. - Can't wait to see how the visualization community responds to legal AI made visual! This is going to be an amazing conversation starter! 🎨 ✨



Matt Walker



Huge congratulations from all at AIMLAC to Matt on his new position at the Met Office! We wish him all the very best in his new role.

STUDENT UPDATES

Chanju Park

MACHINE LEARNING
Science and Technology

PAPER • OPEN ACCESS

Phase diagram and eigenvalue dynamics of stochastic gradient descent in multilayer neural networks

Chanju Park*, Biagio Lucini and Gert Aarts

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[Machine Learning: Science and Technology, Volume 6, Number 4](#)

Citation Chanju Park et al 2025 *Mach. Learn.: Sci. Technol.* 6 045048

DOI 10.1088/2632-2153/ae1acc

Chanju, Biagio, and Gert recently co-authored this New open-access study explores stochastic gradient descent dynamics in multilayer neural networks, advancing theoretical understanding of optimisation behaviour in complex machine learning systems.

Natalia Sikora



Natalia served as a judge at the Hack-Nation Global AI Hackathon supporting evaluation of projects from over 1,500 international participants across 65+ countries.

Teresa Matamoro Zatarain

Last week I had the incredible opportunity to present my work on the active galactic nuclei of the Euclid Q1 data release at the [European Space Agency - ESA's ESLAB Euclid Symposium](#).

This work has been the culmination of months of hard work and collaboration, and it was a pleasure to be able to share it with the community and show off Euclid's capabilities for AGN science.

Once again, a huge thank you to all the collaborators, and to the [ESA Academy](#) for their generous sponsorship to attend this symposium!

If you are interested in this work, it is now publicly available on arXiv.
arXiv: <https://lnkd.in/d5kPuH2w>

James Fawcett



Congratulations to all of our current AIMLAC students on their ongoing achievements. We are incredibly proud of your progress and output and cannot wait to see what you achieve in the future!

14-15TH MARCH 2026

DataAid

Doing Data Science for Charitable Organisations

Committee member Diaa Habibi said: "DataAid was a fantastic opportunity to apply data analytics to a real social challenge. The Bread and Butter Thing's mission of reducing food wastage and helping disadvantaged families access affordable food made this year's DataAid event particularly meaningful. It was great to see PhD students with different backgrounds quickly form effective teams and, in less than just two days, produce results that could have a real impact. Working along with TBBT's CEO, Vic Harper, the volunteers gained valuable experience, and the charity received insights that could help them better support families in communities around the UK."

DataAid is our student driven programme which unites the analytical skills and expertise of PhD students in the AIMLAC CDT and PhD students from our partner universities, with charities in need of data support to generate valuable new insights and perspectives on the data they hold.

AIMLAC students worked in partnership with 'Bread and Butter Thing' who distribute high quality surplus food to thousands of families each week in over 155 community locations around the UK.



“It was fantastic to be able to implement what we have learned on our course and be able to help charities! We improved our current skills, as well as developing our communication, leadership, and organisation skills. - AIMLAC student”

AI CONFERENCE 2025



The 2025 Annual Conference of the UKRI Centre for Doctoral Training in Artificial Intelligence, Machine Learning and Advanced Computing (AIMLAC) was held in partnership with the University of Bristol's Interactive Artificial Intelligence and Practice-Oriented Artificial Intelligence CDTs, under the direction of Professor Gert Aarts and Professor Peter Flach. The event took place at the Radisson Blu Hotel in Bristol on 24–25 June 2025.

This highly successful conference brought together a vibrant community of doctoral researchers, academic leaders, and industry partners from across the UK and beyond. It provided a valuable platform for collaboration, knowledge exchange, and networking within the rapidly evolving fields of artificial intelligence and machine learning.

The programme featured an engaging and diverse range of talks, presentations, and discussions showcasing the breadth and depth of current research. More than 50 participants took part, contributing to sessions that explored cutting-edge applications of AI and machine learning in areas such as particle physics, astronomy, healthcare, and engineering, while also highlighting foundational advances in computer science.

A particular highlight of the conference was the strong involvement of the CDTs doctoral researchers, many of whom delivered presentations on their ongoing work. Dedicated sessions also addressed important cross-cutting themes, including AI governance, ethics, and responsible innovation—topics that are increasingly central to the development and deployment of AI technologies.

The event fostered a collaborative and inclusive environment, encouraging dialogue between academia and industry and supporting the professional development of early-career researchers. Attendees praised the high quality of the presentations and the opportunity to engage with a broad range of perspectives on both the technical and societal dimensions of AI.

Professor Gert Aarts, Director of AIMLAC, said:

“Our annual conference continues to be a cornerstone of the AIMLAC programme, providing our doctoral researchers with an invaluable opportunity to present their work, exchange ideas, and build lasting collaborations. The breadth of topics covered this year reflects not only the diversity of AI research but also its growing impact across science, industry, and society. We are delighted to partner with colleagues in Bristol to deliver such a stimulating and successful event.”

AIMLAC ANNUAL CONFERENCE 2026



A Reflective and Celebratory Gathering in Cardiff

In May 2026, AIMLAC returned to Cardiff for its latest annual conference, hosted at the historic Angel Hotel on 13–14 May 2026. While this year's event was more intimate in scale, reflecting the completion of several doctoral cohorts, it proved to be no less impactful, offering a rich and engaging programme for all who attended.

A Smaller Gathering with Big Ideas

With many students reaching the final stages of their PhDs, the 2026 conference was intentionally smaller than previous years. However, the size of the event created a more personal and reflective atmosphere, allowing for deeper discussions and stronger connections between participants.

Despite its scale, the conference maintained its hallmark high-quality presentations and stimulating discussions, showcasing the exceptional work of AIMLAC researchers and academic collaborators. Attendees benefited from a programme filled with insightful talks that demonstrated both the technical depth and real-world relevance of their research.

Celebrating Research and Alumni Success

A highlight of this year's event was the return of several AIMLAC alumni, who shared their experiences beyond the CDT and reflected on how the programme shaped their careers. We were delighted to welcome back Sophie Sadler, Robbie Webbe and Ben Winter from our 2019 cohort.

Each delivered engaging presentations on their current roles and research, offering valuable perspectives on life after AIMLAC whether in industry or postdoctoral positions. Their talks provided inspiration for current researchers, illustrating the diverse career pathways made possible through the programme, as well as personal reflections on their PhD journeys within AIMLAC.

AIMLAC ANNUAL CONFERENCE 2026



A Fond Farewell to Professor Gert Aarts

The conference also marked a significant moment for the AIMLAC community as we said farewell to Professor Gert Aarts, Director of AIMLAC. Professor Aarts is leaving Swansea University to take up a prestigious new position at Bielefeld University.

In his farewell talk, Professor Aarts delivered a thoughtful and inspiring reflection on his time leading the CDT. He spoke about the development and achievements of AIMLAC, the importance of collaborative research, and the successes of its doctoral researchers. His message was one of pride in the programme and in the many early-career researchers who have emerged from it.

His leadership has played a pivotal role in shaping AIMLAC into a highly regarded and collaborative doctoral training centre, and he leaves behind a strong and thriving community.

Looking Ahead to 2027

Planning is already underway for the next AIMLAC conference, which promises to be an exciting and expanded collaboration. We are pleased to be partnering with University College London, the University of Bath, and Imperial College London.

While arrangements are still in the early stages, the conference is expected to take place in Bristol during the first two weeks of March 2027. Further details will be shared in due course, but we encourage all members of the AIMLAC community and partners to save the date and look forward to another stimulating and collaborative event.

Class of 2019

Ben Winter, based at Bangor University, was supervised by Professor William Teahan during his academic journey.

As part of his studies, Ben undertook a valuable placement with the Science and Technology Facilities Council (STFC), where he worked under the mentorship of Jola Mirecka.

This placement provided him with practical experience and the opportunity to contribute to significant projects in the field of science and technology.

Ben successfully defended his thesis in May 2025, entitled 'Grammatical and Ecological Neuroevolution'.

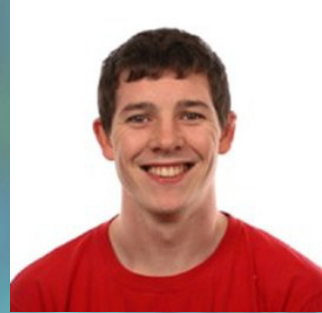
Following the completion of his thesis, Ben has embarked on a professional career as a Lead Machine Learning Engineer at Wyser, a small but innovative AI company. In this role, he applies his expertise to develop and implement advanced machine learning solutions, contributing to the company's growth and success in the AI industry.



Cory Thomas was based at Aberystwyth University and was supervised by Professor Reyer Zwiggelaar. During his PhD, Thomas completed a six-month placement with Agxio, where he continued to work part-time, gaining valuable industry experience and contributing to innovative projects.

Cory successfully defended his thesis in 2025 entitled '*Exploring Breast Cancer Morphology in Mammography through Deep Feature Cluster Analysis and an Investigation into Grade Classification in Mammograms*'.

After completing his PhD, Thomas chose to remain at Aberystwyth University and successfully secured a position as a full-time Research Software Engineer. In this role, he has been instrumental in developing and maintaining software solutions that support various research initiatives.



Class of 2020



Drew Mack, based at Cardiff University, was supervised by Prof Thomas Connor and spent his 6-month placement with the Science and Technology Facilities Council (STFC) under the mentorship of Agnel Praveen Joseph.

Drew submitted his thesis titled "*A Computational Exploration of the Genomic and Structural Evolution of SARS-CoV-2*" and successfully defended his thesis during his viva in November 2024.

Following his academic achievements, Drew has embarked on a professional career with Biotech as a Senior Computational Biologist, where he continues to apply his expertise in computational genomics and structural biology to drive initiatives and forward the company's research and development.



Lukas Golino, affiliated with both Swansea University and CERN, was supervised by Prof Niels Madsen and completed a six-month placement at CERN.

Lukas submitted his thesis, titled '*Machine Learning Methods for Antihydrogen Detection*' in September and successfully defended it in November 2024.

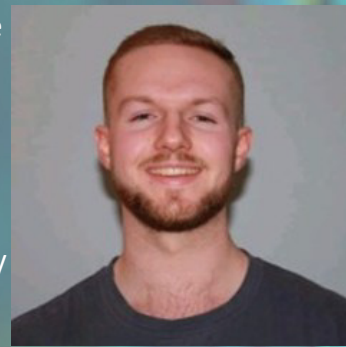
Following his successful defence, Lukas has taken up a position as a Senior Research Fellow at CERN, one of the world's leading centres for particle physics research. In this role, he is working on the development and application of advanced machine learning methods for the detection of antihydrogen, contributing to cutting-edge experiments that seek to deepen our understanding of the fundamental properties of antimatter.

Frank Williams a doctoral researcher based at Bangor University, where he was supervised by Professor Lucy Kuncheva.



As part of his academic journey, Frank completed a research placement with the Science and Technology Facilities Council (STFC), working under the mentorship of Jola Mirecka. This experience offered him valuable exposure to applied research within a national scientific institution, further enriching his doctoral studies. Frank submitted his thesis, '*Learning from Badly Behaving Data*', and successfully defended it during his viva in July 2025. His achievements reflect a strong commitment to addressing real-world challenges through thoughtful and impactful academic inquiry.

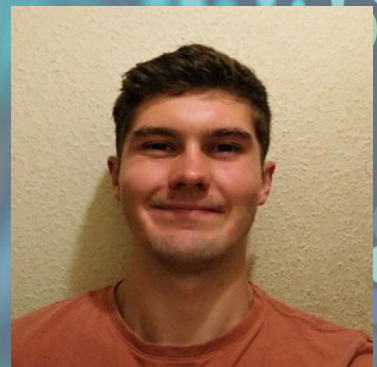
Matthew Selwood based at the University of Bristol, was supervised by Dr Sotiria Fotopoulou, completed a 6-month placement with JD Power UK and was mentored by Patrick Tudor and Steffan Rees.



Matt has successfully submitted his thesis, titled "*Exploring the Evolution of active galactic nuclei with the Next Generation of Astronomical Surveys*" and defended his viva in November 2024.

Soon after leaving Bristol, Matthew successfully secured a position as a Quantitative Analyst at the Bank of America, marking an impressive transition from academia into a highly competitive role within the financial sector.

Matthew Walker, based at Cardiff University, was supervised by Dr Leandro Beltrachini and completed a 6-month placement with DiRAC HPC Facility under the mentorship of Chris Edsall in Cambridge.



Matt submitted his thesis and went on to defend his thesis, titled '*Reduced Order Modelling Applied to Parametric EIT and EEG for Comprehensive Characterisation of the Electrical Conductivities of Head Tissues*' at the end of October 2024.

Following his placement with DiRAC in Cambridge, Matt said he was inspired by his time working with the RSEs there and also expressed that he is "very grateful for the software engineering training we received from AIMLAC."

After his PhD, Matt took a few months off to sail the Pacific with friends. He has since secured a position as a Foundation Scientific Software Engineer in HPC Optimisation at the Met Office.



Will Robinson based at Aberystwyth University, supervised by Dr Bernie Tiddeman and undertook a placement with the Science and Technology Facilities Council (STFC) under the mentorship of Agnel Praveen Joseph.

Will submitted in 2025 and successfully defended his thesis, titled '*ODQ: Entropic Analysis of Machine Learning Model Uncertainty and Instability*', in May 2026.

Will now works for The Open University as a Lecturer in Digital Solutions, where he delivers teaching and support to professional apprentices. In this role, he draws on his expertise to help learners develop practical skills in digital technologies, bridging the gap between academic knowledge and its application in the workplace.

Jake Amey, a doctoral researcher based at the University of Bristol under the supervision of Professor Jonas Rademacker, completed a placement at DiRAC's High-Performance Computing Facility in Cambridge.

Jake successfully defended his thesis, titled *Amplitude*

Analysis of the $B^0 \rightarrow D^0 D^0 K^+ \pi^-$ Decay with the LHCb

Experiment', in January 2025, demonstrating his expertise in particle physics.

Jake has since transitioned to industry and now works as a Data Scientist at Stylus, a London-based company that was named "Start-up of the Year" at the 2025 British Educational Suppliers Association (BESA) Awards.



Congratulations to our associate students from the Data Intensive CDT and Swansea University! The DI CDT is a programme partnered with Bristol and Swansea and led by Cardiff University, we also had a SURES student join us from Swansea University. We'd like to give a big shout-out and heartfelt congratulations to them for successfully completing their PhDs.

**"Wishing you
all every
success and
a bright
future ahead!"**



David Mason studied with Swansea University for his PhD under the supervision of Prof Biagio Lucini and was funded by the UKRI Data Intensive CDT. David undertook a placement with the Science and Technology

Facilities Council (STFC) under the mentorship of Dr Alin Marin Elena.

David successfully defended his thesis in 2024, entitled '*First-order deconfining phase transitions in Yang-Mills theories*'.

Since his Viva, David has been working as a Postdoctoral researcher at Forschungszentrum Jülich, North Rhine-Westphalia, Germany.



Maciej Glowacki studied for his PhD at the University of Bristol, supervised by Prof Henning Flaecher, and was funded by the UKRI Data Intensive CDT.

Maciej completed a placement with EDF mentored by

Hannah Loeb as part of his PhD.

Maciej successfully defend his thesis, titled '*Searches for Beyond-Standard-Model signatures with Jets + Missing energy*' In 2024.

Maciej now works as a Postdoctoral fellow at the European Organisation for Nuclear Research (CERN) on a mission of reshaping experimental particle physics with explainable and reliable A.I. systems.

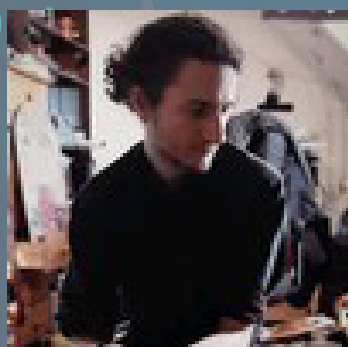
Jacob Elford studied with Cardiff University for his PhD under the supervision of Dr Timothy A. Davis and was funded by the UKRI Data Intensive CDT. Jacob came to Swansea for his placement with JD Power and was mentored by Steff Rees.



Jacob submitted and defended his thesis entitled '*Hungry black holes - AGN fueling and central engines in the millimetre*' in September 2024.

Jacob is now at Universidad Diego Portales, Chile.

Class of 2021



Fergus Baker, a doctoral researcher based at the University of Bristol under the supervision of Dr Andy Young in Astrophysics.

Fergus completed a placement at DiRAC's High-Performance Computing Facility

in Cambridge, where he gained valuable experience working with advanced computational resources and contributing to research in a high-performance scientific environment.

Fergus defended thesis, titled "General Relativistic Effects in Black Hole X-ray Coronal Models," in October 2025.

Following the successful completion of his PhD, Fergus has taken up a postdoctoral research position at Newcastle University, where he continues to build on his expertise in astrophysics and computational modelling.

Laura Ballisat, based at the University of Bristol, carried out her doctoral research under the supervision of Dr Jaap Velthuis. As part of her PhD programme, she completed a six-month placement with GCHQ, where she gained valuable experience applying her scientific and technical skills within a highly specialised, real-world setting.



Laura submitted her doctoral thesis, entitled "*Geant4 Modelling of DNA Strand Breaks from Diffusing Alpha-Emitter Radiation*," and successfully defended in June 2025.

Following the successful completion of her PhD, Laura has moved into a professional role within the NHS. In this capacity, she is applying her scientific training and analytical skills in a healthcare setting.



Zara Siddique was with Cardiff University and supervised by Dr Liam Turner.

Zara completed a six-month industry placement with Amplyfi, where they were mentored by Luis Espinosa-Anke. This placement provided valuable experience in applying natural language processing and machine learning techniques within a

commercial setting, as well as insight into the practical challenges of deploying AI systems in real-world contexts.

Zara submitted their thesis titled '*Measuring and Mitigating Stereotypes in Large Language Models*' and successfully defended it in April 2026.

Following the successful completion of their PhD, Zara has moved into a creative and applied role, where they now work on designing and developing educational games for children.

Sam Hennessey, based at Bangor University, was supervised by Prof Lucy Kunchev.

As part of his PhD pro-gramme, he undertook a six-month placement at Rothamsted Research, where he was mentored by Professor Simon Willcock. During this placement, Sam gained valuable experience

working within a leading agricultural and environmental research institute, applying advanced machine learning techniques to real-world datasets and interdisciplinary research challenges.

In 2025, Sam submitted his thesis titled "*Ensembles of Deep Neural Networks for Semi-supervised Learning*" and successfully defended his thesis during his viva in September 2025.



We would also like to extend a sincere thanks to our CDT partners for supporting our students through their six-month placements across all cohorts. Over the past six years, your contributions have helped more than 60 PhD students gain valuable, career-shaping experiences through insightful, skills-building, and meaningful placements.

AMPLIFYFI

Atos



J.D. POWER



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Agxio, AMPLYFI, DiRAC, EDF Energy, Eviden Technology Services Ltd (formally known as Atos), GCHQ, Infinitesima Ltd, Isambard AI University of Bristol, JD Power UK (formally known as We Predict), Mobileum Ltd, Office for Standards in Education (Ofsted), Office of National Statistics (ONS), Science and Technology Facilities Council (STFC), and Rothamsted Research Institute.