



University College Dublin
School of Computer Science

MAY 2025

CS NEWS



POLITICAL BIAS ON X



University College Dublin
School of Computer Science

WELCOME

A MESSAGE FROM THE HEAD OF SCHOOL



Welcome to our magazine bringing the latest news from around the School to our students, alumni, collaborators, staff, friends and the worldwide computer science community.

Exploring new frontiers of knowledge

This issue gives a sample of some of the very wide range of activities going on in the School.

Among them are research projects addressing big global challenges in fields such as AI, climate change, migration, health and civil society.

Student Experience

We strive to give people from diverse backgrounds opportunities for personal development within a vibrant, welcoming and supportive community. We are proud to acknowledge the achievements of our students and their positive contribution to building that school community.

Learning for Life

We are preparing our students to succeed in disruptive times, by facilitating access to education and nurturing the skills, competencies, attributes and behaviours that will set our graduates up for success.

Many thanks to the editorial team of Rupert Bowen and Mark Matthews. Enjoy!

Neil Hurley, Head of School

Give us your feedback!

Please take 2 minutes to tell us what you think of this issue
www.forms.gle/r94mA2fM8VArSAi9



RESEARCH CENTRES



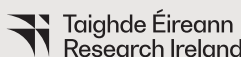
CeADAR - Ireland's Centre for AI

Ireland's national centre for AI, funded by Enterprise Ireland and IDA Ireland.
www.ceadar.ie



UCD Centre for Cybersecurity and Cybercrime Investigation

Leading centre for research and education in cybersecurity, cybercrime and digital forensics. www.ucd.ie/cqi



Science Foundation Ireland Research Centres

UCD CS researchers are active in the following Taighde Éireann – Research Ireland centres, linking scientists and engineers in partnerships across academia and industry to address crucial research questions.
www.sfi.ie/sfi-research-centres/



Insight – data analytics

Data analytics centre that provides fundamental research and innovative technology solutions for industry and society. www.insight-centre.org/



LERO – software

Bringing together expert software teams from universities and institutes of technology in a centre of research excellence with strong industry focus.
www.lero.ie



ADAPT – AI-driven digital content technology

Pioneering new human-centric AI techniques and technologies including personalisation, natural language processing, data analytics, intelligent machine translation, and human-computer interaction. Setting standards for data governance, privacy, and ethics for digital content. www.adaptcentre.ie/



CONNECT – future networks and communications

World-class expertise from ten Irish academic institutes creating a one-stop-shop for telecommunications research, development and innovation.
www.connectcentre.ie



VistaMilk

Innovative precision pasture-based dairying for the environment, animal well-being and the health of consumers. www.vistamilk.ie



FutureNeuro – chronic and rare neurological diseases

Improving the health and healthcare of people with neurological disease through diagnostics, therapeutics and eHealth research. www.futureneurocentre.ie



I-Form – advanced manufacturing research centre

Shaping the future of manufacturing through high-impact research into the application of digital technologies to materials processing. www.i-form.ie

POLITICAL BIAS ON X

Asst. Prof. Przemyslaw Grabowicz

In advance of the 2025 German Federal Election in February 2025, we examined whether German X users would see politically balanced news feeds if they followed comparable leading politicians from each federal parliamentary party of Germany¹. The default algorithmic feed is the *For You* feed. Only 20% of posts shown in the *For You* feed are from the users they are following. We created two X accounts, made both follow the same set of German politicians from each of the eight major German federal parliamentary parties, and tracked their feeds for 4 weeks in January 2025.

Posts of far-right AfD politicians appeared most frequently in the *For You* feed, accounting for about 37.9% of posts of politicians in the feed, even though the AfD politicians posted only 15.2% of the tweets by politicians during this time (see Figure 1). Similarly, posts of the other German populist party, the left-wing BSW, appeared 10.6% times in the *For You* feed, despite the fact that their politicians created only 1.4% of politician tweets.

Because most of the posts in the *For You* feed are from users other than politicians, we analysed who appeared most frequently in this feed. The top two most-appearing users were Elon Musk, who supports AfD, and Alex Jones, an American far-right radio show host.

These biases in news feeds may be because the posts of the far-right AfD and its supporters tend to receive more likes and retweets and the news feed algorithms are promoting content with more engagement. This may be a part of a broader trend of right-wing users engaging with political content on social media. In the context

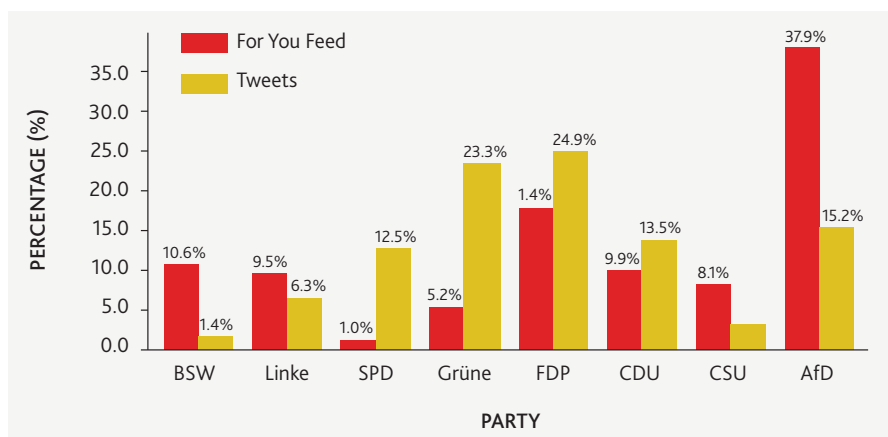


Figure 1: The fraction of the *For You* feed occurrences (red bars) and posts on X (yellow bars) in January 2024 of the 436 members of eight German political parties, ordered by their political ideology: from far left (BSW) to far right (AfD).

of US politics, our earlier research showed that X polls gauging support for the US presidential candidates in 2016, 2020, and 2024 were biased towards Trump because right-wing users were much more likely to engage and vote in them than left-wing users^{2, 3, 4}. We also found significantly increased activity of bots in election polls in comparison to other polls. Other studies noticed a similarly increased number of fake retweets and likes for AfD posts before the German election.

Even if we account for differences in the engagements between the German parties, our findings suggest that there are some other unknown factors related to party affiliation that contribute to explaining political biases in news feeds. For instance, the feed algorithm may favor some topics over others.

Furthermore, social media platforms have significantly loosened their content moderation practices by moving to Community Notes, driven by user reports, rather than fact-checkers. The algorithm that selects a note aims

to bridge different groups, but we do not yet know how effective this method is at labeling political disinformation and misinformation. The Digital Services Act of the European Union allows researchers like us to access publicly available data to enhance our understanding and transparency of social media platforms.

- 1 T.T. Prama, C. Bagchi, V. Kalakonnar, P. Krauss, P.A. Grabowicz (2025). *Political Biases on X before the 2025 German Federal Election*.
- 2 S. Scarano, V. Vasudevan, M. Samory, K. Yang, J. Yang, P. Grabowicz (2025). *Election Polls on Social Media: Prevalence, Biases, and Voter Fraud Beliefs*. The International AAAI Conference on Web and Social Media (ICWSM)
- 3 S. Scarano, V. Vasudevan, M. Samory, J. Yang, P. Grabowicz (2024). *Analyzing Support for U.S. Presidential Candidates in Social Polls*. Journal of Quantitative Description: Digital Media (JQD:DM, joint with ICWSM)
- 4 P. Grabowicz (2024). *Political Biases on X before the 2025 German Federal Election*. Uncommon Good blog.



HABSHIELD

An AI-Powered Early Warning System for Harmful Algal Blooms.

Harmful algal blooms (HABs) pose a major threat to marine ecosystems and sustainable coastal management. High concentrations of algae produce toxins, leading to mass fish kills, human health risks, and economic losses to local aquaculture. The challenge lies in detecting HAB events early enough to mitigate their impact. Currently, tools like Ireland's Weekly HAB Bulletin provide a short (3-5 day) forecast, leaving insufficient time for effective intervention. HABShield researchers, including CS Asst. Prof. Shen Wang and Postdoctoral Researcher Dr. Jiaying Guo are developing an online system for detecting and predicting HAB events to enhance sustainable marine management. It utilises

multimodal data from underwater sensors and satellite imagery, tracking key indicators such as water temperature, salinity, oxygen levels, and chlorophyll concentration, all of which influence algal growth. Changes in sea colour detected from satellite images support early warnings of potential blooms.

Using advanced machine learning models, HABShield conducts spatial-temporal analysis and predicts algal blooms. This system aims to achieve over 90% accuracy in detecting HAB events and extend the prediction window to more than a week, helping local authorities and fishery operators to respond swiftly and minimise damage.

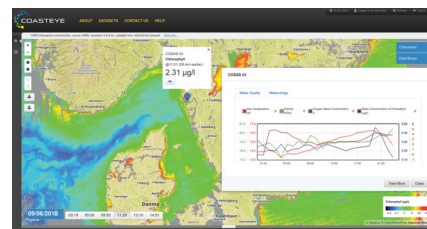


Image from TechWorks Marine's CoastEye Data Platform, which provides data for HABShield.



Dr Jiaying Guo received funding through Research Ireland's IRDIF Programme with Industry partner TechWorks Marine for the HABShield project.

RE-ROUTE

Revolutionising Urban Mobility with Intelligent Systems.

The RE-ROUTE project addresses the challenges of modern transport systems, including congestion, inadequate infrastructure, and the need for sustainable mobility amid rapid urbanisation. It proposes a resilient, intelligent multi-modal transport ecosystem that integrates road, rail, cycling, and walking. Using advanced technologies like artificial intelligence (AI) and edge computing, RE-ROUTE identifies vulnerabilities in transport networks by analysing

real-time environmental and traffic data. A key innovation is the Adaptive Multi-modal Intelligent Transport System (M-ITS), which optimises transport flows and enhances interoperability among services. Additionally, the project emphasises secure data sharing through a blockchain-based platform, ensuring privacy and compliance with regulations like GDPR. By advancing research in AI and transport cybersecurity, RE-ROUTE aims to deliver



significant scientific, technological, economic, and societal benefits, including reduced congestion, lower infrastructure costs, and improved accessibility and sustainability in urban mobility. The project team is led by Asst. Prof. Fatemeh Golpayegani and Nima Afriz from UCD School of Computer Science with funding from the European Union's Horizon Europe Marie Skłodowska-Curie Actions (MSCA).

www.reroute-project.eu/

AI PROJECT SUPPORTS RICE FARMERS TO PROTECT THE ENVIRONMENT AND ACHIEVE A SUSTAINABLE INCOME

Vietnam's vital rice sector, ranked third in the world in rice exporting, faces increasing climate challenges – sea level rise, salinity intrusion, and drought. A new project by researchers from UCD and Can Tho University, *AiRRVie*, has been funded by Research Ireland and Irish Aid to empower farmers with a personalised rice farming assistant.

Leveraging machine learning and remote sensing, the tool will provide small-holder farmers with tailored recommendations on sustainable farming practices – boosting yields while reducing resource usage and emissions. The initiative aims to address the sector's role as both a major contributor to food security and a significant emitter within its



food system. Led by Dr Quan Le, Dr Anh Vu Vo, Dr Pham Dang Tri Van, and Dr Thi Long Trinh, *AiRRVie* promises a climate-resilient future for Vietnamese rice farming.



TRANSFORMING URBAN MOBILITY THROUGH COMMUNITY-DRIVEN INNOVATION

BikeHood is an innovative project designed to nudge citizens towards active travel and address urban challenges such as traffic congestion, air quality, and noise pollution.

Guided by the principles of the 15-minute City and Superblocks and merging state-of-the-art technology with meaningful community participation, *BikeHood* aims to create a dynamic link between top-down policy initiatives and community-driven ideas, paving the way for greener, more efficient urban mobility solutions that have the potential to transform cities for generations to come. At the heart of *BikeHood* is a state-of-the-art digital twin – a virtual replica of the urban environment that harnesses AI algorithms and IoT sensors to capture real-time data on traffic flows, air quality, and noise levels. *BikeHood* empowers communities to imagine and propose active travel improvements. Residents can use the digital twin interactive platform to design and test ideas such as dedicated bike lanes and other active travel initiatives, observing how these changes could impact urban conditions before any real-world modifications are made. This tool offers immediate, data-driven feedback, allowing community members to refine their proposals



BikeHood is being piloted in Ongar, Dublin, where the approach is being tested and refined, complemented by the Ongar Bike Library for interested citizens to trial an ebike and then contribute to workshops, and collaborative planning sessions for active travel in their area. The project was recently featured on the RTÉ Brainstorm Podcast.

based on simulated impacts on traffic congestion and air quality. Proposals can be shared directly with local authorities, creating a transparent dialogue that integrates community insights into urban planning. The process not only fosters innovation but also ensures that potential infrastructure changes are grounded in measurable benefits. *BikeHood* is funded by the Research Ireland National Challenge Fund and led by Prof. Francesco Pilla, UCD School of Architecture,



Members of the BikeHood Team (L-R): Dr Vinayak Malaghan; Darragh Redmond; Assoc. Prof. Gavin McArdle.

Planning and Environmental Policy, alongside Assoc. Prof. Gavin McArdle, UCD School of Computer Science. The initiative also benefits from the expertise of Mary Bartz, Safe Routes to School (SRTS) Programme Coordinator at the National Transport Authority, who plays a pivotal role shaping the project's active travel strategies.

www.sfi.ie/challenges/sustainable-communities-challenge/Bike-Hood/

AI2PEAT

Using AI and Remote Sensing to Monitor Ireland's Peatlands.



Ireland's degraded peatlands are releasing carbon emissions, polluting our watercourses, and losing their unique biodiversity. Their vast surface area is a limiting factor for in-situ monitoring at a larger scale. In turn, this slows conservation planning and the verification of restoration results. The *AI2Peat* Project leverages ecological knowledge with remote sensing and Artificial Intelligence expertise to help solve this scaling issue. Its machine learning pipeline continuously acquires satellite imagery to produce ecotopes maps which indicate the ecology or condition of raised bogs. *AI2Peat* uses ground truth ecotope data from the National Parks and Wildlife Service to train a canonical ensemble learning model. This employs a hierarchy of binary classifiers to classify ecotope

types and is validated by domain experts to assess reliability and accuracy. Currently, *AI2Peat* uses freely available Sentinel-2 data but additional funding could enable the purchase of other remote sensing data to improve the models.

When combined with other scientific elements, such as hydrology and carbon fluxes, these maps could reliably estimate peatland condition at scale and allow in-situ surveys to focus on priority areas.

The *AI2Peat* consortium includes CeADAR (Dr Corrado Grappiolo), iCRAG (Dr Eoghan Hologan), and the National Parks & Wildlife Service (Dr Shane Regan) and is funded by Research Ireland under their National Challenge Fund/Future Digital Challenge. www.ai2peat.ie

REAL-TIME MUSIC PERSONALISATION FOR HEARING-IMPAIRED LISTENERS USING AR AND AI

The *HearAI* project aims to transform live music experiences for individuals with hearing impairments, particularly those with cochlear implants.

Funded by the Insight Strategic Research Fund and a Marie Curie Fellowship for Dr Carl Tolentino, *HearAI* was launched in September 2024. Using augmented reality (AR) and advanced wearable technology, it enhances auditory clarity and accessibility, making performances more immersive and inclusive. A key aspect of the project involved recording live performances at UCD's Trapdoor event venue, creating a unique dataset to refine sound separation techniques. The team repurposed META's ARIA glasses – equipped with seven microphones and three cameras – to personalise real-time audio experiences. Collaborations with the cochlear implant community ensured user-focused AR enhancements that will reduce smartphone app complexity. Researchers presented findings



Recording live performances at UCD's Trapdoor event venue, using repurposed META ARIA glasses.

at META's California office, submitted results for journal publication, and secured further funding to extend the project until October

2026. Led by Dr Andrew Hines and Dr Alessandro Ragano, the project continues to push boundaries for accessible live music.

PROVIDING RESOURCES FOR YOUNG PEOPLE SEEKING HELP ONLINE FOR MENTAL HEALTH

Assoc. Prof. David Coyle and Dr Claudette Pretorius have been investigating the challenges young people face in accessing reliable mental health support online. Many young people turn to the internet for help, but they often encounter overwhelming, difficult-to-navigate, or unreliable information. Traditional search methods



Design and testing of online resources for mental health support.

frequently lead users to overly medicalised content that lacks accessibility and personal relevance, making it harder to find the right support. To address these challenges, the research team conducted a series of studies, including co-design sessions with young people and user testing of a low-fidelity prototype to



determine how young people locate and engage with online mental health resources. This iterative process helped identify key design principles that can enhance digital mental health resources. These include important elements such as: personalisation (ensuring content is relevant to individual needs), immediacy (providing timely and actionable support), and connectedness (fostering a sense of community). Their work has had a direct impact on young people and has been integrated into spunout, Ireland's youth information and support platform for mental health and wellbeing. Recognising its significance, their research was a finalist in the 2024 UCD Research Impact Case Study Competition.

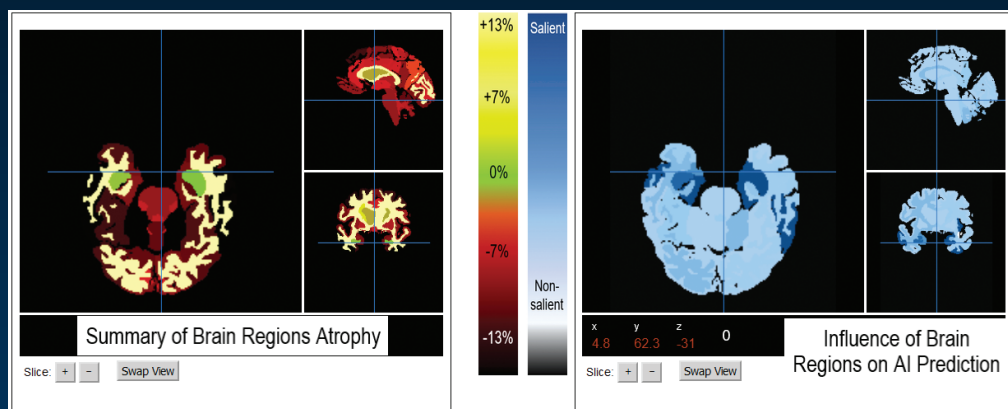
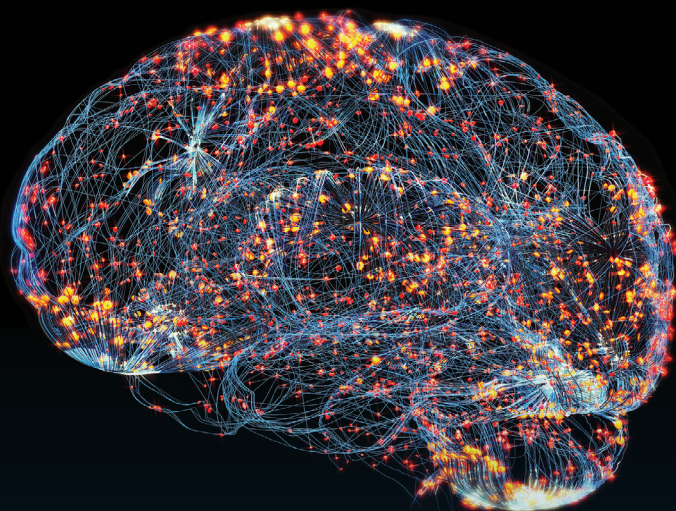
ENHANCING TRUST IN AI

A Transparent and Interactive Approach to Alzheimer's Diagnosis.

Alzheimer's disease and medical imaging-based diagnosis, in general, greatly benefit from Artificial Intelligence-powered automated solutions. AI can efficiently handle tedious and time-consuming tasks with speed and high accuracy. In hospitals, this results in shorter waiting times and faster patient service. However, current AI solutions are not transparent, lack reconfigurability for end-users, and do not provide medical practitioners with options to correct inaccurate AI outputs.

As a result, the trustworthiness of AI models comes into question. To address this, UCD researchers developed transparent AI methods that offer medical practitioners an interactive platform for diagnosing Alzheimer's disease using brain scans. They built a web platform for visualising brain scans, displaying the AI model's outputs, and collecting feedback from end users. The platform displays an AI model's diagnosis and explains why it generated the diagnosis. The system then accepts medical

practitioners' feedback on the AI model's diagnosis and reasoning. Based on their feedback, the AI model is automatically updated to correct its outputs in future. This approach paves the way for building trustworthy and high-performing AI models in hospital settings. The research by 2024 PhD graduate Dr Misgina Tsighe Hagos was supervised by Assoc. Prof. Brian Mac Namee and Assoc. Prof. Kathleen Curran (UCD School of Medicine).



Web platform displays an AI model's diagnosis and explains why it generated the diagnosis.

FROM UGANDA TO UCD Machine Learning Research to Combat Air Pollution.

Priscilla Adong joined The Research Ireland Centre for Research Training in Machine Learning (ML-Labs) in September 2023 from Uganda to pursue her PhD in Machine Learning and satellite imagery for air quality monitoring, supervised by Dr. Soumyabrata Dev. Priscilla's research focuses on enhancing pollution particle detection to provide reliable air quality data for informed policymaking and environmental sustainability. Previously, she

worked as a data scientist at AirQo, Makerere University, developing predictive air quality models. A highlight of her career was her nomination by the U.S. Embassy in Uganda for the International Visitors Leadership Program (IVLP), where she connected with STEM leaders from over 40 countries. She also received the 2023 IVLP Impact Award for leading a project to inspire Ugandan youth in STEM careers.



Priscilla Adong.



ML-LABS, SIX YEARS ON

The Research Ireland Centre for Research Training in Machine Learning (ML-Labs), now in its 6th year, hosts 124 PhD students across UCD, DCU and TU Dublin.

With UCD CS Assoc. Prof. Georgiana Ifrim as lead and Assoc. Prof. Brian Mac Namee as co-lead, the centre has 31 PhD graduates so far.

ML-Labs delivers an ambitious programme of study that allows students to develop the deep

research and technical expertise required for an internationally recognised PhD, alongside the transferable skills and industry experience to make them attractive work-ready graduates. ML-Labs has a multidisciplinary approach to research in Machine Learning enhanced

by a team of Principal Investigators in three partner institutions covering a wide range of application domains from medical imaging, financial systems, LLMs, cybersecurity, responsible AI, smart cities and more.



Assoc. Prof. Gavin McArdle, Assoc. Prof. Georgiana Ifrim and Assoc. Prof. Brian Mac Namee with ML-Labs 2024 PhD graduates Dr William Blanzeisky and Dr Agatha Carolina Hennigen de Mattos.



ML-Labs students Milad Dadgar (TU Dublin) and Oluwabukola Adegboro (DCU) pictured with Assoc. Prof. Georgiana Ifrim.

INNOVATION TO SUPPORT THE DEVELOPMENT OF SEA-RELATED TOURISM

The SEALabHaus project is transforming, revitalising and enhancing the coastal tourism ecosystem in balance with the sea as a key factor of resilience, well-being and sustainability.

UCD's Prof. Eleni Mangina and Dr Michael O'Grady are contributing to the project by preparing a catalog of digital tools and training resources for inclusive, innovative and sustainable blue tourism. It is planned to make it available online, first as a digital catalog but also as a website with an interactive map and search functionality by theme. SEALabHaus is an interdisciplinary multiactor project using New European Bauhaus concepts in



Biodiversity, Earth Science and Environmental Science research. Led by Universidade da

Coruña SEALabHaus is funded by Interreg Atlantic Area 2021-2027.

UNODC REPORT

Emerging Threats in GenAI.

Generative AI (GenAI) and the popular emerging products like large language models (LLMs) provide an avenue for criminals to drastically accelerate their ability to commit fraud through automation, grammar improvement, and reconnaissance. The concerning issue with the future trend of LLMs use among criminals is the ease of access, and software tool production. This enables non-technical criminals to produce sophisticated tooling to enhance their attacks. For highly technical criminals, the opportunity to leverage GenAI to improve their already advanced tooling poses a significant risk, such as the development of advanced malware like ransomware.

The United Nations Office on Drugs and Crime (UNODC) published a report in October 2024 titled: "Transnational Organized Crime and

the Convergence of Cyber-Enabled Fraud, Underground Banking and Technological Innovation in Southeast Asia: A Shifting Threat Landscape". This report details the emerging threats across

Southeast Asia as the criminal landscape is evolving at a record pace not yet witnessed. Three members of the UCD ASEADOS lab, Dr. Jack Nicholls, Dr. Aditya Kuppa, and Assoc. Prof. Dr. Nhien-An Le-Khac, were requested by the UNODC to contribute their knowledge to the report addressing the emerging threats in GenAI. They detailed the ability to jailbreak



Advertisement of assorted 'dating materials' for targeting Japanese citizens being marketed to cyber-enabled fraud operators on Telegram.

LLMs that are publicly available to produce highly advanced cybertooling for the sole purpose of attacking and retrieving cryptocurrency ransoms, exfiltrating sensitive data, and exercising Distributed Denial of Service (DDoS) attacks. Find their report at <https://aseados.ucd.ie/>

EMPOWERING RESEARCHERS TO USE GENAI EFFICIENTLY AND ETHICALLY

UCD strives to promote a positive research culture and an environment that supports researchers to reach their full potential.



In pursuit of this objective UCD's ReCLAIM scheme funds teams developing new ideas with impact across the university. As the use of Generative AI (GenAI) becomes increasingly prevalent in research to boost productivity, concerns are growing around its impact on research integrity. UCD School of Computer Science researchers Dr. Shen Wang and Dr. Adrian Byrne won funding for their project on the responsible use of GenAI in research, which aligns with European Commission guidelines to adapt best practices to UCD through workshops, white

papers and training. The impact will be felt not just in CS but across the wider UCD research

community, empowering researchers to use GenAI responsibly and ethically.



Dr. Adrian Byrne and Asst. Prof. Shen Wang with UCD President Prof. Orla Feely.



SUCCESS AT ACM COLLEGIATE PROGRAMMING COMPETITION



Congratulations to our talented students, Vladimir Tetyukhin, Serhii Ilin, Thomas Fischer, Nick Haynes, Alice Karatchentzeff de Vienne and Daniel Williams who represented the UCD School of Computer Science at the ACM Collegiate Programming Competition in University College Cork in March. Our UCD Bitblitz team finished in a remarkable 5th place in a field of over 60 teams. The students had just completed our new Stage 3 module on Competitive Programming, and put in a considerable amount of extra-curricular practice to achieve this result.

AI & CYBERSECURITY RESEARCH PUBLISHED AT IEEE CONFERENCE



Marcel Kaminski's undergraduate project on AI and Cybersecurity has been accepted for publication in the proceedings of the IEEE Cyber Research Conference Ireland 2024. Marcel's paper, with his supervisor Asst. Prof. Dr Rob Brennan, is entitled "Enhancing AI Incident Data Sharing Using Cyber Threat Intelligence Feeds" and it describes a new process and a prototype tool which will help the cybersecurity community to share and analyze cyber attack incidents using AI.

UCD COMPUTER SCIENCE STUDENTS AWARDED NAUGHTON SCHOLARSHIPS



Dr Martin Naughton, Carmel Naughton, Anna Curry and Tánaiste Simon Harris.

Two UCD CS students were among twelve UCD students who were awarded prestigious Naughton Foundation Scholarships this year. These scholarships are for exceptional Irish students to further their studies in the STEM area and to support academic and innovative excellence. Our CS awardees started their undergraduate studies in September. Vishal Tutte



Dr Martin Naughton, Carmel Naughton, Vishal Tutte and Tánaiste Simon Harris.

from Kildare and Anna Curry from Offaly will each receive €24,000 over the course of their degree – providing funding for each year of their undergraduate programme. The awards were presented by the founding patrons of the Naughton Foundation, Dr Martin Naughton and his wife Carmel, who were joined by then An Taoiseach Simon Harris.

UCD COLLEGE OF SCIENCE AWARDS 2025

These awards acknowledge student achievement and recognise their efforts outside of their academic endeavours. Eleven CS students won awards for outstanding academic achievements based on their GPA. Congratulations to Jeric Antony, Hari Mohan, Peter Oliver, Daniel Al-Zgul, Cillian Manning, Denis-Mihai Dinu, Leo Humphreys Newman, Alice Karatchentzeff de Vienne, Hiya Garg, Aimen Taha and Eoin Creavin. Two students were nominated for an award for their leadership ability or personal achievement

as shown through involvement in science-based activities which help make UCD Science a more exciting, enjoyable and engaged environment (e.g. committees, events, societies, clubs, etc.) or through courage, optimism and the determination to overcome great personal and emotional odds to achieve academic success. Well done Chamara Sandeepa (PhD candidate at UCD) and Misgina Tsighe Hagos (now a Postdoctoral Researcher at CMIV, Linköping University).

AMAZON INTERNSHIP

Solving Combinatorial Optimization Problems in Practice.

I started my Applied Science internship with Amazon in August of 2024. I joined the Research and Development Team for Network Topology Optimization in Amazon's Science and Technology team based in Luxembourg. The team I joined included members from a variety of backgrounds including Physics, Robotics and Economics as well as Computer Science. As an Applied Scientist, my role consisted of both investigating and implementing optimisation techniques for solving large scale real-world logistical challenges. As a

result, I got to develop my software engineering skills through implementing various algorithms while also utilising my research experience I've gathered during my PhD. I also learnt a huge amount about the importance of collaboration with other researchers and the different challenges compared to academia when developing solutions to real-world industry problems.



Eanna Curran is a PhD student in UCD ML-Labs.

UCD ALUMNI FIGHTING CRIME WORLDWIDE

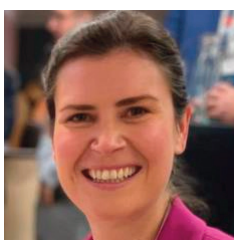
The MSc Forensic Computing and Cybercrime Investigation is an online education programme for law enforcement that grew out of discussions between UCD and An Garda Síochána (AGS) about upskilling police officers in digital forensic investigations and cybercrime. 20 years on, 1700+ police officers from 72 countries have graduated. 300+ members of AGS have completed a Certificate in Fraud and eCrime Investigation, under Course Director Assoc. Prof. Nhien-An Le-Khac.



Cathy Curtin
is Head of the Online Child Exploitation Unit (ONCE) in AGS, the point of

contact for all referrals relating to Child Sexual Abuse and Exploitation online. Referrals are received from worldwide including the US National Centre for Missing and Exploited Children and from national Law Enforcement agencies through Interpol and Europol and from Hotline.ie.

"Studying at UCD helped me develop essential time management and life skills, taught me how to prioritise tasks, meet deadlines, and stay organised - skills that have been incredibly useful in both my career and personal life. It also improved my ability to adapt to new situations, work independently, and collaborate with others, all of which are crucial in a professional environment."

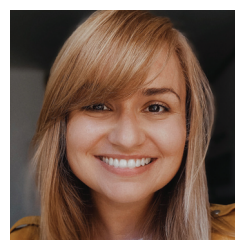


Jessica Hermann
is a Detective Inspector and Cybercrime Expert

in the AI Project Office KIRKE in the State Police of Baden-Wuerttemberg, Germany.

"The MSc was a turning point in my career as a police officer. It gave me the confidence to present complex CSA cases in court, thanks to courses like Computer Forensics and Online Child Abuse Investigations. These courses taught me to conduct detailed forensic investigations and analyze digital evidence accurately."

My Research Project further sharpened my analytical skills. Since my Master's thesis, where I explored Machine Learning, I've been working on an AI project, where I bridge the gap between technology, police work, and legal requirements."



Feodora Hamza
is Manager - Policy Development Support at ICANN (Internet Corporation for assigned names and

numbers), and was previously at Europol.

"The program's focus on practical skills in digital forensics and cyber investigations provided me with the technical foundation necessary for roles in cybersecurity. At Europol, I applied these skills to analyze complex cyber threats and support law enforcement operations across Europe. Currently, at ICANN, this background enables me to contribute effectively to policy development that ensures the security and stability of the Domain Name System (DNS). My master's thesis focused on network investigations with an emphasis on DNS encryption and its impact on DNS investigations. This research deepened my technical expertise and underscored the critical need for robust security measures in our increasingly digital world, directly relevant to my current role"



Alumnus Paul Gillen, then heading AGS's new cybercrime unit, first approached UCD's Prof Joe Carthy about training. The

training they developed evolved with the help of EU funding, into an online Master's programme. After a distinguished career in law enforcement with AGS and Europol in The Hague, he now heads cybersecurity at Barclays, one of the world's largest banks. He received a UCD Alumni Award in 2024.



Detective Chief Superintendent Michael Gubbins is Chief Bureau Officer of the Criminal Assets Bureau, an

Independent Statutory agency tasked with the investigation and seizure of assets derived from the proceeds of crime. He was part of the team involved in the development of the MSc and also one of the senior officers in AGS who steered the development of the fraud and eCrime Certificate programme.



Former Garda and Interpol officer, Mick Moran, is now CEO of Hotline, a charity fighting Online Child Sexual Exploitation and Abuse

(OCSEA), Intimate Image Abuse (IIA), Xenophobia and Financial Scams. Mick served in AGS for over 30 years including as Assistant Director at INTERPOL leading the Vulnerable Communities team dealing with Online child exploitation, Human Trafficking and People Smuggling. As well as having the MSc FCCI himself, he is also the Adjunct Lecturer who developed the module in OCSEA.



University College Dublin
School of Computer Science

UCD School of Computer Science

University College Dublin

Belfield, Dublin 4, Ireland

Eircode: D04 V1W8

☎ +353 1 716 2483

☎ +353 1 716 2469

✉ Email: computerscience@ucd.ie

🐦 www.twitter.com/ucdcompsci

📘 www.facebook.com/ucdcs/

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