



Photo courtesy of Maura Boyle.

## Welcome to the Spring 2022 edition of Connect + Innovate, as the sun shines on Maynooth campus.

In this edition, we are highlighting some of MaynoothWorks' most exciting prospects for commercial impact: we reveal how student researchers are making direct contributions to the operation successes and development of innovative companies hosted by our New Frontiers programme.

We profile one of our most active and entrepreneurial researchers, Dr Fabiano Pallonetto, and the strides he is making in decarbonising Ireland's energy-hungry data centre industry. Finally, we announce the winners of the John Scanlan Award for Industry Engagement, for the success of their major new industry-academia research partnership. All will be revealed below...

## JOHN SCANLAN INDUSTRY ENGAGEMENT AWARD 2021

The 2021 John Scanlan Industry Engagement Award goes to Rowan Fealy (ICARUS) and Tim McCarthy (NCG). Rowan and Tim are the lead investigators on [Terrain-Artificial Intelligence \(Terrain-AI\)](#), a €5M project funded by [Science Foundation Ireland \(SFI\)](#) and [Microsoft](#) through SFI's Strategic Partnership Programme. Terrain-AI, led by Maynooth University, involves partners from Teagasc, Trinity College Dublin, University College Dublin, Dublin City University and the University of Limerick.

Each year MaynoothWorks recognises and celebrates members of staff who demonstrate a passion for putting their research to work through engagement with industry. Excellence in all aspects of commercialisation of research at Maynooth University are taken into consideration when choosing the winner of the John Scanlan Industry Engagement Award: from collaborations to invention disclosures, to the



LtoR: Dr Rowan Fealy and Prof Tim McCarthy.

creation of spin-out companies.

Terrain-AI brings together a cross disciplinary team of experts, ranging from climate modelling, earth observation, ecosystem processes, land use, soils and carbon, water, urban climates, transportation and artificial intelligence (machine learning) with the latest earth observation technology and high end computational resources – provided by Microsoft's Azure Cloud - to monitor, measure and ultimately model terrestrial or land based carbon stocks and fluxes.

The research employs state of the art approaches - using multi modal sensors, including satellite information, data acquired by drones, in-situ field-based instruments, traffic monitors, weather and climate information, along with existing datasets on land use, forestry, soils, road networks, buildings

and demographic and other human mobility dataset – to understand the complex interactions between biotic (living) and abiotic (non-living) components of the natural and human environments. Capturing and representing these dynamic activities are central to Terrain-AI – they provide the basis for running state of the art land surface models and critically, to understand how human actions influence carbon emissions.

Terrain-AI, in close collaboration with its main industry partner Microsoft, work with a wide range of individuals, academic and government partners and small and medium sized enterprises (SMEs) to develop novel solutions, tools and information services in support of more effective climate change decision making – from individual land managers, to city, regional and national scales.

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## RESEARCHER PROFILE: DR FABIANO PALLONETTO

Dr Fabiano Pallonetto joined Maynooth University in July 2020 as an assistant professor at the School of Business, where he holds the position of Program Director of the MSc in Business Analytics. His research focuses on the decarbonisation of the power system through data employing advanced analytics techniques, machine learning and AI models. In the last 15 years Fabiano has co-founded two successful startups: Delta Energie and Xpreso Software. DeltaEnergie (2006) supported the decarbonisation of society by commercialising innovative renewable energy and home automation systems. As co-founder of XpresoSoftware (2013), awarded Ireland Best Startup 2014, he developed a machine learning and optimisation system to deploy real-time courier re-routing for the supply and logistic operators.

From 2012 he has been working in the data analytics and energy system integration area as a Researcher in the UCD Energy Institute. From 2018 to 2020, he was responsible for the Energy System Integration Laboratory for Building Systems, where he also has consolidated research partnerships with several industries and international research institutes.

His research is merging Computer Science and Engineering using innovative interdisciplinary approaches necessary for addressing the sustainability challenges of our era.

As we move towards the decarbonisation of our society and try to reduce the dependency on fossil fuels relying on constant clean energy generation, demand-side management, integration of renewables and integrated energy system needs to evolve for mitigating the effects of climate change.



Dr Fabiano Pallonetto.

Fabiano's multidisciplinary education in computer science, engineering and business and his broad experience in the industry offers a unique perspective to solving real technical problems. He is also actively publishing relevant research publications, attracting funding and helping our students to boost their potential in interdisciplinary research in connection to industry needs. His current research effort focuses on critical areas of national and global need such as Energy Flexibility, Smart Buildings, Electric Vehicles, Sustainable Transport, Large Scale Data Processing Techniques, Machine Learning and AI for anomaly detection in the power system.

## EXPLORING NEW FRONTIERS WITH STUDENT ENTREPRENEURS

One of MaynoothWorks' most important roles is to bring the academic and industrial worlds closer together: to help University researchers understand commercial motivations and pressures, whilst helping industry leaders to visualise how the expertise, facilities, and resources of the University can transform their businesses. We often have the most significant impacts with very early-stage businesses, helping founding teams refine their technology product and business model. With this in mind, MaynoothWorks launched a new programme over the winter, to deliver business intelligence and market research direct to companies enrolled in our New Frontiers programme.

Four early-stage companies worked with multidisciplinary teams of PhD students, who stripped down and rebuilt their "client" companies' business plans, stress-testing assumptions and investigating the market fit of their proposals, and developing new pitch decks based on their findings. The event culminated in a Dragons' Den-style pitch event judged by experienced investors Andrew Parish of WakeUp Capital, Sam Rush of the Yield Lab, and MaynoothWorks' own Karen Griffin. Unanimous winners on the day were Future Employment Ireland and their microcredential and recruitment service CareerPath2Success: the team's business development research highlighted a range of lucrative and unmet opportunities in the corporate recruitment sector. We look forward to watching them and the other participating New Frontiers companies, Otals, Esca Menu, and Preserve, as they grow and develop over the coming years.

