



Cristian BOSCH

Institution: Centre for Applied Data Analytics Research (CeADAR), UCD

Academic Mentor: Dr Ricardo Simon Carbajo

Commercial Partner: Munich Re

Commercial Mentor: Dr Sebastian Kaiser

Cristian is a researcher whose alma mater was the University of Valencia, from where he holds a Degree in Physics, a Masters in Nanotechnology and a PhD in Theoretical Physics.

His research has left contributions in the fields of Quantum Computation realisation and Beyond Standard Model Physics.

Cristian's research path began as an undergraduate with three introductory grants given by the Spanish Research Council (CSIC) and the Spanish Ministry of Education, followed by the CERN Summer Student fellowship (2010) and the PhD fellowship from the Spanish Ministry of Education.

He has conducted research at CERN (Switzerland) and Fermilab (US). He has been published in major particle physics journals and has participated in national and international conferences.

See case study overleaf

Dr Ricardo Simon Carbajo

Dr Ricardo Simon Carbajo is Senior Research Fellow at CeADAR and is responsible for EU Research & Innovation. His research background includes areas such as wireless networking, distributed systems, signal processing, sensor data fusion, real-time data analytics and machine learning. These have application to inter-disciplinary projects on cooperative wireless networks, wind turbine health monitoring, machinery failure prediction and 3D human motion capture and analysis. Ricardo also has experience in entrepreneurship as founder of a startup company.

Dr Sebastian Kaiser

Dr Sebastian Kaiser completed his PhD in Statistics in Ludwig-Maximilians Universität München (LMU Munich) with a qualification of Magna Cum Laude. Since then, he has worked as a Risk Analyst in RSU Rating Service Unit (2011-2014) and Data Scientist in Volkswagen DataLab (2015-2017). He is currently Head of the Artificial Intelligence Centre of Excellence at Munich Re. His academic contribution includes 25 publications on statistics, clustering and machine learning.

Centre for Applied Data Analytics Research (CeADAR), UCD

The Centre for Applied Data Analytics Research (CeADAR) at UCD was established in response to the emerging opportunities in this still-developing discipline. It conducts applied research of commercial interest to many different sectors, addressing research challenges in data analytics identified by SMEs and Multi-nationals operating in Ireland.

Munich Re

Munich Re is one of the world's leading insurers offering solutions for complex risk. It has a premium income of €28bn approx. from reinsurance alone; and its global investments (excluding insurance-related investments) amount to €219bn.

Cristian's project

Renewable energy is one of the main focuses of current technological research and development. One of the biggest challenges in the sector is the generation of sufficient power when it is in demand.

The purpose of this research is to study historical data retrieved by windmill sensors through the application of machine-learning techniques, detecting anomalies in the behaviour of its mechanical parts and predicting faults.

Fault prediction in advance can avoid undesired low-productivity and allow for proactive maintenance to lessen the damage on the windmill components.
