Ayman FARAHAT

Technology Centre: Centre for Applied Data Analytics (CeADAR), TUD
Academic Mentor: Dr. Susan McKeever
Commercial Partner: DOCOsoft
Commercial Mentor: Dr. Bernard Cosgrave

Ayman received his bachelor's degree in Cairo University, Egypt. In 2003 he started his master's degree in Cairo University focusing on Knowledge discovery in Geographic Information Systems (GIS) data. In 2008 Ayman started his Doctoral degree in Cairo University doing research on Outlier Values Identification in Data Mining applications. Ayman's PhD was awarded the best PhD prize at Cairo University during in 2014-2015. He published 4 publications in relation to his PhD work - two articles in two prestigious journals and two international conferences papers.

Dr. Susan McKeever

Dr. Susan McKeever is a senior lecturer in the School of Computing at Technological University Dublin (TU Dublin) and a principal investigator on the CeADAR team in the Technological University of Dublin (previously DIT). She is also a member of the Applied Intelligence Research Centre in TU Dublin. Her research areas are in the fields of machine learning, text analytics and computer vision, using sensor data, text, video and other unstructured data. Prior to entering academia, Dr .McKeever worked in IT consultancy, managing the delivery of IT solutions to industry clients in the finance, retail and manufacturing sectors.

Dr. Bernard Cosgrave

Dr. Bernard Cosgrave has worked with DOCOsoft as the lead data scientist since 2014. His is responsible for leading data analytics initiatives within DOCOsoft, coordinating and managing the integration of analytics features into DOCOsoft's product set. He also spearheads the direction of DOCOsoft's data analytics strategy alongside DOCOsoft's CEO Aidan O'Neill. He is involved in the hiring of new staff, and the supervision of existing staff and initiatives. He has worked extensively in the third level sector, in both UCD and as a visiting lecturer to Vilnius University in Lithuania in lecturing and tutoring roles.

Centre for Applied Data Analytics (CeADAR)

CeADAR is the National Centre for Applied Artificial Intelligence. CeADAR is a market-focused technology centre that drives the accelerated development and deployment of data analytics and machine intelligence technology innovation. The Centre's work focuses on developing tools, techniques and technologies that enable more people, organisations and industries to use analytics and machine intelligence for better decision making and competitive advantage. CeADAR is the bridge between the worlds of applied research in data analytics and machine intelligence and their commercial application.

DOCOsoft

DOCOsoft is an Irish company with offices in Dublin, London, Cardiff and Tokyo. Their claims system is the market leading enterprise claims management solution in the London Insurance Market, used by over a third of the Lloyd's Market, including many tier 1 syndicates. They are currently processing over 70% of the market's claims messages and managing over 15 Billion sterling of assets. They are recognized as an innovator in their field winning a host of awards including Technology Initiative of the Year at the London Market Awards (2016), ACORD Case Study award winner (2017), Irish Times innovation award fintech winner (2017).

Ayman's project

"Insurance risk Management using Rich Data with Machine learning"

Our insurance claims company partner DOCOsoft identifies that between 5 and 10% of claims are fraudulent, representing a huge direct cost to insurance companies and resulting higher premiums throughout business and consumer sectors. Insurance frauds contain two particular scenarios: claims that stand out as "anomalies" and groups of claims that, for whatever reason, follow identifiable common patterns, such as a cluster of claims that involve asbestos.

In the past decade, the application of traditional machine learning to insurance fraud and claims processing has provided greater automation and some success in the ability to flag fraudulent claims. However, the American Coalition against Insurance Frauds report that the 17% to 20% of total insurance company compensation are paid against fraudulent cases.

The proposed project will improve the state-of-the-art in insurance claims processing and fraud detection in several ways through the use of previous unexplored information (unstructured data) on the claims records advancement on machine learning techniques to identify insurance anomalies and detection patterns in claims for greater fraud insight and faster "similar claim" processing. The project team will deliver a visual software prototype to evaluate and demonstrate new techniques.

The secondment and collaboration with company partner DOCOsoft, a recognised innovator in the claims management sector, will provide critical specialist insurance domain expertise and training - and so overcome the reliance on artificial data cases and lack of expert domain input that is prevalent in this research domain. Ayman's ambition is to develop as an industry-ready independent researcher, whilst bringing his specialist existing expertise to the work.

This project will equip Ayman with industry experience, industry contacts via the CeADAR technology centre, a national and international network of collaborators in academia, and career development through training, research learning environments and supervision.