Santos FERNANDEZ NOGUEROL

Technology centre: Centre for Applied Data Analytics and Machine Intelligence (CeADAR), TU Dublin
Academic Mentor: Professor Sarah Jane Delany
Commercial Partner: Valuation Office of Ireland
Commercial Mentor: Francis Power

Santos received his honours bachelor's degree in Geography from University of Oviedo, Spain. In 2008, he obtained his master's degree from University of Oviedo focusing on Recent territorial transformations in the Municipality of Lena (Asturias, Spain), and also he received a postgraduate Certificate in Education from University of Oviedo. In 2015 Santos received his Doctoral degree from University of Oviedo doing research on Recent territorial transformations in the Caudal valley as a consequence of industrial restructuring.

Professor Sarah Jane Delany

Professor Sarah Jane Delany's research area is in machine learning focusing on text analytics, concept drift and active learning primarily. She is currently the Assistant Head of School in the School of Computing at TUD and is responsible for postgraduate programmes and research in the School. She received an honorary Professorship by DIT in 2017 for her contributions to research, teaching and academic leadership.

Francis Power

Francis Power is the Data Management Officer for the Valuation Office. Fran has over 15 years' experience in the technology sector and over 11 years mentoring in all things ICT. He has a Hdip in Applied Electronics from DIT in 2001, a BSc in IT from Dublin City University (DCU) in 2015 and a certificate in Mathematics for Data Analytics/Statistics from University College Dublin (UCD) 2017. From a mentoring perspective he has trained numerous colleagues in ICT related areas predominantly focusing on Linux/Unix OS including system analysis, data management, database administration/design and software development.

Center for Applied Data Analytics (CeADAR)

CeADAR is the National Centre for Applied Data Analytics and Machine 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.

The Valuation Office

The Valuation Office is Ireland's State property valuation organisation and has carried out valuation functions since 1830. The mission of the Valuation Office is to support Government policy by delivering an effective and impartial property valuation service for citizens and other stakeholders. The core function of the Valuation Office is the establishment and maintenance of a uniform and equitable valuation base on which commercial rates may be levied by local authorities, in accordance with the Valuation Acts 2001 to 2015. These valuations are integral to the commercial rating system in Ireland and form the basis for levying approximately €1.46 billion of local government funding each year.

Santos's project

"AutoVal - Automated Property Valuation using Machine Learning"

Real estate is the third largest asset for institutional investors, but determining its value remains elusive. Manual valuation has been the default method for achieving the most accurate results, but recent studies have highlighted that automated valuation algorithms using machine learning techniques can contribute in this area. This is especially useful in a variety of areas such as assisting real estate agents in pricing properties for purchase or government agencies for taxation.

As this project involves prediction it falls under the area of supervised machine learning. In supervised learning historical data is used to train and build a model which is used to predict the value for new properties. Data on residential properties is more readily available in the public domain through real estate websites, property price indices, etc.

As a result, most of the current research in this area is in residential properties. However, the focus of this research project is in commercial properties. This is enabled by the company partner in this project, the Valuation Office in Ireland, who been responsible for Ireland's State valuation service since 1830. The core business of the organisation is the provision and maintenance of accurate, up-to-date valuations of commercial and industrial properties to ratepayers and rating authorities. They have recently digitised a large amount of their data and will make it available to the project.

The aim is to develop machine learning tools that help with data management and the valuation of commercial real estate. To do so, we will have access to the recently digitized information at the Valuation Office of Ireland. New methods of automatic valuation classification would represent a benefit to the Valuation Office in the time the valuation process takes and a more efficient use of resources, both economic and personal.