Data-driven Modelling of Individual's Risk-taking and AI-based Financial Decision-making in a Digital and Ageing Society

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Understanding individual's long-term financial risk-taking behaviour is vital for finance sectors to design and recommend bespoke services to their customers (e.g. pension, insurances, properties and individual assets in general). However, this poses challenges, due to a lack of individual behaviour and financial decision-making data. The recent technology evolution of smart mobile/IoT devices provides new sources of behaviour data for individuals, commercial firms, governments and healthcare services. Such a boost of new sources of data from third parties provides new opportunities to understand the individuals' risk-taking behaviour and provide further insight for emerging opportunities for insurance sectors. This project aims to explore the state-of-the-art modelling/prediction techniques, such as AI models to predict individual's risk-taking and financial decisions related to the insurance products. This project also aims to enhance the understanding of how public sectors and insurance businesses may effectively use such new data sources and provide more effective services. For example, providing financial advices for retirement and pension annuity insurance services, which is vital for the whole society. However, traditional insurance products have limitations of the "one-size-fits-all" issue and are not tailored to the user's preference through their lifetime.

This project aims to (i) facilitate and develop research themes/plans of importance to both private and public sector stakeholders, particularly related to our insurance industry partners; (ii) develop innovative users' risk-taking behaviour and financial decision- making models by using the latest information technologies, multiple sources of behaviour data and third-party data. Then combining behaviour/preference models with the latest artificial intelligence (AI) and deep learning technologies. Such approaches can effectively model users' behaviour pattern; (iii) maximising users' long-term satisfaction and match the most suitable insurance products for individuals. (iv) address major challenges of the finance aspects from the insurance angle with individual behaviour-based pricing using AI models. For example, healthy behaviour will lead to lower healthcare insurance premiums but may need a better planning strategy for retirement.

We will work in collaboration with the Legal and General and liaison with IFoA to ensure that the research addresses key priorities related to our industry partners and, we expect the fellow to take a leading role in facilitating this collaboration relationship further and address key research topics which shall be carried out during the three years fellowship scheme.