THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

CREATE CHANGE

Summer Research Projects

Project title: Using the power of machine learning in improving patient satisfaction in primary care

Project duration, hours of engagement & delivery mode:

Duration: 10 weeks
Preferred commencement date: 21 November 2022
Campus: St Lucia, with hybrid/remote working arrangements possible
Collaborators: WeKo Health

Description:

The goal of this research is to develop a Machine Learning model for predicting GP appointment delays. Our preliminary analysis of the dataset shows 15.4 minutes of waiting time across 550,000 GP appointments. Accurate prediction and reduction of this waiting time can lead to significant positive outcomes, including improved patient satisfaction, economic productivity, reduced waste, and less crowded GP waiting areas, which in turn reduces the risks of cross-transmission of viral diseases.

In this research, we aim to review the current literature on IS and health informatics to summarise and criticise the existing works on improving the patients' waiting time in primary care and possible challenges around it. In our analysis, we first perform an initial analysis and generate a basic set of features, including baseline values, the trend of delays in appointments, and removing noise effects. We also explore if we can extract any seasonality behaviour on doctors' appointment patterns. Following feature engineering, we plan to conduct several experiments on generated features utilising traditional forecastings. We use advanced machine learning models (such as SVM and ANN) to train predictive algorithms. We anticipate that the modelling process can accurately predict upcoming appointments time 30 min prior to them occurring.

Expected outcomes and deliverables:

The selected applicant will improve her/his technical and data analytics skills and use this project's outcomes as evidence of successful teamwork in an impactful research project with practical implications. In collaboration with the selected applicant, we aim to publish the results of this multidisciplinary study in IS or health-informatics journals. The student will work closely with the supervisors in developing the literature review and conceptual model of machine learning in social media monitoring. To ensure research impact and to communicate the outcomes to a broader audience, we plan to publish the results of this research in journals, such as *Decision Support Systems* and *Decision Science*.

Suitable for:

This project is open to applications from students with a background in business and analytics. We are looking for 3rd – 4th year undergraduate or 2nd year post-graduate students who is familiar with research methods, literature review development and machine learning (to the extent that machine learning and its tools are taught in the Business School).

Primary Supervisor:

Dr Morteza Namvar and Dr Saeed Akhlaghpour

Further information:

Students can contact about the project via: m.namvar@business.uq.edu.au or s.akhlaghpour@business.uq.edu.au