MSc in Software Design with Artificial Intelligence

Initial Project Concept

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| Student Name: | Simon McLain |
| Student Number: | A00279668 |
| Project Title: | A comparative analysis of the accuracy of various Machine Learning Algorithms/Models at predicting daily  COVID-19 cases in Ireland |
| Project Background: | * Machine Learning has the potential to be a powerful tool in more accurately predicting prevalence of COVID-19 and aid decision making by policy makers and health care professionals * Several international studies have been carried out, yet there are no IEEE studies published on predicting total daily COVID-19 cases in Ireland. * The project scope is to review international machine learning models for predicting COVID-19, identify best practices for algorithm design, and apply to a model for predicting daily COVID-19 cases in Ireland. * An initial review of publications indicates that international models are accurate to a degree they can be used to inform public health policy, but there may be room for improvement. |
| Project Challenge: | The challenge is to improve the prediction of daily COVID-19 cases in Ireland, based on a review of international machine learning models. |
| Proposed Approach: | * Using Python to create, evaluate and select the most appropriate machine learning algorithm. Including but not limited to Deep Neural Networks, Naïve Bayes, and Decision Tree etc. * Conduct a literature review of machine learning models * Gather data for Irelands past confirmed COVID cases. * Determine the dataset variables to include and exclude from our model, such as:   + Immunisation uptake.   + Incubation period   + Degree of social lockdown   + Population density   + Variant r values |