A model for predicting stroke outcome based on circulating lymphocyte profiles

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Author: Brugha Fitzpatrick

Student Number: 115312131

Programme: MSc in Bioinformatics and Computational Biology

Supervisor: Dr Christian Waeber, Head of Pharmacology, University College Cork

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# Abbreviations

# Acknowledgements

# Abstract

Globally stroke has the second largest mortality rate and is a leading cause of physical and mental debilitation. It is the third most common cause of death in China with approximately 1.57 million deaths in 2018 [(Wang et al., 2020)](#1), over 700,000 cases are observed every year in the United States of America with 165,000 of those cases leading to death (Ingall, 2004), and 1 in 5 people in Ireland will suffer a stroke in their lifetime (Stroke - Irish Heart, n.d.). The statistics back the idea that more research is required, because the human race is living longer as medicine improves and with stroke victims typically being over the age of 65 years old, the probability that one will suffer a stroke increases. Bushnell et al. in 2014 published a paper that claims that every 10 years over the age of 55 years old, the probability that one will suffer a stroke doubles. However, age is not the only factor that has an effect on the chances of a stroke occuring. Currently, obesity is a leading factor that causes stroke in young people. Some papers found that children as young as 15 years old have suffered a stroke (George, Tong, Kuklina and Labarthe, 2011) due to conditions obtained from obesity such as hypertension, diabetes, and atherosclerosis.

Stroke is a very prominant and fatal condition in modern society. With the population living longer and child obesity becoming a considerable threat, it is vital for medicine to be equipped with tools such as Machine Learning (otherwise known as Artifical Intelligence, or AI) algorithms to predict the outcomes of stroke based on a set of features, such as lymphocyte profiles, which may help alleviate pressures on healthcare systems, and fortify the medical professional’s opinion which, ultimately, would provide a better and more accurate healthcare service.

# Aim

The aim of this project is to explore the possibility that, with suffiecient data, a predictive machine learning model could be built to predict the outcomes of stroke based on lympthocyte profiles. This shall be shown using various examples of other predictive models for different diseases and how a model can predict their respective outcomes because there is far more data available in comparison to stroke.

# Introduction

# Materials & Methods

* Ubuntu 20.04
* Jupyter Notebook
* Tensorflow
* Keras
* Sci-kit Learn

# Results

# Discussion & Future Perspectives

# Bibliography

# Appendices