MASTER THESIS PROJECT Prediction of Caregiver's Next Action in Digital Healthcare
STUDENTS Elin Andersson, Paulina Sager
SUPERVISOR Mikael Nilsson (LTH)
EXAMINER Karl Åström (LTH)

Predicting the Outcome of a Consultation in Digital Healthcare

POPULAR SCIENTIFIC SUMMARY **Elin Andersson, Paulina Sager**

The need for digital healthcare to be more established in society is considerable as Swedish healthcare faces major challenges. By using machine learning algorithms together with data from digital healthcare providers, the outcome of a consultation can be predicted. In this way, digital and human knowledge can work together to improve the healthcare system as we know it.

Caregivers are constantly facing tough decisions as a part of their work. This project is trying to ease their load by creating a reliable machine learning model that can give suggestions of the decision predicted to be the best one.

In this project, patient survey data collected from a digital healthcare provider has been employed. The data consisted of both structured data, like multiple choice questions, and unstructured data, like free text. Different machine learning algorithms have been tested with the best models obtaining the accuracy 67% and the AUC score 0.72, presented in Figure 1. The AUC score is a performance metric that can take a value between 0.0 and 1.0 where 1.0 is the optimal value and 0.5 represents a random classifier.

In the end of the process, text classification was implemented. The text answers turned out to contain much information as the results increased after their inclusion. Continued modeling with text would be valuable.

Further development, including increasing the complexity of the models, extending the data set with new data and using more advanced processing techniques, is needed and would hopefully improve the results.

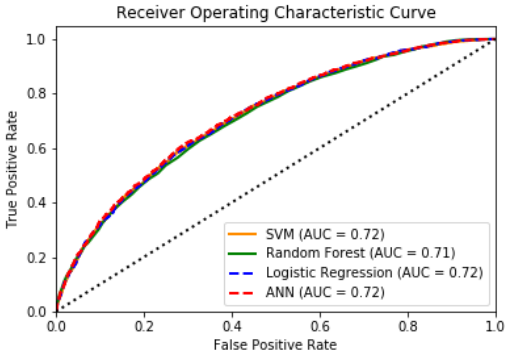

Figure 1: ROC curves for the best models. The dotted line represents a random classifier with the AUC score 0.5.

To limit the amount of decisions, the focus in this project was to decide if a case was suitable for digital healthcare or not. By knowing this when a case is received time can be saved both for the patient and the caregivers. Caregivers can then spend more time with patients who they can actually help. This is likely to enhance the patient experience and result in more patients using digital healthcare.