Västra Götalandsregionen uses AI to make better discharge decisions

The region worked with Advectas to complete a successful pilot delivery of a machine learning algorithm, which helps doctors to analyze the risk of early readmittance for all patients in their wards

The ePsychiatry Unit (ePsykiatrienheten) is a joint resource for the entire adult psychiatry service at Gothenburg's Sahlgrenska University Hospital. Its mission is to develop digital treatment support for use in the unit's everyday operations.

Predictive models in healthcare

Doctors working in closed psychiatric wards within the Västra Götalandsregionen have to manually prioritize which patients to discharge. They must take into account a wide variety of data about each and every patient – both in the form of medical journals and as data about patient demographics, care history, diagnoses, and use of medication. The ePsychiatry Unit wanted to find out if advanced analysis using machine learning methods could utilize this data to predict which patients were likely to be readmitted after discharge. If such a process worked, it would be possible to introduce a system to help doctors make calculated patient discharge decisions.

Machine learning projects are very special since the prerequisites for being able to succeed are hidden in the data itself. It is not possible to know in advance if there are any clear patterns that differentiate groups of patients. Instead the system simply has to be tested.

In an effort to determine whether or not there was a reliable way to accurately predict which patients were likely to be readmitted to its addiction care wards following discharge, Region Västra Götaland (VGR) worked with Advectas, a subsidiary of Capgemini, to carry out an Analytics Jumpstart. This method gave the ePsychiatry Unit the opportunity to undertake a pilot project to examine – quickly and without major initial investment – whether machine learning was a usable tool to assist doctors in the patient discharge process.

VÄSTRA GÖTALANDSREGIONEN

Overview

Client: Västra Götalandsregionen

Industry: Public Sector, Healthcare

Region: Sweden

Client Challenge: Working with limited resources, doctors at Västra Götalandsregionen need to be able to prioritize patients for discharge without raising the risk of readmittance in order to manage the capacity of their nursing wards

Solution: Collaborating with Capgemini, Västra Götalandsregionen developed an analytical model built on patient medical data, Rx, demographics, and medical best practices that prioritizes which patients to discharge first

Benefits:

- 40% precision rate when predicting patient relapse within 14 days of release
- 50% of relapse patients found
- More effective guidance regarding the release of patients

Using machine learning to help patients

The insights gained from the pilot experiment can be applied directly to everyday operations and help doctors make better discharge decisions.

In addition to the machine learning models and project report, the project also delivered a proposal for how the results could be used in everyday operations. As a recommended subsequent step, the project suggested an investigation into the prerequisites for implementation into operational production. The ePsychiatry Unit approved this step and has now authorized financing to continue with phase 2 of the project in 2020.

The staff wanted to learn how projects in the field of Artificial Intelligence can be implemented, and Advectas offered close cooperation featuring continuous updates and discussion on the project's progress. These discussions led not only to knowledge transfer, but also to the use of subject-specific insights to develop better machine learning models.

During the course of the pilot project, the solution achieved a precision rate of 40% whether the patient would relapse within 14 days, with 50% of the relapse patients found. The machine learning models that were created thus delivered reliable results, not just random success. In addition, a lot of insight was gained into which factors impacted a patient's risk of readmission. In the aftermath of this pilot phase, Västra Götalandsregionen will now develop the solution further.

About Advectas

Advectas was founded in Sweden in 2006 with the aim of being Scandinavia's leading Business Intelligence company. In April 2020 we became part of Capgemini. Together with them we are now the leading Data, Analytics and AI supplier in Scandinavia.

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