Detecting misuse in processes and data requests to Health Information System based on requests logs

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Problem Statement

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1 Motivation

Health Information System in Estonia holds different electronic health records for almost every person in Estonia. Also for some foreigners who have visited a doctor or a emergency medical care facility for various reasons in Estonia. Every healthcare facility in Estonia has to send their patient medical records electronically to central Health Information System, so that patients can view these documents electronically through a website called Patient Portal and other healthcare facilities and doctors can view their patients previous documents and data through their software. This provides visibility between patient and doctor communicatoin and other healthcare facilities benefit from it by seeing previous data and documents when patients goes to other healthcare facility.

This provides doctors and nurses the ability look into patsients private data, when patient turns to them with a problem. This also gives the possibility to browse peoples data even when they arent treating the patient or the patient has never turned to them in any way. It is a security threat which usually is regulated with in-house rules and contracts, when a staff member of the healthcare facility has the right to access persons medical data. But

this is usually only regulated on paper and its difficult to check when the medical staff really has the right to check persons information. The right is given when a patient has turned to that healthcare facility and their medical staff but any other time doctors and nurses dont have the right unless it is releated to their previous relationship and/or encounter associated with a medical procesdure.

This gives motivation to examine the usage of Health Information System and detect anomalies and data misuses by the healthcare facilities and their staff using machine learning and process mining using feature selection and other methods depending on the information what kind of usages are wrong and what to look for in the request logs.