ABSTRACT

AN AUTOMATIC DATA MAPPING FOR INTEROPERABILITY OF OPENEMR ELECTRONIC MEDICAL RECORDS SYSTEM USING FHIR

by

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The existence of Electronic Medical Records (EMR) still poses new difficulties. Several of them are related to data exchange between healthcare facilities. One example of this data exchange problem would be the difference of data structure used in EMR, which leads to incompatibility. Data compatibility should be advantageous, especially for medical practitioners such as doctors or physicians, so that they can grant a more accurate decision on what treatments should be carried out for their patients, since a precise treatment or medication will increase the chance that patients would successfully heal from their disease.

The compatibility of EMR data can also be called interoperability. This research attempts to apply interoperability of healthcare data by implementing an automatic mapper of an EMR data from one EMR management system called OpenEMR so that its data can meet the FHIR standard. Specifically, a classifier to categorize the OpenEMR data into the appropriate FHIR type is discussed in this research.

Three classifiers are developed in Java and Python, which utilize the concepts of machine learning's classification techniques which, in this case, are Naïve-Bayes and Decision Tree. Both implementations of machine learning algorithm showed a classification accuracy of 100%, which resulted in the additional implementation of rule-based technique that also resulted in 100% accuracy.

Keywords: *OpenEMR, electronic medical records, FHIR, interoperability, classification*