

LITERATURE SURVEY

Team Title: Analytics for Hospital and Health Care Data

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CASE STUDY I

TITLE

Big Data Analytics in Healthcare: Data-Driven Methods for Typical Treatment Pattern Mining

AUTHOR

Chonghui guo and Jingfeng Chen : Year 2019

PROJECT DESCRIPTION

A huge volume of digitized clinical data is generated and accumulated rapidly since the widespread adoption of Electronic Medical Records (EMRs). This paper discusses the research background - big data analytics in healthcare, the research framework of big data analytics in healthcare, analysis of medical process, and treatment pattern mining. Healthcare systems generate large amounts of administrative data about patients, departments, medical material costs, bed availability, diseases, etc. This departs from readily available administrative data to assess resource use in hospital systems. Machine learning techniques are applied to hospital management in an attempt to optimise hospital resources more efficiently within the departments, providing an extra advantage in favour of patients and hospital entities, material and methods, data preparation, training and testing data setup, evaluation criteria of the methods. Hospital departments were compared according to the algorithms used to predict results, taking into account those which offer better results in comparative tests. This research shows that reductions in hospital costs improvement in quality patient care are possible.

CASE STUDY II

Big Data in Supply Chain Management and Medicinal Domain

AUTHOR

Aniket Nargundkar and Anand J.Kulkarni : Year 2019

PROJECT DESCRIPTION

In this paper a robust model is designed to help hospital administration to predict patients' Length Of Stay (LOS) to resolve the issues faced by hospitals. They collected a very large-sized data (more than 2.3 million patients' data) related to New-York Hospitals patients and containing information about a wide range of diseases including Bone-Marrow, Tuberculosis, Intestinal Transplant, Mental illness, Leukaemia, Spinal cord injury, Trauma, Rehabilitation, Kidney and Alcoholic Patients, HIV Patients, Malignant Breast disorder, Asthma, Respiratory distress syndrome, etc. have been analyzed to predict the LOS. The main objectives were to explore the Inpatient De-identified data and to build a robust model that could predict the hospital LOS of patients coming to the hospital in future. They conclude that the maximum stay was between 0 to 5 days with the meantime of each patient 5.3 days and more than 50 years old patients spent more days in the hospital. Visualization Exploratory data analysis (EDA) was used to analyze the dataset and summarize the dataset's main variables.

CASE STUDY III

Transforming Healthcare with Big Data Analytics and Artificial Intelligence

A Systematic Mapping Study

AUTHOR

Nishita Mehta, Anil pandit and Sharvari Shukla : Year 2019

PROJECT DESCRIPTION

The current study performs a systematic literature review (SLR) to synthesise prior research on the applicability of big data analytics (BDA) in healthcare. The SLR examines the outcomes of 41 studies, and presents them in a comprehensive framework. The findings from this study suggest that applications of BDA in healthcare can be observed from five perspectives, namely, health awareness among the general public, interactions among stakeholders in the healthcare ecosystem, hospital management practices, treatment of specific medical conditions, and technology in healthcare service delivery. In this work they report a predictive model for length of stay (LOS) together with a study of trends and patterns that support a better understanding on how LOS varies across different hospital departments and specialties.

SOLUTION

Hospital's management system facing various issues in bed allocation and resource allocation for heart patients because of their Length of stay(LOS) variation . Heart patients LOS may vary based on their level of severity.Inorder to overcome this issue we have to predict the patients LOS in advance. For that process we have to first collect the datasets from the e-medical records or medical records of the hospital. After collecting the datasets we have to apply any of the following algorithms Fuzzy Logic (FL), Naïve Bayes (NB),Regression Trees (CART), Random Forest (RF) and predict the length of stay of the patient and visualization for those data sets are created using EDA