International Journal of Psychosocial Rehabilitation, Vol. 24, Issue 03, 2020
ISSN: 1475-7192

CLASSIFICATION AND ANALYSIS OF BIGDATA USING HOSPITAL APPOINTMENT PREDECTION SYSTEM

[1]*G. Adi Narayana, [2]S. Stewart Kirubakaran

ABSTRACT--*The high percentage of patients missing their appointment, be it a consultation or a medical examination, is a recurrent issue in healthcare. The present study seeks behavioral trends for patients that allow predicting the probability of no-shows. We are investigating the ease of using Machine Learning models to perform this function This research includes the exploratory data analysis of the 100k medical appointments in Brazil and focuses on whether or not patients are turning up for appointments. Data cleaning / preparation and data analysis will be performed on the whole data collection to evaluate the data validity. For every two variables, Calculate the percentages of combinations of groups to classify the largest number of patients who did not turn up. The purpose of this study is to serve as a starting point for identifying the factors that can contribute to the patients who miss their appointments. In addition, comparing and discussing the performance of comparative analysis with finding the best accuracy is applied by given dataset attributes in different supervised machine learning techniques from the data set with Interface based application.*

Keywords*-- appointment, examination, comparing and discussing, combinations, attributes*.

I. INTRODUCTION

The need for healthcare has significantly different attitudes in both the public and private sectors, both quantitatively and qualitatively, irrespective of the country's health system. This can be explained mainly by fluctuations in funding and gaps in the service portfolio offered. process of Recognizing the intrinsic characteristics of healthcare demand is important for actors, whether service providers or policy makers, who have some responsibility for it. Comprehension of this demand will have economic and social benefits, for example by saving and reducing waiting lists. The current denominator is always the added value that is given by this information. In either case, demand analyzes must be performed in a systematic way so that health care providers can respond accordingly. Machine learning techniques play an important role here, because without them it would be very difficult to do so. It is worth noting that this study has historically been performed using historical data. This is not the case in other parts of the economy.

Scope of the project

*[1]*UG Scholar, Saveetha School of Engineering, Saveetha Institute of Medical and Technical Sciences, Chennai, adhigorantla22@gmail.com*

[2]Assistant Professor, Saveetha School of Engineering, Saveetha Institute of Medical and Technical Sciences, Chennai, stewartk.sse@saveetha.com

Received: 03 Dec 2019 | Revised: 21 Jan 2020 | Accepted: 18 Feb 2020

The purpose of this project is to use machine learning techniques to analyze a dataset of appointment records for public hospitals in Brazil. The data includes some patient characteristics and state that the patients turned up to the appointments. The study will concentrate on identifying patterns that could cause patients to show up to appointments or not show up. Therefore, how to predict the appointment of new patients from cancelation / Missed appointment habits of patients using concise statistics. It depends on whether patients appear for their appointments or not.

II. LITERATURE REVIEW

1) Automated patient appointment confirmation for mobile application across network [1]

There are many patients in hospitals today seeking care for illnesses, and this continues to increase in each year. For certain conditions, the doctor has to constantly track the patient's symptom so that the doctor can have a follow-up appointment for the next medication. Now, some hospitals do not have a patient appointment alert when the appointment arrives, and other hospitals are informing their patients by either a call or a short message service (SMS). This paper proposes an automatic patient appointment notification for mobile application across platforms. After the appointment date, patients can obtain appointment notice, can quickly delay or cancel the appointment because they are unable to see the doctor or the patient improve. The doctors and patients are also able to observe their appointment via mobile application. The efficiency of the application is measured by customer satisfaction ratings.

2) Comparison of two alternatives in the Appointment Process to Reduce No-show [2]

Before seeing the doctor, it is normal practice for patients to make an appointment beforehand. This paper contrasts two alternative no-show policies for a central server appointment program with an exponentially distributed service time, the overbooking policy and the open access policy. A predetermined number of patients require an arrangement before the planned day, however may drop the booking or don't appear under the overbooking strategy. Two sorts of open-get to approaches are mulled over: same-day and same-or-following. If an unspecified number of patients need the arrangement for that day or the day after. System exhibits are thought about when the two solutions are similar to the usual remaining tasks at hand. The empirical findings suggest that the prevalence of open-get to policies isn't as unambiguous as the findings under deterministic inference. The same-day AS system has a cap on all operational costs, in which it beats the overbooking method, the same-day or subsequent day system is also preferable apart from the low likelihood of flaking out or the patient's heaviness.

3) Development and implementation of a patient scheduling and appointment program [3]

The new healthcare environment required quality and patient satisfaction for optimum results. There are plenty of problems facing the outpatient in most clinics in developed countries. These include: overtime for doctors and nurses during training hours, long waiting period for patients and excessive counter staff workloads. Overtime and peak work load has affected the efficiency of health care delivery. It focuses on creating a framework for enhancing the productivity and consistency of providing a web-based appointment scheme to minimize waiting time. Within

Received: 03 Dec 2019 | Revised: 21 Jan 2020 | Accepted: 18 Feb 2020

this paper a patient appointment and scheduling program for the frontend is built using Angular JS. Ajax client-server request handling platform, and Sqlite3 and MYSQL backend handling.

III. PROPOSED SYSTEM

This study is not intended to provide a final conclusion about why patients are skipping their appointments because it does not require the use of inferential statistical techniques / machine learning algorithms. Undertaking Goals and Objectives Because of the irregularity in verifiable details on medicines for patients, an analysis of the data set will be conducted in this manner and how to resolve it naturally. The targets for the venture.

- Explore mathematical methods for the control of data set analyses.
- Assess and analyze statistical and visualized results, which identify standard patterns for all regiments.
- Summaries of relevant pattern detection and data correction approaches based on results from study.

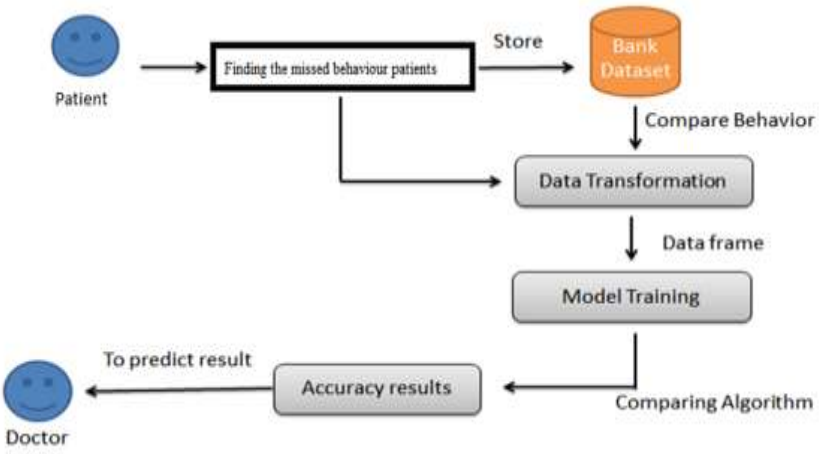


Figure 1: System Architecture

Dataset Description:

It places a research in a hospital in Brazil, the hospital has almost all clinical specialties and an outpatient operation. Consequently, it conducts over one lakhs of ambulatory consultations every year and, in addition, it will make a comparable number of ambulatory diagnoses. (Diabetes, high blood pressure, obesity, handicap and so on). Therefore, the number of patient characteristics is included in-row.

- **Patient Id**: Indicates the patient ID; duplication is possible due to cases where more than one appointment was booked by the same patient.
- **Appointment ID**: This area should be special, indicates the appoint ID
- **Gender**: Indicates the patient's gender (M/F)
- **Scheduled** Day: Specifies the patient's date / time of appointment.
- Appointment **Day**: Specifies the date / time the patient was asked to book their appointment.
- **Age**: show the age of the patient.
- Neighborhood: Indicates the location of the hospital.

Received: 03 Dec 2019 | Revised: 21 Jan 2020 | Accepted: 18 Feb 2020

- **Scholarship**: Specifies whether or not the patient is enrolled in Brazilian Bolas Família health programme.
- **Hipertension**: Indicates whether the patient has Hypertension or not.
- **Diabetes**: Indicates whether or not the patient is experiencing Diabetes.
- **Alcoholism**: Indicates whether or not the patient is experiencing Alcoholism.
- **Handcap**: Indicates whether or not the patient is with special needs.
- **SMS-received**: Indicates that the patient got a text message for the alert or not.
- **Show-up**: 'No' if the patient has appeared before their appointment and 'Yes' if they have not appeared.

IV. RESULT AND DISCUSSION

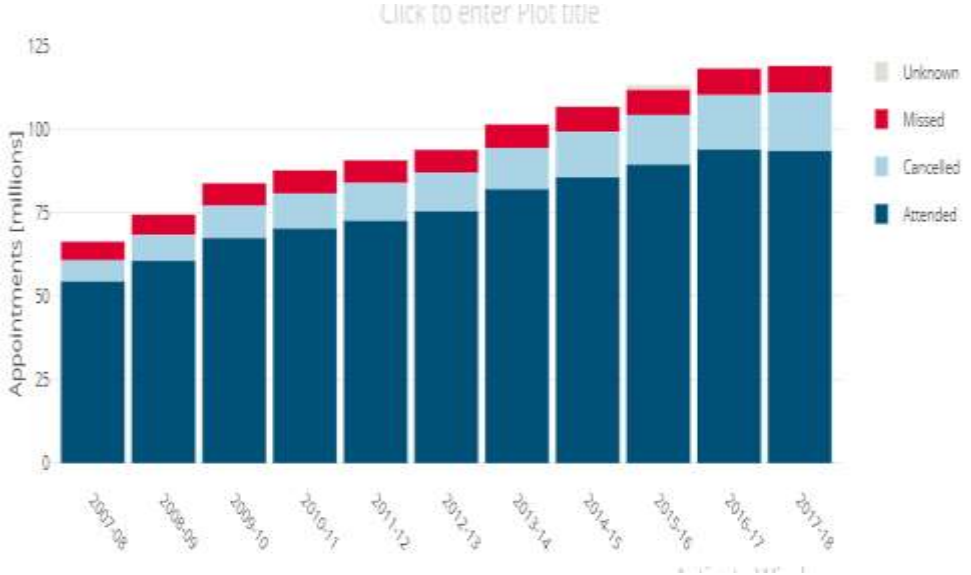
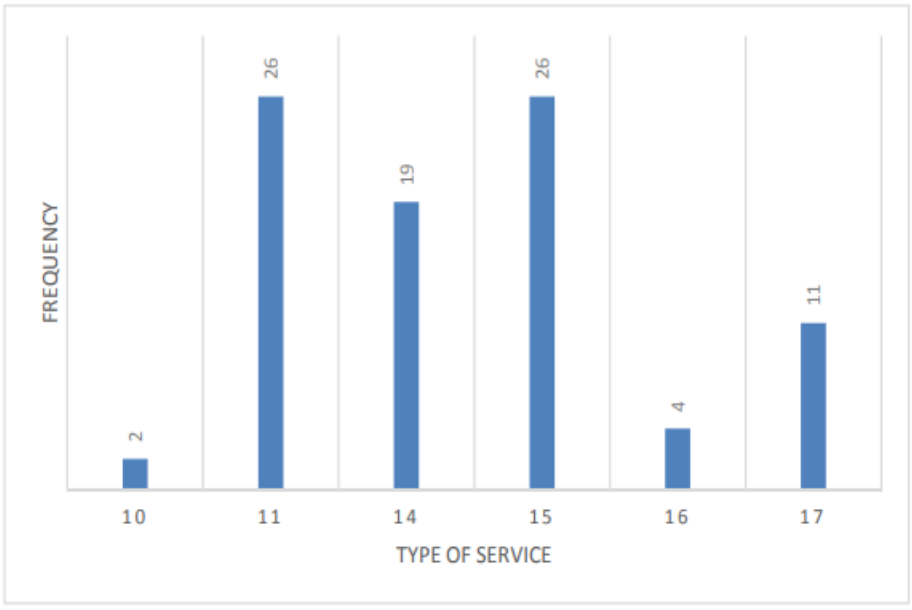


Figure 2: It shows every year patient appointments details weather the patient is attended, cancelled or missed details are shown in the fig.



Received: 03 Dec 2019 | Revised: 21 Jan 2020 | Accepted: 18 Feb 2020

Figure 3: type of service distribution.

It provides the services distribution towards the medical appointments.

IMPLEMENTATION:

To increasing the amount of patients from missed appointments. The simplicity of the online scheduling program allows it to be used at medical, fitness and wellness facilities for a range of different programs and activities. Scheduling appointments, therapies and facilities for patients**.**

V. CONCLUSION

The analytical process began with data cleaning and preparation, missing meaning, exploratory analysis and finally the creation and evaluation of models. The best accuracy of the Decision Tree algorithm system on the public test set is higher accuracy score. This gives some of the following insights into estimating the number of missing patients on appointments. Predictive models for no-show clinics can significantly enhance the usage of resources and help healthcare systems assign important clinical appointments to patients in a timely and effective manner. Clinically impactful and deployable predictive models are needed to increase program performance with a increasingly aging population and scarce healthcare resources. Lastly, we demonstrated that our established model had strong discriminative potential to classify no-show clinics and showed that patients at high risk of no-show could be aimed at reducing no-show and decreasing overall patient waiting time should be done.

Future Enhancement:

In future development they are multiple models of machine learning technique to study a dataset of appointment records for public hospitals in Brazil. The data contains certain patient characteristics and state that the patients have turned up to appointments. The research will focus on identifying patterns that cause patients to turn up to appointments or not. Therefore, how to determine the appointment of new patients from the patient's cancelation / missed appointment habits using descriptive statistics is based on whether or not patients are turning up for appointments.

REFERENCE

1. M. Hatcher, “Voting and priorities in health care decision making, portrayed through a group decision support system, using analytic hierarchy process,” Journal of Medical Systems, vol. 18, pp. 267-288, 1994.
2. F. H. Binkhuysen, F. P. Ottes, J. Valk, V. C. De, P. R. Algra, “Remote expert consultation for MRI procedures by means of teleradiology,” European Journal of Radiology, vol. 19, pp. 147-159, 1995.
3. N. Demartines, D. Mutter, J. Marescaux, F. Harder, “Preliminary assessment of the value and effect of expert consultation in telemedicine,” Journal of the American College of Surgeons, vol. 190, pp. 466-470, 2000.
4. I.L. Janis, “Groupthink: psychological studies of policy decisions and fiascoes,” Boston, vol. 36, pp. 112-119, 1982.

5. W. J. Zhang, H. U. Shu-Tao, L. Zhang, Y. Jian-Bo, “Application of OLAP in hospital decision support system,” Information of Medical Equipment, vol. 20, pp. 13-15, 2005.
6. B. Cánovas-Segura, M. Campos, A. Morales, J. M. Juarez, F. Palacios, “Development of a clinical decision support system for antibiotic management in a hospital environment,” Progress in Artificial Intelligence, vol. 5, pp. 181-197, 2016.
7. L. Nanni, S. Brahnam, A. Lumini, T. Barrier, “Data mining based on intelligent systems for decision support systems in healthcare,” Springer Berlin Heidelberg, vol. 7, pp. 21-40, 2010.
8. L. Aleksovska-Stojkovska, S. Loskovska, “Data mining in clinical decision support systems,” Lecture Notes in Electrical Engineering, vol. 156, pp. 287-293, 2013.

Received: 03 Dec 2019 | Revised: 21 Jan 2020 | Accepted: 18 Feb 2020