

A Parallel Patient Treatment Time Prediction Algorithm and Its Application in Hospitals Queuing-Recommendation in a Big Data Environment

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Abstract: In Today's busy life everyone get illness in all the days where ever you go all Hospitals & Clinics are very busy and crowded but all people are very busy with their time schedule and with their work hence we propose system like "Parallel Patient Treatment Time Prediction".

Overcrowding is the issues we are facing in Hospitals which they are facing long periods results in substantial resources and wasting of time and becomes greater frustration endured by the Patients. It would be agreeable and better if the patients could receive the well planned treatment and know the predicted waiting time through a mobile application that updates in real time. So, a simple, user friendly and vigorous software is helpful for both Hospitals and as well as patients.

Therefore, we propose a Patient Treatment Time Prediction (PTTP) algorithm predicts the waiting time for each activities. We collect the data of a various hospitals and patients such that, we can predict and analyze that data from software realistic dataset, then the current queue of each activities or task the predicted treatment time is collected.

On the basis of this predicted waiting time, the Hospital Queuing-Recommendation (HQR) is developed. HQR going to calculates and predicts the well and suitable treatment plan for the patients. Because of large scale, realistic dataset and the requirement for real-time response, the PTTP algorithm and HQR system mandate efficiency and reduce the latency response.

Extensive experimentation and simulation results says the effectiveness and applicability of this model for patients to minimize their waiting time on hospitals.

Keywords: Apache spark, Big data, Cloud Computing, Hospital Queuing Recommendation, Patient Treatment Time Prediction.

I. INTRODUCTION

Now days most of the all Hospitals are very rush or huge crowded because of Human Life Cycle. Everyone get illness periodically and undergoing for Hospitals all Hospitals over crowded making a queue and checking health undergoing different tasks like examination, tests all these will take time it is very difficult to waiting illness patient that people don't have that much patience. Hence we proposed Time prediction for different patient treatment.

In this paper we proposed Time prediction for different treatments first we have collecting the data from various Hospitals analyzing the time as per the data given and calculating the time for various treatments, examinations and tests according to that we are intimating to the customer how process and exact time required for the each tasks by using Big Data and algorithm (HQR).

This is very helpful to the Patient and Hospitals. Hospitals become very less rush and patient also quite happy and they are spending a time with different tasks.

II. OBJECTIVES OF THE WORK

- Residents must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of the health problems and the promotion of health.
- Gather essential and accurate information about their patients.

- Make informed decisions about diagnostics based on patient information and preferences, up-to-date scientific evidence, and clinical judgment.
- For these all, the effective patient waiting time prediction and reduce latency the PPTP algorithm and HQR recommended system were used in Big Data environment.

III. STUDY AREA AND METHODOLOGY:

- MVC architecture in J2EE is used in designing the work.

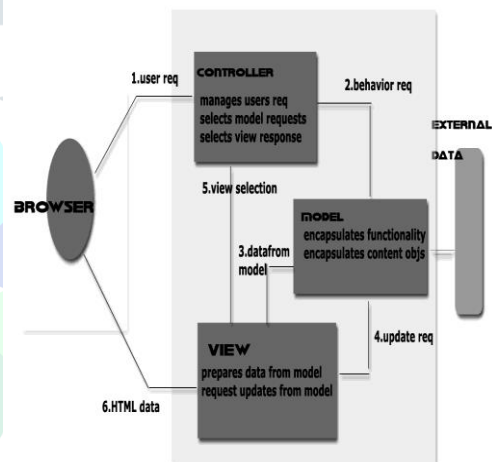
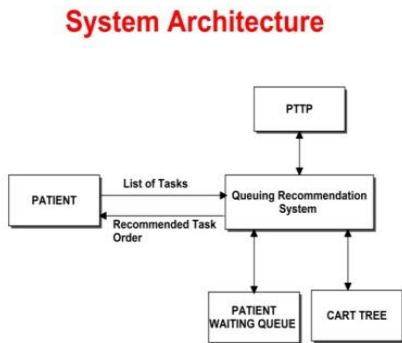


Fig 1. J2EE Uses MVC Architecture

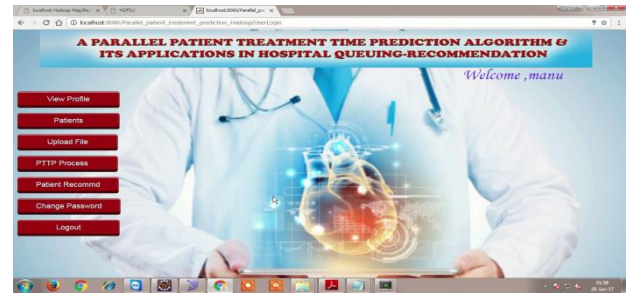
- Interface design describes the structure & organization of the user interface.
- Component design develops the detailed processing logic required to implement functional components.

- Architecture design identifies the overall hypermedia structure for the web app.

Fig 2. System Architecture



applicability of this model for patient to minimize their waiting time in hospitals. The proposed architecture is implemented by the following web pages.



4.1 HOME PAGE:

Fig 3. Home Page

- The home page consist of view profile, patient details ,upload file, PTPP process, patient recommendation , change password, logout.

- Web app architecture is defined within the context development environment in which application is to implemented.
- And mainly, our aim to demonstrate the effectiveness and applicability of our proposed model to recommend an effective treatment plan for patients to minimize their wait times in hospitals. So, the system architecture for our project is as shown above.

IV. RESULTS AND DISCUSSION

- Is to predict and analyze the patient data and also hospital data that the hospital time taken for various treatments from software realistic dataset, then on this basis we predict the waiting time by HQR.
- Such that, PTPP algorithm and HQR system mandate efficiency and reduce the low latency.
- Extensive experiments and simulation results says the effectiveness and



4.2 VIEW PATIENT DETAILS:

Fig 4. Patients Details Page

- In view patient details we add the patient data from the database through Graphical user interface.
- The patient details consist of patient name, age, gender &treatments.

4.3 QUEUEING

RECOMMENDATION:

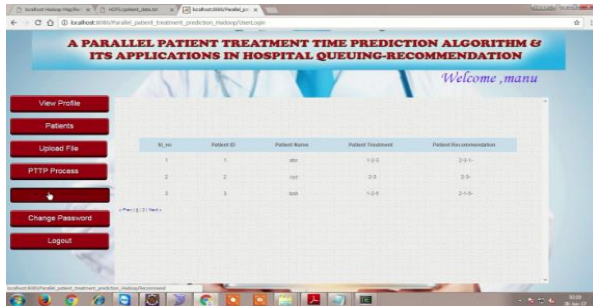


Fig 5. Queuing Recommendation page

- Based on the priority of the treatment & the average treatment time, the new treatment slot will be recommended.

V. CONCLUSION

- A PTPP algorithm based on big data and the Apache Spark cloud environment is proposed.
- Here, the queue waiting time of each patient treatment task is predicted based on the trained PTPP model.
- A parallel HQR system is developed, and well planned is recommended for each patient.
- Experimental results show that our PTPP algorithm and HQR system achieve high precision and performance.
- Hospital's data volumes are increasing every day. The workload of training the historical data in each set of hospital guide recommendations is expected to be very high, but it need not be.
- Consequently, an incremental PTPP algorithm based on streaming data and a more suitable recommendation with

minimized path-awareness are suggested for future work.

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