Towards the Definition of an Intelligent System for Organizing Medical Visits and Collecting Medical Data

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Abstract. Appointment Scheduling (AS), typically serves as the basis for the majority of non-urgent healthcare services and is a fundamental healthcare-related procedure which, if done correctly and effectively, can lead to significant benefits for the healthcare facility. The main objective of this work is to present ClinApp, an intelligent system able to schedule and manage medical appointments and collect medical data directly from patients.

Keywords. Medical Appointment Scheduling, Medical Appointment Management, Medical Data Management, Chatbot, Medical Questionnaire, Conversational Agent

1. Introduction

Medical appointments are traditionally scheduled by the secretary of the respective department or clinic, mainly via telephone communication. This method, although fully flexible, is directly affected by the human factor [1]. Digital healthcare is constantly evolving and the recent pandemic has reinforced the need to transition to more patient-centric approaches [2]. Thus, incorporating technology into the AS process through the use of web-based interventions, addressed directly to patients, may have a positive impact. To this end, this paper proposes the design of an intelligent Web-based Appointment System (WAS) for AS and remote medical data collection, called ClinApp.

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2. Methodology and Results

In the context of this study, input from medical and administrative personnel was gathered through targeted interviews in order to determine the functional requirements needed for an efficient AS. The interviews resulted in 16 functional requirements that were used to design the ClinApp system.

The novelty of the proposed approach lies in the fact that besides AS, patients will be able to effortlessly and securely record their medical data prior to their appointment, thus gaining more quality time with the physician. In addition, patients will be able, if they want, to record their medical data through speech recognition using a conversational agent, while after confirming the completion of the appointment they will be given the opportunity to evaluate the services they received, providing that way valuable information to the administrative staff of the healthcare facility. For the reader’s convenience, in Figure 1 the proposed system’s (a) main applications and (b) AS procedure workflow are provided.

![Figure 1. ClinApp system’s: a) Main applications and b) Workflow of the AS procedure.](image)

3. Discussion and Conclusions

This work presents an initial attempt towards the definition of an intelligent system able to schedule and manage medical appointments and collect medical data directly from patients. Future steps include the technical development of the ClinApp system and then piloting it in private practices and hospital outpatient departments, where its overall performance and perceived usefulness by end users will be evaluated.

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