

# IXHEALTH: A Multilingual Platform for Advanced Speech Recognition in Healthcare

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**Abstract.** Nowadays, there are many healthcare systems focused on the optimization and improvement of processes such as the generation of medical records and medical test reports. The interaction with this kind of systems is mainly done through user interfaces that demand the use of a keyboard or a mouse, which reduces the productivity of healthcare professionals. For example, pathological anatomy professionals use both sight and hands to analyse a sample by means of a microscope; therefore, the use of information systems through traditional interfaces (keyboard and mouse) involves a considerable waste of time and effort. In this sense, this work presents IXHEALTH, a multilingual platform for advanced speech recognition that allows healthcare professionals to perform transcription and dictation activities, as well as the definition and management of voice commands to interact with healthcare information systems. From this perspective, IXHEALTH was evaluated in terms of its ability to allow users to perform dictation activities and to interact with healthcare information systems by means of speech recognition and natural language technologies. The evaluation results seem promising and have proved that IXHEALTH platform is highly useful to healthcare professionals.

**Keywords:** Speech recognition · Speaker recognition · Text-to-Speech · Natural language processing · Semantic annotation

## 1 Introduction

In the last years, there have arisen many healthcare systems whose main goal is to optimize and improve processes such as the generation of medical records, medical test reports, clinical trials, and the filling out of electronic forms, among others. The interaction with most of these systems is mainly done through user interfaces that require the use of a keyboard, a mouse or a touch screen. The use of these interfaces often reduces the productivity of healthcare professionals. For example, in the context of pathological anatomy, professionals use both sight and hands to analyse a sample by means of a microscope; therefore, the use of information systems through traditional interfaces