



**INFORMATICS INSTITUTE OF TECHNOLOGY**

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**Real Time Telephony based Speech Recognition Solution for  
Mobile phones to assist the Hearing-Impaired**

A dissertation by

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## Abstract

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Automatic Speech Recognition (ASR) has always been a growing interest in the software field for developers. Multiple researches and effort has been conducted in the past years to achieve higher success rate in speech recognition. With Smartphones becoming the go-to device for users, it has become the most sought-out platform to develop speech centric mobile applications; which are helpful for users with disabilities such as hearing loss. There are many factors which affect the performance of ASR. For ASR whose processing is done in the server, there are various network related factors such as packet loss, and network availability. To eliminate them, the best choice is to have the ASR located in the mobile itself (Embedded Speech Recognition). This research concerns the use of embedded ASR technology in order to transcript phone calls in real time as an alternative for hearing-impaired users to communicate with others. The usual text-based methods (SMS, *Whatsapp*, *Skype* etc.) lack in providing the feel of real time conversations and engaged with delays, so it aims to help both hearing-impaired users and others to communicate with each other using calls, which is the popular medium of telephony communication. An offline-based speech recognition library was chosen and the solution presented acceptable levels of accuracy results when tested against simple phrases spoken via an active phone call.

**Subject Descriptors:**

I.2.7 Natural Language Processing

**Keywords:**

Automatic Speech Recognition, Embedded, Real Time, Telephony, Smartphones