Reproducible Automatic Speech Recognition

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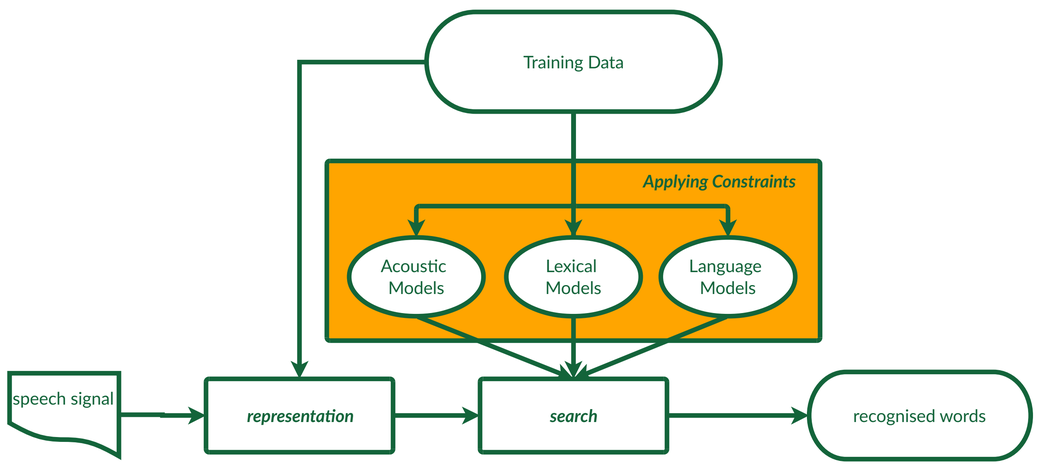
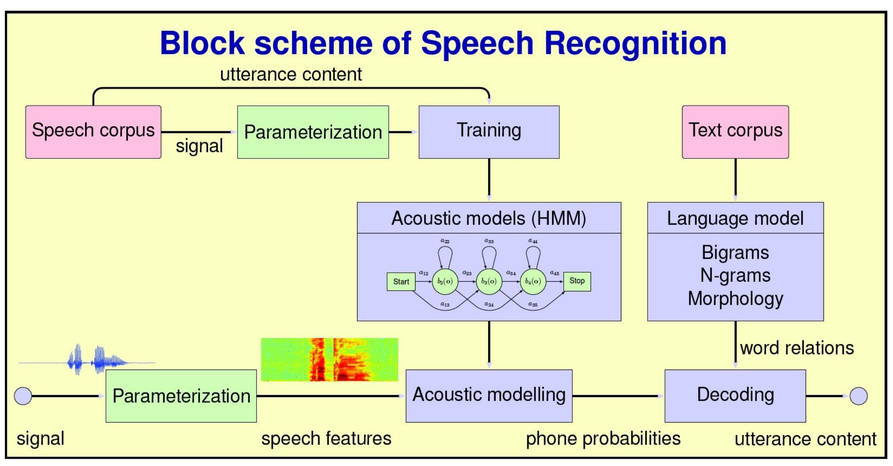
Introduction

Automatic Speech Recognition (ASR) is an important part of modern daily life, present in nearly all parts of communication technology. However, resources are biased towards certain languages, whilst indigenous and local languages are under-resourced. There is nonetheless a large and active research community dedicated to developing speech recognition. Workflows have been developed in order to provide research communities with a means to improve collaboration and synergy across the field.

Schematic diagram of ASR : converting audio signals to words



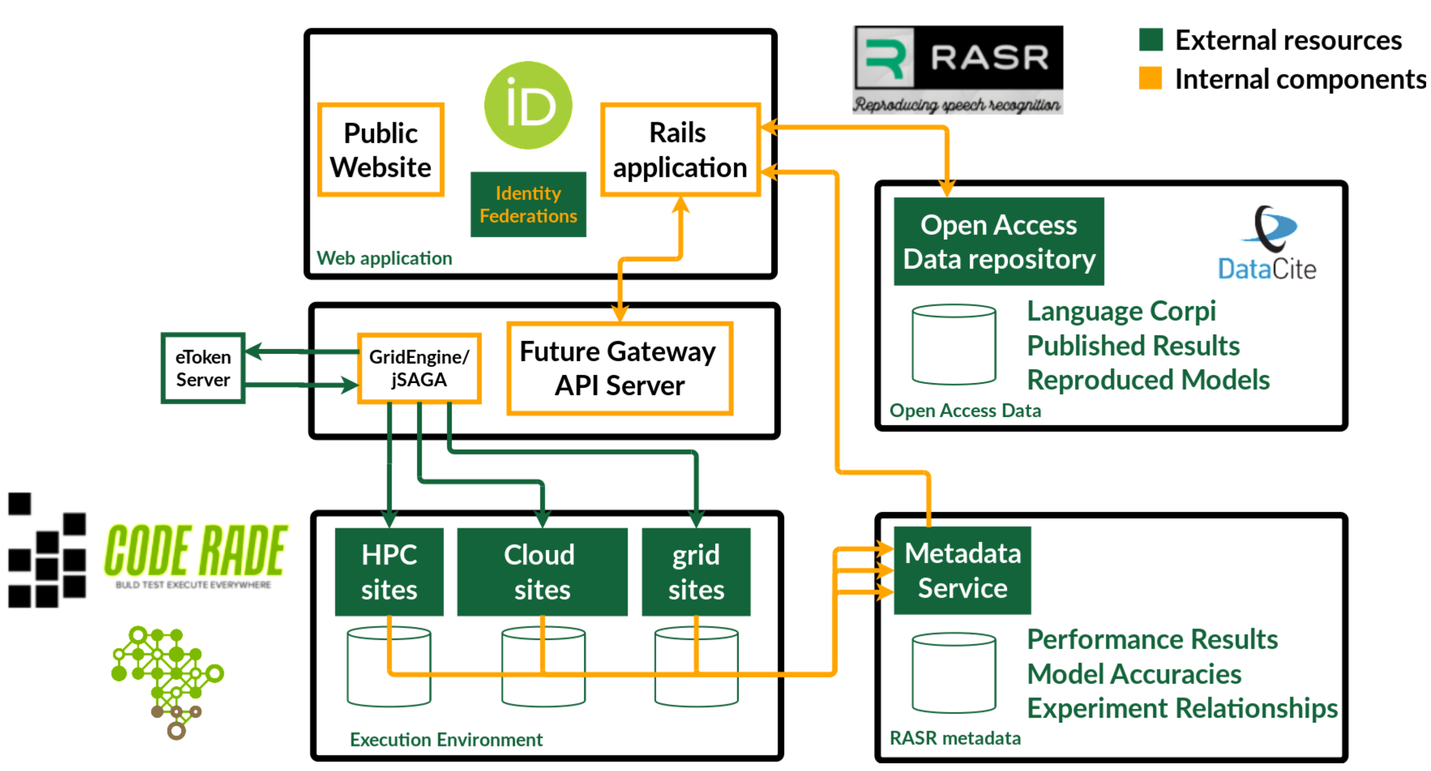


Automated Speech Recognition

ASR is technology that allows a computer to identify the words that a person speaks into a microphone or telephone and convert it to written text. However, these methods are dependent on several parameters and filters, which are selected heuristically and independently by various groups. Although consistent corpora exist for various indigenous languages, the methodology for generating speech models, training data, *etc* are not easily shared, and can be difficult to reproduce. Reliably reproducing the accuracy of speech recognition with specific models, from language to language or varying constraints is challenging.

Sci-GaIA contribution

Sci-GaIA promotes and supports a platform for Open Science which provides several of the tools and services necessary. The Summer Hackfest started work on a web-based ASR System focussing on re-utilisation on reproducibility of speech recognition: RASR.
RASR combines compute resources, ASR workflows, Open Access data repositories, metadata libraries, and persistence and uniqueness frameworks such as DataCite to allow researchers to discover, extend and reproduce ASR work. Researchers are able to easily access services via a web-application, using their ORCID. RASR will allow researchers to reproduce and fork experiments in automated speech recognition, improving synergy and collaboration in developing under-resourced language tools.



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