

An Indian-Australian research partnership

Project Title: **Speech Processing and Voice Analytics for a Farming Advisory system**

Project Number **IMURA0253**



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Research Academy Themes:

Highlight which of the Academy's Theme(s) this project will address?

(Feel free to nominate more than one. For more information, see www.iitbmonash.org)

1. **Advanced computational engineering, simulation and manufacture**
2. Infrastructure Engineering
3. Clean Energy
4. Water
5. Nanotechnology
6. Biotechnology and Stem Cell Research

The research problem

Define the problem

Farmers in rural India have very little access to agriculture related advice from agro-experts. This project aspires to research the field of speech processing with the aim to create advanced Interactive Voice Recognition (IVR) technology that can interpret farmer's queries spoken in various different Indian languages and dialects for automated or technology aided question answering.

Project aims

Define the aims of the project

- Automatic analysis of farmer voice queries from different regions of India and conversion of speech queries to text.
- Spot the key words and key concepts from textual representation of farmer's voice queries that can be used to (a) automate the process of answering the query or (b) trigger an SMS/MMS that alerts an expert to answer the query.
- Extraction of patterns from textual representation of voice queries, which could be used to send alerts to neighbouring farmers.

Expected outcomes

Highlight the expected outcomes of the project

The outcomes of the project are listed below:

- New techniques for speech processing in Indian languages.
- New techniques for understanding voice queries in different languages.

- Cross Lingual voice analytics.
- Papers, publications and patents in the area of speech processing with a focus on Indian languages and dialects.
- M Tech and / or Ph D thesis

How will the project address the Goals of the above Themes?

Describe how the project will address the goals of one or more of the 6 Themes listed above.

This project deals with speech and natural language processing, signal processing and interactive voice recognition technologies. Therefore the theme “Advanced computational engineering, simulation and manufacture” is suitable for this project as it deals with advanced computational aspects of speech recognition and signal processing.

Capabilities and Degrees Required

List the ideal set of capabilities that a student should have for this project. Feel free to be as specific or as general as you like. These capabilities will be input into the online application form and students who opt for this project will be required to show that they can demonstrate these capabilities.

An ideal candidate should have a Masters degree in Electrical Engineering with a background in one-dimensional and two-dimensional signal processing.

A background in natural language processing and text mining is not required but preferred.