

1. Title: Investigation of Real-time English Speech Recognition Techniques & Algorithms.
2. Group Member : SungHan CHA (u3951656), Kien Nguyen (u3335510), Suwendu Mukherjee (u3930524)

3. Description of DSPC project:

Real time speech recognition is a key technology that can revolutionise the way we interact with our surrounding environment everyday. There are currently several different techniques and algorithms available and this is still an on-going research topic to discover better and robust technologies. This project will investigate speech recognition in English language in the following contexts;

- A. Real-time DSPC – Since talking person-to-person or person-to-computer involves real-time interactions, DSPC techniques in speech recognition is subject to Real-time DSPC.
 - B. Robust and flexible DSPC to work with various different English accents – There will be many different users all over the world. This causes many different accents in English speech. DSPC must be robust and flexible to work with these variations.
 - C. Autonomous Machine learning process for DSPC – The techniques must have some way to keep track its mistakes, errors to handle automatic corrections.
4. Technical aspects / relevant theory
- A. Signal (Voice) reception (Microphone, A2D processing)
 - B. Signal Filtering (noise reductions + signal conditioning)
 - C. Word/Speech Cognitive Algorithms (including Machine learning process)
 - D. Speech synthesis (D2A) - OPTIONAL
5. Project Tasks / outcomes
- A. Research histories and background information
 - B. Investigation of industry trends (available technologies, software, etc.)
 - C. Technical/theoretical analysis on current cognitive algorithms
 - D. Simulations with several algorithms (different software)
 - E. Trade off analysis of algorithms/techniques (in terms of performances, time, efficiency, robustness, financial cost)
 - F. Drawing Conclusions. (technical recommendations)
6. Group Responsibilities
- A. Researching tasks can be split into 3 sections (histories, background theory/info, industry trends) – each person can take one section.
 - B. Technical analysis on algorithms can be done on 3 major algorithms – each person can be responsible for one algorithm.
 - C. All Group members can participate simulations with software available.
 - D. Group discussion can be carried over trade off analysis and conclusions.