

MEng Final Year Project: Audio Signal Zoom for Small Microphone Arrays

Project Supervisor: Dr. Patrick Naylor

Project Lead: Chi Hang Leung

Project Start Date: 10/16/2017 (Monday)

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|---|---|-------|-------|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | | | | | ## | ## | ## | ## | ## | ## | ## | ## |
| WBS | Task | Start | End | Cal. Days | % Done | M | M | M | M | M | M | M | M |
| 1 | Capturing Audio Data and Establishing Testbench | ##### | ##### | 9 | 100% | | | | | | | | |
| 1.1 | Research on Room Acoustics and Generating Room Impulse Response (RIR) | ##### | ##### | 3 | 100% | | | | | | | | |
| 1.2 | Capturing/Fetching Anechoic Speech Examples from available Databases | ##### | ##### | 1 | 100% | | | | | | | | |
| 1.3 | Developing the RIR Generator Software | ##### | ##### | 4 | 100% | | | | | | | | |
| 1.4 | Creating Test Cases with Scenarios with Different Microphones and Speaker Location | ##### | ##### | 2 | 100% | | | | | | | | |
| 1.5 | Generating the Room Impulse Response and Filter the Anechoic Audio Data | ##### | ##### | 2 | 100% | | | | | | | | |
| 2 | Developing Processing Algorithm | ##### | ##### | 20 | 25% | | | | | | | | |
| 2.1 | Background Research on Time-Frequency Analysis | ##### | ##### | 4 | 100% | | | | | | | | |
| 2.2 | Familiarising with Time-Frequency Analysis using Spectrogram and Overlap-add Method | ##### | ##### | 2 | 100% | | | | | | | | |
| 2.3 | Experimenting Binary Oracle Mask based on Phase Difference of Arrival | ##### | ##### | 3 | 75% | | | | | | | | |
| 2.4 | Background Reading on Clustering | ##### | ##### | 4 | 10% | | | | | | | | |
| 2.5 | Developing the Algorithm with Clustering Time-frequency bins on Phase-Spectrogram | ##### | ##### | 8 | 0% | | | | | | | | |
| 2.6 | Separation | ##### | ##### | 3 | 0% | | | | | | | | |
| 3 | Evaluating the Performance of the Algorithm | ##### | ##### | 7 | 0% | | | | | | | | |
| 3.1 | Setting the Standard to Evaluate the Performance of Audio Zooming | ##### | ##### | 1 | 0% | | | | | | | | |
| 3.2 | Refining the Algorithm based on the evaluation according to the standard | ##### | ##### | 1 | 0% | | | | | | | | |
| 3.3 | Demonstrating the final results (potentially with a real-time demo) in Presentation | ##### | ##### | 4 | 0% | | | | | | | | |