Student name: [Name]
Student ID: [ID]

The University of Newcastle
Final Year Project

MEETING NOTES – WEEK 02

Meeting/Project Name:	Sound-source Localisation using a Microphone-array for NUbots		
Date of Meeting: (MM/DD/YYYY)	03/01/2023	**Time:**	16:00 – 16:30
Minutes Prepared By:	Clayton Carlon	**Location:**	EAG29

Attendance at Meeting

Name	School / Discipline
Clayton Carlon	School of Engineering
Andrew Fleming	School of Engineering

Progress since the last meeting

Topics discussed

- The basic description and scope was informed.
- Some context around NUbots was given.
- The need to simulate first before any hardware design was discussed.
    - Such simulation software as Simulink and MATLAB were given as potential software.
- Some aspects of the hardware were discussed:
    - the number of ADCs and channels needed,
    - the sampling frequency of the microphones,
    - the potential need for upsampling as a last resort to improve precision,

Things to do for the next meeting

- A bird-eye's view of the literature was expressed as an importance.

Supervisor's Name		**Signature**		**Date**	

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MEETING NOTES – WEEK 05

Meeting/Project Name:	Sound-source Localisation using a Microphone-array for NUbots		
Date of Meeting: (MM/DD/YYYY)	03/20/2023	**Time:**	13:00 – 13:30
Minutes Prepared By:	Clayton Carlon	**Location:**	EAG29

Attendance at Meeting

Name	School / Discipline
Clayton Carlon	School of Engineering
Andrew Fleming	School of Engineering

Progress since the last meeting

- Two literature-reviews were informed to Andrew, namely Argentieri et al. (2015) and Rascon & Meza (2017).
- A search of simulation-software was informed to Andrew, namely:
    - Audio Toolbox on MATLAB,
    - Acoustics Toolbox,
    - and Phased Array System Toolbox.

Topics discussed

- COMSOL was suggested by Andrew as a potential candidate.
- Acoustics in gaming was also given as a potential place of inspiration.

Things to do for the next meeting

- Literature-review was stressed as an important area to start.
- The method to benchmark methods was given by Andrew, namely plotting the variance and mean error over noise.

Supervisor's Name		**Signature**		**Date**	

MEETING NOTES – WEEK 07

Meeting/Project Name:	Sound-source Localisation using a Microphone-array for NUbots		
Date of Meeting: (MM/DD/YYYY)	04/03/2023	**Time:**	13:00 – 13:30
Minutes Prepared By:	Clayton Carlon	**Location:**	EAG29

Attendance at Meeting

Name	School / Discipline
Clayton Carlon	School of Engineering
Andrew Fleming	School of Engineering

Progress since the last meeting

- The progress of the literature-review was given.
    - The fact that it was taking longer than expected was expressed.

Topics discussed

- Some of the methods in the literature were discussed such as MUSIC.

Things to do for the next meeting

- The literature-review was to be complete soon, and a table comparing the best methods was to be drawn up.

Supervisor's Name		**Signature**		**Date**	

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MEETING NOTES – WEEK 09

Meeting/Project Name:	Sound-source Localisation using a Microphone-array for NUbots		
Date of Meeting: (MM/DD/YYYY)	05/04/2023	**Time:**	13:30 – 14:00
Minutes Prepared By:	Clayton Carlon	**Location:**	EAG29

Attendance at Meeting

Name	School / Discipline
Clayton Carlon	School of Engineering
Andrew Fleming	School of Engineering

Progress since the last meeting

- Looked over the paper by Chen & Xu 2019.
- Briefly looked over the spreadsheet of literature examples.

Topics discussed

- Discussed a way forward to simulate literature examples.
- Discussed simulation software:
    - Some possible examples on Python and MATLAB
    - Needs to simulate dimensions of a room, material, etc.
    - Ideally should give a time-domain signal that can be processed into MATLAB or Python, etc.
- Discussed the definition and context of R60 (reverberation time at 60dB) as a metric for reverberation.
- Discussed the effects of reverberation in rooms, e.g. hallways.

Things to do for the next meeting

- Simulation was highlighted as the next step.

Supervisor's Name		**Signature**		**Date**	

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Student ID: [ID]

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MEETING NOTES – WEEK 11

Meeting/Project Name:	Sound-source Localisation using a Microphone-array for NUbots		
Date of Meeting: (MM/DD/YYYY)	05/15/2023	**Time:**	13:00 – 13:30
Minutes Prepared By:	Clayton Carlon	**Location:**	EAG29

Attendance at Meeting

Name	School / Discipline
Clayton Carlon	School of Engineering
Andrew Fleming	School of Engineering

Progress since the last meeting

- Informed the use of the Python module pyroomacoustics as a way to simulate reverberation.

Topics discussed

- Discussed the methodology of testing:
    - A simulation loop is run for the same room-conditions
    - 10,000 results are needed for variances.
    - 100 levels of noise are tested.
    - The mean error and the variance are to be calculated for each level or noise and plotted against noise.
    - A random seed is needed.
    - The mean is expected to stay around zero if the estimator is unbiased.
    - If it is biased, then it may stray further with noise.
    - The variance is expected to increase linearly with the logarithmic scale of noise.
- The noise is the thermal noise on the microphones.

Things to do for the next meeting

No meeting was to be after this one.

Supervisor's Name		**Signature**		**Date**	