

## **APPENDIX 4A: Meeting Details and Agendas of Each Weekly Cohort 8 Meeting**

### **WEEK 1**

#### *1.1. Meeting Details*

Date: 21/09/2022	Time: 10:00		
Group 1: 22G05	Chairperson 1: Jesse van der Merwe	Secretary 1:	Robyn Gebbie
Group 2: 22G50	Chairperson 2: Keowa Pretorius	Secretary 2:	Casey Steyl

#### *1.2. Agenda Items*

- Opening and welcome
- Apologies (excuse members who can't make it)
- Introductions from each group
- General questions
- Closure

### **WEEK 2**

#### *2.1. Meeting Details*

Date: 26/09/2022	Time: 10:30		
Group 1: 22G02	Chairperson 1: Ilan Malkin	Secretary 1:	Adam Blumenthal
Group 2: 22G03	Chairperson 2: Gabriella Ndhlovu	Secretary 2:	Mpho Moloi

#### *2.2. Agenda Items*

- Opening and welcome
- Apologies (excuse members who can't make it)
- Reading and adoption of minutes of previous meeting
- Allow each group to present their progress for the previous week and their plans for the following week, and allow for feedback or information sharing from other groups (Standup Session)
- Answers for all previous raised issues: Check if unreachable supervisor contacted groups, do we submit individual or cohort, whether or not we're splitting into two groups, answer to if each person has to chair or just one group.
- General questions
- Closure

### **WEEK 3**

#### *3.1. Meeting Details*

Date: 03/10/2022	Time: 10:30		
Group 1: 22G09	Chairperson 1: Kavisha Reddy	Secretary 1:	Zakhna Dhiraj
Group 2: 22G85	Chairperson 2: Reza Seedat	Secretary 2:	Isaiah Chiraira

#### *3.2. Agenda Items*

- Opening and welcome
- Apologies (excuse members who can't make it)
- Answers for all previous raised issues and raising of any new concerns.
- Reading and adoption of minutes of previous meeting
- Allow each group to present their progress for the previous week and their plans for the following week, and allow for feedback or information sharing from other groups (Standup Session)
- General questions
- Closure

### **WEEK 4**

#### *4.1. Meeting Details*

Date: 10/10/2022	Time: 10:30		
Group 1: 22G46	Chairperson 1: Neo Mthimkhulu	Secretary 1:	Tshepo Chokoe
Group 2: 22G58	Chairperson 2: Cynthia Kijjambu	Secretary 2:	Mampuru Molebogeng

#### 4.2. Agenda Items

- Opening and welcome
- Apologies (excuse members who can't make it)
- Answers for all previous raised issues and raising of any new concerns.
- Reading and adoption of minutes of previous meeting
- Allow each group to present their progress for the previous week and their plans for the following week, and allow for feedback or information sharing from other groups (Stand Up Session)
- General Outstanding questions
- Closure

### WEEK 5

#### 5.1. Meeting Details

Date: 17/10/2022                      Time: 10:30  
Group 1: 22G20                      Chairperson 1: Sanet Witbooi                      Secretary 1: Nomtha Njamela  
Group 2: 22G34                      Chairperson 2: Maria (Louise) Botha                      Secretary 2: Lutfiya Charfaray

#### 5.2. Agenda Items

- Opening and welcome
- Apologies
- Answers for all previously raised issues and raising of any new concerns
- Allow each group to present their progress for the previous week and their plans for the following week, as well as allow for feedback or information sharing from other groups
- General questions / any other business
- Closure

### WEEK 6

#### 6.1. Meeting Details

Date: 24/10/2022                      Time: 10:30  
Group 1: 22G01                      Chairperson 1: Mukundi Mushiana  
Group 2: 22G73                      Chairperson 2: Lungelo Chala                      Secretary 2: Sinazo Thungo

#### 6.2. Agenda Items

- Opening and welcome
- Apologies
- Answers for all previously raised issues and raising of any new concerns: Open day issue was addressed by Dr. Genga.
- Allow each group to present their progress for the previous week and their plans for the following week, as well as allow for feedback or information sharing from other groups
- General questions / any other business
- Closure

### WEEK 7

#### 7.1. Meeting Details

Date: 31/10/2022                      Time: 10:30  
Group 1: 22G19                      Chairperson 1: Faatimah Mahomed                      Secretary 1: Milan Jeevan

#### 7.2. Agenda Items

- Opening and welcome
- Apologies
- Allow each group to present their progress for the previous week and their plans for the following week, as well as allow for feedback or information sharing from other groups
- General questions / any other business
- Closure

## **APPENDIX 4B: Minutes of Each Weekly Cohort 8 Meeting Taken by the Secretary(s)**

### **WEEK 1 – MEETING 1**

#### *Date and Time*

21/09/22 at 10:00

#### *Venue*

Microsoft Teams

#### *Names of Participants*

Students of groups 22G09, 22G46, 22G19, 22G01, 22G73, 22G05, 22G34, 22G02, 22G20, 22G50, 22G85, 22G58, 22G03

#### *Meeting Hosts*

##### *22G05*

Chair: Jesse van der Merwe

Secretary: Robyn Gebbie

##### *22G50*

Chair: Keowa Pretorious

Secretary: Casey Steyl

#### *Purpose of Meeting*

This meeting was an introductory meeting to get to know the members of cohort 8. The meeting also provided a forum for discussion about future meetings and how they would be conducted.

#### *Agenda Items*

- Group members introduce themselves
- Description of each group's project
- Decide on date and time of meetings going forward
- Decide on how future meeting agenda items will be decided upon
- Allocate meeting hosts for future meetings

#### *Discussion Notes*

##### *Group Introductions*

- 22G09: Using control knowledge to improve the grip of a bionic hand.
- 22G46: Building an improved sensing armband for a bionic hand.
- 22G19: Using AI to convert sign language to text.
- 22G01: Assisting visually impaired by building cane with a camera that notifies user of obstacles using audio.
- 22G73: Designing a heart rate monitor that will be used to identify health problems in users.
- 22G05: Analysing spiral drawings to determine if FUS is effective treatment for patients with Essential Tremor and Parkinson's Disease.
- 22G34: Building a computerised tremor assessment for patients with Parkinson's Disease.
- 22G02: Determining difference between persuasive and non-persuasive speech using data and signal analysis.
- 22G20: Using neural networks to monitor heart conditions and determine what the patient is suffering from.
- 22G50: Using machine learning and signal processing to diagnose cardiac conditions using cardiac sounds.
- 22G85: Determining the correlation between Radiohead albums using digital signal processing.
- 22G53: Evaluating changes occurring in virus trajectories by using entropy to measure these changes.
- 22G03: Investigating the effect of lightning on nerve strands. Generating lightning current using impulse generator. Investigating the stability of using coaxial cables instead of actual nerves.

#### *Group Organisation*

The chairperson asked the groups if they had managed to get in contact with their supervisors. It was found that all groups were able to contact their supervisors and had made arrangements to meet with their supervisors privately with the exception of one group. This group would continue to try make contact. If they were still unable to make contact by the next meeting the other groups would contact their supervisors and ask for advice.

#### *Future Meeting Arrangement*

- A roster was set up to determine who was going to chair the meetings each week. This was done by making a spreadsheet available to the cohort and allowing for each group member to sign up.
- It was decided to create an agenda system in order to decide on the topics that will be discussed in the future meetings. This was done by making a Google Document available to the whole cohort, each member could add their topics of concern to the document. It was decided that if the agenda items were not discussed in meetings due to time constraints they would flow over to the next meeting.
- It was decided that future meetings would be held on Mondays at 10:30. This day was decided upon by allowing the members of the cohort to vote between Mondays, Wednesdays, and Fridays.
- It was decided that the meetings did not need to include the group supervisors.

#### *Questions*

Several questions were raised that would need to be answered by the head of this course.

- Should each person take individual minutes or is one set of minutes for everyone fine?
- Can the cohort split into 2 groups for meetings and if so, do we need to combine the meeting minutes from these 2 groups.

The chairperson of this meeting will email the head of the course to find the answers to these questions.

#### *Next Meeting Date*

26/09/2022

#### *Adjournment*

The meeting was adjourned by Jesse van der Merve at 10:54.

## **Cohort 8 Minutes by 22G50**

**21 September 2022 10:am**

Jessies group and my group are chairing - 22G05 & 22G50  
Just some general conversation in the group about what the project will entail

A quick vote for which day to have the meeting. Monday wins.

Group 9 talks about their project to hold a pen and a marble with a pen and a bionic hand.

22G46 - Designing armband to take emg signal from amputees to a bionic hand to control its movement.

22G19 - Sign language translation device - will implement it using gloves with sensors connected to arduinos. Gestures transmitted to bt speaker to hear and understand the sign language.

22G01 - Making a device for assisting visually impaired individuals. Cane with ultrasonic sensors and camera connected to reaberry pi and sensor connected to arduino. If person approaches object their cane gives feedback as vibration. Bt earphones will also make noise to move away from object.

22G73 - Building device to monitor heartrate and will be using LED's to measure blood pulsations in finger and compute heartrate.

22G05 - analysing handrawn circles and analysing to see if persons Parkinson's treatment is working and helping fix the disease

22G34 - app to help physicians detect tremors in people with Parkinson's

22G02 - understand difference between persuasive and non-persuasive speaking. Speech processing

22G20 - Building and coding a system which will take in capillary readings to identify neurological data from patients and coalesce a database.

22G50 - use neural networks and AI to monitor heart conditions. Automatically determine cardiac murmurs using ai and machine learning and signal processing

22G85 - Radiohead has Easter eggs in music. Correlation and signal processing and machine learning to find correlation between two albums

22G58 - Developing quantification model for inferring changes on viral sequences. Develop parametrics to evaluate changes that have occurred between viral sequences. Specifically for covid 19. Check degree of changes and evolutionary changes. Once they have model they hope to test with covid 19, influenza and hiv to check how feasible and accurate the model is.

They met up with people from bioinformatics to assist them with finding artificial changes. Not prevalent in literature and so needs to be figured out this week.

22G03 - investigating effect of lightning on nerve strands in nervous system. Generate lightning and then use coaxial as nerve proxy to see effects induced - currents and voltages. Collect this data and create model on how expect nerves to behave in these lightning electromagnetic fields.

Generate current impulses similar to lightning. Use impulse generator. Objective is how to use the generator and understand circuit. Generated lightning currents already. Expected rise and fall times. Research coaxial instead of nerve use for the project and how this will affect measurements. Effect of an open nerve on the human body with standing waves and electrical impulses.

Added a channel to teams thing where we can talk about small questions we have

Anyone struggling to talk to supervisors? - Adam was emailed on Monday and they still have no response. They will try call him and see what the problem is. Will check up with this next week.

Any questions for other groups? Not necessarily.

Need to set up a roster for who will be chairing each week. A google sheet will be made and shared on the whatsapp group

Okay with 10 on Monday? If people have loadshedding just notify everyone beforehand. Group 2 wants to chair next week and group 3 next week - Both groups will chair

Can we make it 10:30? Doesn't seem to be a problem. Did a vote and everyone is happy. All weeksm meetings to be changed to 10:30

Minutes to be uploaded to files section of MS teams group on the day of the meeting and no later.

Check we can submit minutes as a cohort or individually - check this for all cohorts

Any other general questions?

Jessie will email and clarify about how chairpersons will work. Since we have an exceptionally large cohort.

Check if we can split the cohorts up as we get more detailed to save time

Make a google doc for the agenda for each week. Chairpersons will carry over things from previous weeks and anyone can access it and add their own things to the agenda. Only one google doc that continuously grows

Can we split into two groups? Will we have two separate minutes? Jessie will email and find answers to this

22G05 and 22G50 closed the meeting. Next meeting on Monday September 26 2022  
@10:30

## Cohort 8 Meeting Minutes

<u>Location</u>	: Microsoft Teams
<u>Date</u>	: 26 September 2022
<u>Time</u>	: 10:30
<u>Attendees</u>	: All groups from cohort 8 are present
<u>Chair</u>	: Gabriella Ndhlovu, Ilan Malkin
<u>Secretary</u>	: Mpho Moloi, Adam Blumenthal

### **10:33 Meeting Starts**

- Opening and Welcome by Gabriella Ndhlovu
- Issue about meeting recordings
- Suggestion to not record meetings so as to create a safe space for everyone to voice out their concerns about anything and everything
- Instead of recording, it was suggested that people go through minutes to find out what was said in the meetings

### **10:37 Apologies: Gabriella**

- One member from 22G46 (Tshepo Chokoe) couldn't make it

### **10:38 Reading and adoption of minutes of previous meeting: Gabriella**

- Last week we discussed the scopes and objectives of the projects
- How will chairing work
- Check if we can split the cohort into two different groups
- Have google form to put minutes and agenda
- Groups who couldn't reach their supervisors

### **10:40 Standup Session: Ilan**

- Jesse sent an email to the course coordinators and got no response
- Allowing each group to present

### 22G09

Precision grip. Got their parts. Tested parts. Problem and sorted it out. After meeting they focusing one sensor this week. Redid mechanics of hand. Make one sensor and test it out.



### 22G46

- Managed to order some parts. Waiting for delivery
- Finished paper design. Put order today and waiting for parts
- For this week, design the 3D CAD design for electrodes. 2D print of substrate electrodes

### 22G19

- Making flat sensors.
- Been through a few designs
- Problem with resistance values
- Got components, waiting for others. Hopefully will get others before the week ends.

### 22G01

- Working on project alone so scope had to change. Met with supervisor and presented new reduced scope.
- Ordered components. Haven't received anything.
- This week, waiting for components and doing software part of the project

### 22G73

- Worked with filter and amplifier
- This week: look at software. Cant order components as ethics application hasn't been approved.

### 22G05

- Last week: did research and background and got in touch with MSc students through help of supervisor which will give them code and software
- Will start implementing code that does image processing this week

### 22G34

- Got ethics approval
- Chose python for mobile development
- Doing tremor analysis
- Chose what to do f or database
- Want to create user interface this week

### 22G02

- Extracted features for data analysis
- Want to recode to make it work with big data

-Find out what testing to use. Generalizing for data analysis

#### 22G20

-Solved ethics, got clearance

-Compiled database and collection

-This week: build software to analyse data

#### 22G50

-Did new ethics letter last week

-Continuing feature extraction for heart monitoring system

-Want to train data for Machine Learning program

#### 22G85

-Did background about digital signal processing

-Need to purchase the albums first

#### 22G58

- Working on info entropy system. Got additional info from bio informatics department. Checked if scope needed to be adjusted.

-This week: present adjusted scope for review. Information entropy model

#### 22G03

- Generated impulse. Weekly meetings with supervisor.

-Got idea from supervisor to first simulate the model.

-Need to know if results getting are correct.

-Goal to model and simulate system on Simulink first. Model should be using nerve, using coax cable to get the experiment results.

-Final model should be more nerve based than coax based.

-Software tools to use models nerve behavior.

-Looked at Hodgkin model for the nerve model.

-This week planning to finish simulation. Reading to figure out how to get data.

#### **10:58 Answers for all previous raised issues: Gabriella**

-No response from email suggesting the cohort split into two groups

- Look at the matter of submitting own minutes or group minutes next week
- Dr. Pantanowitz finally responded and the meeting was set with students

**10:59 General Question: Gabby**

- Follow up on the email sent last week
- It is suggested that groups ask for help from other groups

**11:07 Closure**

- Gabriella Ndhlovu adjourned the meeting

## Meeting Minutes 26 September 2022

### Cohort 8

#### 1. Opening and welcome

Gabby:

Isaiah: Recordings so we can look back on stuff?

Ilan: Meetings don't need to be recorded.

#### 2. Apologies (excuse members who can't make it)

22G46 one member couldn't make it.

#### 3. Reading and adoption of minutes of previous meeting

Gabby: How chairing works. We will address stuff raised last week. Split into 2 groups of 6 groups. Look back at some groups they couldn't reach supervisors.

#### 4. Allow each group to present their progress for the previous week and their plans for the following week, and allow for feedback or information sharing from other groups (Standup Session)

Ilan: Quick summary and plans for next week. Any blockers and advice from other groups.

5. Answers for all previous raised issues: Check if unreachable supervisor contacted groups, do we submit individual or cohort, whether or not we're splitting into two groups, answer to if each person has to chair or just one group.

No response from lecturers about splitting into smaller groups and waiting to find out about minutes for it.

Adam contacting him and got back to them last week.

#### 6. General questions

Problems and or questions:

#### 7. Closure

Concluding meeting and message other groups doing similar thing if need help.

Group	Response
22G09	Precision grip. Got their parts. Tested parts. Problem and sorted it out. After meeting they focusing one sensor this week. Redid mechanics of hand. Make one sensor and test it out.
22G46	Order some parts. Waiting on them to be collected/delivered. Focused on design and did it on paper. Order components for this week and waiting to get them to build their circuits. 3d cad design to be started for electrodes. Get substrates for electrode.
22G19	Making flat sensors. Been through a few designs. Having a few problems with resistance values. Got a few today and end of this week should have them all.
22G01	Working alone. Redo the scope and present the scope to supervisor about project and what he intends to do. Meeting supervisor and discussed new reduced scope. Ordered some components. Waiting for them to arrive. Haven't received them as of yet. Working on software part of project in the meantime.

22G73	Working on filter and amplifier last week. Looking at software side of project. Haven't ordered components and waiting on ethics approval. If order now may need to change components while ethics approval.
22G05	Background and research for project. Vered put her in contact with previous masters students. Masters will give some code and software for them.
22G34	Ethics approval granted. Did some research. Python and ? for mobile development. Digital spiral assessment for database. Focusing on reg page for patients. Allow user to draw on spiral tem
22G02	Extracted all features. Research on stats tests. This week generalising for data analysis.
22G20	Ethics clearance. Data collected. Build software environment for analysing data once samples are taken.
22G50	Whole new ethics letter last week. Feature extraction for heart monitoring system. Segments split to train ML program.
22G85	Did background for project. About digital signal processing. Need to purchase the albums first.
22G58	Working on info entropy system. Got additional info from bio informatics department. Checked if scope needed to be adjusted. Presenting adjusted scope with scope. And start implementation of group.
22G03	Generated impulse. Weekly meetings with supervisor. Got idea from him to first simulate the model. Need to know if results getting are correct. Goal to model and simulate system on simulink first Model should be using nerve using coax cable. Final model should be more nerve based than coax based. Characteristics of nerves. Fluids that surround nerve. Software tools to use models nerve behaviour. Hodgkin model. This week planning to finish simulation. Reading to figure out how getting data.

## Meeting Minutes 3 October 2022 by Zakhna Dhiraj

Chaired by Groups 9 and 85

### Cohort 8

1. Opening and welcome
2. Checked attendance of all groups.
3. Apologies
  - Adam sent apologies as he will join the meeting a bit late.
4. Revised last week's minutes.
5. Follow up on last week's queries.
  - Follow up regarding the query on whether to split the cohort into 2 groups – Yuval Genga said yes, it is allowed.
  - Groups that have Professor Pantanowitz and Professor Rubin as supervisors have a similar meeting on Thursday thus, they we can split accordingly.
  - A discussion occurred as to whether splitting the cohort was necessary.
  - A vote was done to determine whether the group should split from next week.
6. Progress from each group:

Group	Progress
22G09	Constructed 3 force sensors, however measurements are inaccurate, therefore a measurement system for the force sensors needs to be created. This system will be tested for a few days to see the consistency of the measurements. The design of the packaging for the circuit will also be worked on this week. This week will also be used to work on the control system and feedback from the sensors.
22G46	The power supply was completed. Testing of the arm band will be done, currently working with galvanized steel and brass electrodes. Currently completing the building of the signal conditioning and the design of the signal processing circuit. If extra time, the previous arm band will be tested.
22G19	Tested different sensors, materials, and configurations and established a design for a sensor. This week will be used to test the sensor and establish more consistent readings over different periods of usage.
22G01	Received components on Friday, the software component of the design was worked on. This week will be used to build an ultrasonic sensor as well as a vibrating feedback mechanism and a piezoelectric buzzer, as well as an accelerometer with a text-to-speech speaker.
22G73	Ordered components. The ethics community said the submission was too late thus a heartbeat will have to be modelled which will be worked on this week. There were issues with the input thus an oscillator had to be designed. Waiting for components to start the signal conditioning aspects.
22G05	Met with a master's student who completed similar research. A small portion of the student's code will be implemented as part of the preprocessing of the data. Further implementation of the software will be done this week.
22G34	Created a login page, a menu page and a form for the doctor to fill out the patient's information. A database was created to store the patient's information. This week's focus is to query patients' data from the database and to set out a template spiral drawing for the patients to draw on.
22G02	Analysis of debating speeches verses ted talks. Focused on extracting features from debating speeches using clusters and MPI. This week will be used to conduct feature extraction and preprocessing on the ted talk speeches.

22G20	Last week was used for image processing while this week will be used for preprocessing and analyzing code. This will allow interpolated samples to be collected so that the control model can start being designed. There was a problem with components as they could not be ordered through Wits, therefore they have been ordered via the supervisor which will cause a delay of a few days.
22G50	Last week was used to test different algorithms in diagnosing different murmurs. Some feature extraction was completed to train different machine learning models which resulted in a high accuracy. This week will be used to merge the different algorithms and feature extraction together to diagnose a heartbeat.
22G85	Obtained the albums and tested the musical similarity between the two albums and added a third one as a control measure. This week will be used to alter the crossfade of the albums as it may help detect more similarities.
22G58	Started to implement the entropic model and this week will be used to simulate it and plot all the entropic parametric curves. The nucleotide motifs from Covid-19 virus will also be looked at.
22G03	Got induction measurements of voltage and current that was induced in the coaxial cable and discussed the measurements with the supervisor. A question was asked as to how the students know these measurements are not noise and discussed how the protection of the measurement system can act as a frequency filter. The frequencies that will be allowed and not allowed through the faraday cage need to be determined and the simulation needs to be completed.

7. From the votes the majority voted that the group should split. From next week, the groups will be split and will attend different meetings at the same time. The splitting of the groups will be discussed on Whatsapp.
8. The meeting was closed off by Kavisha Reddy.

## Meeting Minutes 3 October 2022

Chaired by Groups 9 and 85

### Cohort 8

1. Opening and welcome
2. Checked attendance of all groups.
3. Apologies
  - Adam sent apologies as he will join the meeting a bit late.
4. Revised last week's minutes.
5. Follow up on last week's queries.
  - Follow up regarding the query on whether to split the cohort into 2 groups – Yuval Genga said yes, it is allowed.
  - Groups that have Professor Pantanowitz and Professor Rubin as supervisors have a similar meeting on Thursday thus, they we can split accordingly.
  - A discussion occurred as to whether splitting the cohort was necessary.
  - A vote was done to determine whether the group should split from next week.
6. Progress from each group:

Group	Progress
22G09	Constructed 3 force sensors, however measurements are inaccurate, therefore a measurement system for the force sensors needs to be created. This system will be tested for a few days to see the consistency of the measurements. The design of the packaging for the circuit will also be worked on this week. This week will also be used to work on the control system and feedback from the sensors.
22G46	The power supply was completed. Testing of the arm band will be done, currently working with galvanized steel and brass electrodes. Currently completing the building of the signal conditioning and the design of the signal processing circuit. If extra time, the previous arm band will be tested.
22G19	Tested different sensors, materials, and configurations and established a design for a sensor. This week will be used to test the sensor and establish more consistent readings over different periods of usage.
22G01	Received components on Friday, the software component of the design was worked on. This week will be used to build an ultrasonic sensor as well as a vibrating feedback mechanism and a piezoelectric buzzer, as well as an accelerometer with a text-to-speech speaker.
22G73	Ordered components. The ethics community said the submission was too late thus a heartbeat will have to be modelled which will be worked on this week. There were issues with the input thus an oscillator had to be designed. Waiting for components to start the signal conditioning aspects.
22G05	Late last week met with a master's student who completed similar research. A small portion of the student's code will be implemented as part of the preprocessing of the data. Further implementation of the software will be done this week.
22G34	Created a login page, menu page and a form for the doctor to fill in to add new patients. Also set up a database to store the patients details. Planned to focus on searching for existing patients on the database and creating a spiral drawing templates.
22G02	Did analysis of debating speech vs Ted talks specifically extracting features from debate speeches. Planned to do more preprocessing.



22G20	Worked on image processing code. Planned to continue working on the processing code as well as analysis. Reported on a setback as far as components ordering is concerned.
22G50	Worked on different algorithms to diagnose S1S2 for different types of murmurs. Planned to do code integration.
22G85	Tested for music similarity between OK computer and in rainbows using machine learning algorithms with Kid A as a control album. Planned to test 01 10 theory.
22G58	Implemented the entropic model. Planned to start simulation and putting all entropy parametric curves.
22G03	Gave a feedback on their meeting with the supervisor on protecting the measurement equipments.

## **Weekly Meeting Minutes**

**Date | Time:** 10 October 2022 | 10h30 – 11h00

**Chairpersons:** Neo Mthimkhulu and Cynthia Kijjambu

**Secretaries:** Tshepo Chokoe and Mampuru Molebogeng

### **Week 4**

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#### **Agenda:**

1. Opening and welcome
2. Apologies (excuse members who cannot make it)
3. Answers for all previous raised issues and raising of any new concerns.
4. Reading and adoption of minutes of previous meeting
5. Allow each group to present their progress for the previous week and their plans for the following week, and allow for feedback or information sharing from other groups (Stand Up Session)
6. General Outstanding questions
7. Closure

#### **Proceedings:**

1. Opening and welcome by Neo Mthimkhulu and Cynthia Kijjambu
2. Check attendance for all groups to report any students in absentia
  - All members were present for the meeting
3. Follow up on last week's queries
  - The cohort decided to chair the meeting like the previous ones and implement the splitting in Week 5, to avoid time delays
  - The cohort is to be split into two sub-cohorts that will run concurrently, how the groups would be split will be decided before the end of the week according to project focus.
  - It was raised that the splitting at this point could be redundant since the project timeline is reaching conclusion. A new voting poll was made and majority voted for not splitting
4. Revised last week's meeting minutes to check for any outstanding queries

5. Progress of each group is summarised in a table below

<b>Group</b>	<b>Progress report</b>
<b>22G09</b>	Finish up sensor design and fit it onto the bionic hand. This week focus is to control the finger movement to improve precision. Integrate sensor into the bionic hand.
<b>22G46</b>	Done signal conditioning subsystem and integrating the subsystems. Plan is to conclude integration of subsystems this week
<b>22G19</b>	Have three designs on sensors. Plan is to integrate other sensors by the end of this week
<b>22G01</b>	Finished doing obstacle and fault detection subsystem. Halfway through voice feedback subsystems where the blind person will be listening through Bluetooth. Integrate subsystems altogether.
<b>22G73</b>	Trying to model and finished the circuitry. This week will be starting with the mobile app.
<b>22G05</b>	Extracted all spirals for images. Devised methodology to detect tremor severity
<b>22G34</b>	Created the assessment template to access the patient information from the database. Signal and image processing to be done.
<b>22G02</b>	Started the pre-processing and statistical testing, which hasn't run according to plan. Plan is to try finish testing this week.
<b>22G20</b>	Completing imaging and pre-processing code and received components. Planning to finish code and make 3D chin rest.
<b>22G50</b>	Pretty much done and everything works accordingly, left with testing the auscultation prototype.
<b>22G85</b>	Continuing with similarity testing, found that there is correlation between the

	algorithms and currently looking for ways to improve
<b>22G58</b>	Completed the entropy computation model, the next focus would involve devising the time evolution of entropy parametric curves
<b>22G03</b>	Supervisor advised that there is always interference. Therefore, it must be minimised and quantified. Induction measurements to be done.

#### 6. General Outstanding questions

- Adam asked if we will be allowed to make changes on our projects after the 3rd of November 2022. It was advised that the question be taken up with course coordinators and/or supervisors.

#### 7. Closure by Cynthia Kijjambu and Neo Mthimkhulu

#### Week 4 Cohort 8 Meeting Minutes

Date: October 10<sup>th</sup>, 2022

Chaired by: Cynthia Kijjambu (22G58) and Neo Martin Mthimkhulu (22G)

Secretary: Mampuru Molebogeng

1. Opening and welcome: Cynthia Kijjambu and Neo Mthimkhulu
2. Apologies (excuse members who can't make it)
  - All members were present for the meeting
3. Answers for all previous raised issues and raising of any new concerns.
  - The cohort decided to chair the meeting like the previous ones and implement the splitting in Week 5, to avoid time delays
  - The cohort is to be split into two sub-cohorts that will run concurrently, how the groups would be split will be decided before the end of the week according to project focus.
  - It was raised that the splitting at this point could be redundant since the project timeline is reaching conclusion. A new voting poll was made and majority voted for not splitting
4. Reading and adoption of minutes of previous meeting
5. Allow each group to present their progress for the previous week and their plans for the following week, and allow for feedback or information sharing from other groups (Stand Up Session)

Group	Project
22G09	Finish up sensor design and fit it onto the bionic hand. This week focus is to control the finger movement to improve precision.
22G46	Done signal conditioning subsystem and integrating the subsystems. Plan is to conclude integration of subsystems this week
22G19	Have three designs on sensors. Plan is to integrate other sensors by the end of this week
22G01	Finished doing obstacle and fault detection subsystem. Halfway through voice feedback subsystems where the blind person will be listening through Bluetooth
22G73	Trying to model and finished the circuitry. This week will be starting with the mobile app.
22G05	Extracted all spirals for images. Devised methodology to detect tremor severity
22G34	Created the assessment template to access the patient information from the database.
22G02	Started the pre-processing and statistical testing, which hasn't run according to plan
22G20	Completing imaging and pre-processing code and received components. Planning to finish code and make 3D chin rest
22G50	Pretty much done and everything works accordingly, left with testing the auscultation prototype
22G85	Continuing with similarity testing, found that there is correlation between the algorithms and currently looking for ways to improve
22G58	Completed the entropy computation model, the next focus would involve devising the time evolution of entropy parametric curves

22G03	Worked around the faraday cage, leaving some interference to occur at minimal magnitudes, we will be able to then take induction measurements
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6. General Outstanding questions

- Adam asked if we will be allowed to make changes on our projects after the 3<sup>rd</sup> of November 2022. It was advised that the question be taken up with course coordinators and/or supervisors.

7. Closure by Cynthia Kijjambu and Neo Mthimkhulu

MINUTES OF THE MEETING OF ELEN4012 INVESTIGATION COHORT 8,  
HELD ON 17 OCTOBER 2022 AT 10:30 AM ON MICROSOFT TEAMS

PRESENT:

- All the groups in Cohort 8
- Hosted by Group 34 & Group 20
- Chairs:
  - Maria Botha
  - Sanet Witbooi
- Secretaries:
  - Lutfiya Charfaray
  - Nomtha Njamela

1. Maria Botha opened the meeting by welcoming the cohort members.

2. Adam Blumenthal sent his apologies as he could not attend the meeting.

3.1. Previously raised concerns: Adam previously asked if we are allowed to make changes to our project after the open day (3 November 2022). Maria asked if anyone got feedback regarding this.

3.2. New concerns: Whether we should host cohort meetings after the 3<sup>rd</sup> of November. Sanet has emailed the course coordinators regarding this and will inform the group on WhatsApp. Casey asked where we are supposed to submit the minutes of our meetings. Lungelo and Mukundi responded saying that it should be in the appendix of our reports and Sanet suggested that we should confirm this with our supervisors. Milan asked if the cohort will still have a meeting the week of the 31<sup>st</sup> of October 2022 and Maria suggested that we should, this will allow Milan's group to fulfil their chairing requirements.

4.

Group Number	Progress and Plan
22G09	Last week: Integrated their systems and completed their circuitry. This week: Testing of sensors and reliability testing.
22G46	Last week: Ordered parts. This week: Busy with circuitry and hardware design for electrode.
22G19	Last week: Settled on reliable sensor configuration. This week: Working on calibration and creating the database.
22G01	At the moment: Combining circuitry, testing of cane and reliability of sensors.
22G73	Last week: Looked at mobile app development and finalizing peak detection on code. This week: Mobile app development and moving circuitry to Veroboard.
22G05	Last week: Result of spirals, indication of the amount of tremor in spirals and lines. This week: Automate results and start writing report.

<b>22G34</b>	Last week: Timing of assessments, created a visual assessment rating tool, packaging of app for android. This week: Complete signal processing and testing of app.
<b>22G02</b>	Last week: Extracted features, tested data. This week: Machine learning and writing of reports.
<b>22G20</b>	Last week: Completed code and built system. This week: Feed in blind tests, calibrate and complete code.
<b>22G50</b>	Last week: Finished testing on all their data and all their algorithms are trained. This week: Complete their reports.
<b>22G85</b>	Last week: Similarity tests. This week: Confirm results using machine learning.
<b>22G58</b>	Last week: Finished entropy model and tested it with a few Covid-19 sequences. This week: Quantification model.
<b>22G03</b>	Last week: Varied distances to see inductive effects. Recorded results. This week: Verify results. Review and compare coaxial cables to nerves. Vary length of the coaxial cable and research the frequencies of lighting.

5.The next cohort meeting will take place on 24 October 2022 at 10:30am on MS Teams

6. Maria and Sanet adjourned the meeting at 10:48 am.



## Week 5 Meeting Minutes by Nomtha Njamela

**Date and time:** 17<sup>th</sup> October 2022 at 10:30

**Chairs:** Sanet Witbooi and Maria (Louise) Botha

**Secretaries:** Nomtha Njamela and Lutfiya Charfaray

**Groups:** 20 and 34

*Cohort 8*

1. Opening and welcoming by Louise
2. Apologies
  - Apologies from Adam Blumenthal for not attending the cohort meeting.
3. All previous issues were brought up and new raising concerns were addressed:  
Previously raised concerns:
  - Adam asked if changes are allowed to be made on the projects after the 3<sup>rd</sup> of November (Open day), Sanet offered to email the course coordinator regarding this concern.  
New concerns:
  - Casey – asked where minutes should be placed in the report. Meeting members Lungelo and Mukundi says it should be in the report's Appendix
  - Milan – asked if a cohort meeting will take place the week of open day. Meeting member Maria confirmed that it will take place for them to fulfil their chairing requirements.
4. Sanet asked each group to present a quick summary of what they have achieved so far and what they are planning to do going forward:

Group	Progress
22G09	Previous week: integrated their mechanical sensory with their power supply. All of their circuitry is done, and they started testing their sensors This week: reliability tests will be done, like the hand holding, to make sure that the measurements are consistent in order for them to start deciding on how to control the actual movement.
22G46	Previous week: they ordered components. This week: boarding their circuitry and working on the hardware design for electrode
22G19	Previous week: settled on a reliable sensor configuration This week: working on calibration and creating their database.
22G01	Previous week: combining circuitry and doing tests This week: do reliability test for chain and the sensors
22G73	Previous week: looking at the mobile app development, learning how to program a mobile app and finalizing the peak detection of their code. This week: log into the mobile app development and finalize and move the circuitry.
22G05	Previous week: they received the result for their spirals. This week: automate spirals so that they can find it for every patient that they have data on and start writing.

22G34	Previous week: timed the assessments and created a visual assessment rating tool. Attempted to package the app for Android, but there are still some issues. This week: to complete the signal processing and start testing the app
22G02	Previous week: tested data and extracted Features This week: machine learning and being with writing the report
22G20	Previous week: built system and complete 90% of the code. This week: feed in blind tests, calibrate and complete the 10% of the code
22G50	Previous week: finished testing on all their data and algorithms are trained. This week: Started writing their reports.
22G85	Previous week: translation comparisons and visual processes to spot differences. This week: confirm results using machine learning methods
22G58	Previous week: received entropy model and tested it out with a few COVID-19 sequences. This week: time evolution quantification model
22G03	Previous week: verified the distance and inductive effect. Results were recorded. This week: verification of the results. Review what a nerve is represented as electrically and compare that with how a coaxial cable is represented electrically. Verification of the length of their coaxial cable, find lightning frequencies that correspond to which lengths to induce voltages.

5. The meeting was adjourned at 10:48 by Maria and Sanet

## Meeting Minutes 24 October 2022

Chaired by Groups 01 and 73

### Cohort 8

1. Opening and welcome
2. Checked attendance of all groups.
3. Apologies
  - Milan from Group 19.
  - Group 9.
4. Revised last week's minutes.
5. Follow up on last week's queries.
  - Queries on open day were addressed by Dr. Y. Genga. A communication is to be released shortly.
6. Progress from each group:

Group	Progress
22G09	Excused.
22G46	<b>Last week:</b> Completed the 3D printing for the two channels. Waiting for components to duplicate the system for the two channels. <b>This week:</b> Still busy with the signal processing stage. Need to standardize the testing methodology and add the linear envelope to the Veroboard to complete the system for one channel.
22G19	<b>Last week:</b> Sensors are working on the glove and a correct output is obtained. Letters are recognized as the hand gestures change. <b>This week:</b> Busy with the text-to-speech using Bluetooth interface.
22G01	<b>Last week:</b> Took data from the cane in relation to the ultrasonic and accelerometer sensors to detect falling for response generation (a buzzer). Planning on working on sending an SMS to someone (a relative) in case a cane user gets injured. <b>This week:</b> Waiting for components. Working on data analysis and results. To start working on the poster.
22G73	<b>Last week:</b> Busy with the mobile application development. Tried integrating the system on Friday but still experiencing a few bugs in the software. <b>This week:</b> To work on fixing those bugs and try moving to a Veroboard.
22G05	<b>Last week:</b> Worked on two methods, one of the group members had method that performed well. <b>This week:</b> To collect results from the best performing method and start working on the poster. To start working on system validation.
22G34	<b>Last week:</b> Focused on signal and image processing of the tremor drawings. Added analysis to results. Fixed the UX functionalities. Performed unit testing. <b>This week:</b> To complete the testing and work on making the application run on an android device (tablet).
22G02	<b>Last week:</b> Got results that were too good to be true. <b>This week:</b> To test the system using a different dataset for validation.

22G20	<p><b>Last week:</b> Done with the system and the coding part. Created the control model.</p> <p><b>This week:</b> To gather data on the abnormalities and decide which ones are to be investigated for the purpose of this project. This will be based on the data available. To perform system validation.</p>
22G50	<p><b>Last week:</b> Created a GUI for the application to display the different heart auscultations.</p> <p><b>This week:</b> To start working on the poster.</p>
22G85	<p><b>Last week:</b> Confirmed that the theory they are using is not true. Still trying to formulate a new one.</p> <p><b>This week:</b> To come up with a different theory and work on data visualization for past results for the poster.</p>
22G58	<p><b>Last week:</b> Test functional and random sequences on the model created. Came up with a conclusion to their hypothesis.</p> <p><b>This week:</b> Results verification with supervisor. To try and finalize the time evolution of the model. To test and get results.</p>
22G03	<p><b>Last week:</b> Finished taking lab measurements.</p> <p><b>This week:</b> To work on scaling the model and basing it from using a coaxial cable to a nerve. To model the effect the effects using a real nerve instead of a coaxial cable.</p>

7. Queries:

- Open day (start and end times).

## Meeting Minutes 31 October 2022 (Milan Jeevan)

Chaired by Group 19 (Faatimah Mahomed)

### Cohort 8

1. Opening and welcome
2. Checked group attendance
3. Apologies
  - Nomtha (Group 20) excused due to a medical appointment.
4. Allowed each group to present their progress (tabulated below) for the previous week and their plans for the current week, as well as allow for feedback or information sharing from other groups

Group	Progress
9	Experienced issues with connections and sensor readings, had to reconnect and remake sensors and subsequently retake measurements. Plan to finalise Open Day presentation this week.
46	Experienced a setback with burnt components, had to redo the circuit setup with new components
19	Received ethics clearance last Friday, working on movement with human hand. Open Day preparation to also be done this week.
1	Have achieved proof of concept. Currently busy with recording and documenting results in preparation of Open Day.
3	Had to replace Bluetooth module and thus adjust the code previously written. Working on web app since issues were experienced with the mobile app. Open Day prep planned for this week.
5	Have finalised results (tremor values and related data), poster is also complete. Open Day presentation to be completed this week.
34	Have tabulated results, have begun and continue to work on unit tests and packaging the app, will also work on the report.
2	Have achieved meaningful results, will complete final testing this week and preparation for Open Day.
20	Has completed system and model along with verified results. Preparation for open day and working on report planned for this week.
50	Poster has been completed, working on packaging application and further preparation for Open Day.
85	Attempted data extraction one final time, will prepare for Open Day this week.
58	Tests done on entropy model. Supervisor verified the methodology and made further suggestions. Currently working on finalising tests and preparing for Open Day.
3	Currently working on model, Open Day preparation planned for this week

5. General questions / any other business
  - The topic of the Open Day poster was brought up, majority of the groups were unclear and seeking clarity with regards to poster format and content. No concrete input could be provided during the meeting, it was decided that should anyone receive any helpful advice it is to be shared on the Cohort 8 WhatsApp group.
6. Meeting closed off by Faatimah Mahomed.