SIR 2023 - Logbook TA Group Red 21

Week 44 (Course Week 1)

Mohamed

What have I worked on? I installed the SIC framework on my laptop, brainstormed with my team about the interaction problem and I went through the framework, reading the code.
What challenges did I encounter? I did not encounter any challenge. I was able to install the SIC framework without any trouble, and the interaction problem we were discussing about was just a first idea (teaching a new language to a child).
How did I solve them/follow-up on those? -
What are the next steps? The next steps are to split the tasks and try out the NAO robot as I did not have access to it this week. I would like to apply various techniques to it to know what I am able to do with the robot.

Geralda

What have I worked on? 1) Successfully installed the necessary software framework essential for the project's development, and 2) Created and configured an Overleaf project, ensuring that all team members have access.
What challenges did I encounter? During the setup process, I faced challenges in getting the demo to run smoothly. The primary issue seemed to stem from compatibility problems with pyaudio. I think that the root of these difficulties lies in the M1 processor's ARM-based architecture, which differs from the x86_64 architecture most software is optimized for - not sure though. Another challenge was me having to work remotely. We tried setting up zoom meetings, but - although this sounds like a bad excuse - my wifi often was terrible.
How did I solve them/follow-up on those? Debugging. Tried a lot of different things here, which makes it hard to tell what exactly did the trick. To solve the second challenge, I asked my teammates to keep me up to date, and we had clear/good communication on Whatsapp, so luckily it was not really a problem after all.

What are the next steps? 1) Task division, it's important to clearly assign tasks and roles within the team. This will help streamline our workflow. 2) Getting familiar with NAO and SIC, and 3) Literature review to reinforce our project's foundation, I will dive into the relevant literature; researching previous work on human-robot interaction, e.g. case studies involving the NAO robot.

Floris

What have I worked on? Installing the SIC framework on my laptop. Helping other macOS users with installing the SIC framework xd. Trying to get the robot to connect. Ran some demo test files, edited them and tried some different things from the documentation of NAOqi online.
What challenges did I encounter and how did I solve them/follow-up on those? There were some issues with installing the framework, after searching it online I found I needed to install git-lfs to correctly pull it and portaudio to make the audio work on macOS. I posted about this on the Slack channel. I also found that one motion option didn't work correctly, this was because of a typo in the code. After mentioning this on the Slack channel it was fixed quickly and pushed to the main branch. There was also a problem with our group, we did not have 6 members, only 3 it seemed, messaged the TAs about this. Also don't have access to the GitHub repository yet.
What are the next steps? Still need to do the microassignment. Getting access to the GitHub repository. Hopefully get the complete group together.

Fei

What have I worked on? Installed the SIC framework on my laptop.
What challenges did I encounter? XXXXX
How did I solve them/follow-up on those? XXXXX
What are the next steps? XXXXX

Week 45 (Course Week 2)

Mohamed

What have I worked on? I worked with the NAO robot, trying out different demos and getting to understand how to develop on it. Also, I worked on setting

up Dialogflow, as it was expected to be the main component to the solution for our interaction problem. Finally, I also continued the discussion about the interaction problem with my team.

What challenges did I encounter? The first challenge was that I was not able to run the Dialogflow demos due to missing files. Also, it was only after having access to the NAO robot that I found out that I was not able to configure the redis servers correctly.

How did I solve them/follow-up on those? For the first challenge, it turned out that my SIC framework folder was missing some files. Cloning the SIC framework repository again solved the problem. As for the second issue, I had certain settings on my laptop that were conflicting with the redis-server configurations. By turning of these settings, I managed to solve the problem.

What are the next steps? Work on the presentation slides to present our interaction problem and solve issues related to Dialogflow as there were unresolved issues.

Geralda

What have I worked on? Conducted a thorough literature review to narrow and identify potential interaction problems that could be addressed through our project. This review was not limited to HRI, but also user experience and educational robotics. I began drafting potential solutions that could be applied to our interaction problem (language learning using NAO).

What challenges did I encounter? The research phase progressed without big obstacles. The amount of and diversity of the literature was a bit overwhelming ;)

How did I solve them/follow-up on those? Tried to keep track of the literature and summarize papers, so the rest of the group could quickly go over it and get an idea of what research has been done so far.

What are the next steps? Concept validation, checking whether we're on the right track with our current idea. Establishing a set of criteria to evaluate the proposed interaction problem.

Floris

What have I worked on? Watched tutorials on how to use Dialogflow. Ran the demo files on speech output, audio file output and speech recognition. Recorded my own voice and played it back on the robot. Figure out how we

could use this for our project and what the best way would be for our final implementation.
What challenges did I encounter? Dialogflow always returns the default intent, for no apparent reason. We followed the tutorial completely and exactly, multiple times. Weird. My recorded voice audio file also did play correctly on the robot. The GitHub email was in a different email box, oops.
How did I solve them/follow-up on those? Redid the tutorials multiple times, created multiple accounts and projects on Dialogflow to try and work out where to problem is. Asked the TAs what the problem could be, worked it out with them, but they also didn't know. Learned a bit on how audio files work on a computer, bitrate, sample rate. Read the documentation of the robot, I found out it only plays wav files. Converted my file to a wav format and recorded the audio at the right sample rate to make it work with the robot.
What are the next steps? Try to figure out why Dialogflow isn't working, as it is an integral part of our project.

Felix

What have I worked on? XXXXX
What challenges did I encounter? XXXXX
How did I solve them/follow-up on those? XXXXX
What are the next steps? XXXXX

Week 46 (Course Week 3)

Mohamed

What have I worked on? Due to last week, I wanted to try solving the Dialogflow interactions as it turned out the robot was not able to perceive what one utters. Furthermore, I worked on the interaction flowchart for the presentation slides, and we received feedback for our interaction problem, which I also worked on.
What challenges did I encounter? The previous question already mentions a number of challenges. First, we still had an issue with Dialogflow to solve. Another challenge was the scope of the interaction flowchart for the presentation, because we got to the point that it was too much to cover in the

presentation. Furthermore, while designing the interaction flowchart with a teammate we got into a discussion about it due to a few disagreements that we had to overcome. Finally, the main issue of this week was the definition of the interaction problem as it turned out that we did not really have an interaction problem, but a use case.

How did I solve them/follow-up on those? The first challenge turned out to be easy to solve. It was simply a matter of following the video tutorial instead of the Confluence article, which appears to be inaccurate. The second challenge, we decided to leave aspects of the interaction flowchart out so that it is usable for the presentation. As for the third, we came to a compromise that made both of us happy about the outcome. Finally, for the interaction problem, fortunately we weren't that far off from the actual interaction problem we wanted to solve; turn-taking. This turned out to be a perfect advantage of the Simon Says game, so we managed to adapt quickly.

What are the next steps? With the interaction problem now set in place, we can now start on working on the first prototype based on the current interaction flow chart. Given my experience in programming, I have decided to take this responsibility upon myself together with another teammate. So this will be the focus of next week.

Geralda

What have I worked on? This week the main focus was on creating presentation slides, shaping the content, and trying to ensure clarity for our presentation. Besides, started working on the design document by outlining its structure and started on the introduction.

What challenges did I encounter? The most important challenge I encountered during this phase was our current interaction problem. When writing the introduction for the interaction problem, it was hard to come up with an actual research question and experimental design. - Or actually it kind of was impossible, since there were no conditions to be compared.

How did I solve them/follow-up on those? To address this challenge, again our research question and design should be refined. In particular, this means extending the current design with various experimental conditions. Team discussions to brainstorm about this would be ideal.

What are the next steps? Finalizing the interaction problem, since we're already in week 3 we should really try and finalize our interaction problem. Our final interaction problem should be able to be turned into a detailed design /

experiment. Only then we can completely define variables, outline data collection process, think of the exact implementation etc. Lastly, I will make sure to keep track of the report, and continue working on it.

Floris

What have I worked on? XXXXX
What challenges did I encounter? XXXXX
How did I solve them/follow-up on those? XXXXX
What are the next steps? XXXXX

Felix

What have I worked on? XXXXX
What challenges did I encounter? XXXXX
How did I solve them/follow-up on those? XXXXX
What are the next steps? XXXXX

Week 47 (Course Week 4)

Mohamed

What have I worked on? I have mainly worked on realizing the first prototype and setting up the project in Github repository.
What challenges did I encounter? I stumbled upon a number of challenges. One is that I tried to isolate our own code from the framework, but this was not working because of “module import problems”, as was reported by the framework. Another challenge was the time constraints. Two practical sessions in which we also have to discuss a lot and share the robot is not enough for development.
How did I solve them/follow-up on those? For the first challenge, I consulted the TA and kept debugging. I was already skeptical about the error message because I was able to import the modules myself, in the same file. In the end I found out that this error message was incorrect; the problem had to do with something else, I inserted the wrong ip to initialize the Dialogflow object. For the second challenge, fortunately the focus was Dialogflow. I worked on the code

from home using the microphone. Although not always accurate, it was feasible so I was able to finish the implementation.
What are the next steps? This is a first prototype, so I definitely have to expand the software so that we can also add non-verbal cues. Also the interaction flowchart is not definitive; so next week I will have to adjust the interaction in the code based on an updated flowchart, which I have discussed with my team to work on.

Geralda

What have I worked on? So (I hope/guess) I have finalized the interaction problem for our project. The problem now involves the Simon Says game where a child can make two types of mistakes: Responding when it should not respond OR Not-responding when it should respond. These mistakes should be corrected / the child should get feedback during the game, and in our design we look into three potential feedback strategies (verbal, gestures, and combination of verbal+gestures). Besides, progressed some more on writing of the design report, trying to keep it up to date with our current ideas.
What challenges did I encounter? No particular challenges - mainly brainstorm challenges.
How did I solve them/follow-up on those? Diving into literature, watching youtube videos on HRI, ...
What are the next steps? Making a detailed solution design of each of the proposed solutions/feedback strategies. This includes specifying how verbal and non-verbal cues will be used to address incorrect responses or non-responses during the game. I also want to start planning what the experiment we are going to conduct should be like - to test the effectiveness of each solution. And finally, I have to make sure to update the report according to our last changes.

Floris

What have I worked on? XXXXX
What challenges did I encounter? XXXXX
How did I solve them/follow-up on those? XXXXX
What are the next steps? XXXXX

Felix

What have I worked on? XXXXX

What challenges did I encounter? XXXXX
How did I solve them/follow-up on those? XXXXX
What are the next steps? XXXXX

Week 48 (Course Week 5)

Mohamed

What have I worked on? I re-engineered the entire codebase (applying an object-oriented design) after the implementation of the first prototype, so that we can easily expand the software to achieve our goals with the robot. I also added a lot of new features, such as fallback interactions, the gestures, and response time so that the robot knows that the child did not respond in time. Furthermore, as a team we presented our prototype to another group for feedback.
What challenges did I encounter?

1. We can only use the NAO robot during practical sessions and I have to share the NAO robot with other teammates. Development takes time, so I had to do a lot of the code remotely from home. This made it a difficult challenge.
2. Remote debugging fortunately most of the software is based on Dialogflow so I could use my laptop microphone to test some of the software. However, it turned out that my microphone often was unstable, despite trying different frequencies.

How did I solve them/follow-up on those? The first two challenges were solved using the same solution. That is, mocking the tests. For example, instead of using microphone and Dialogflow to get the answers, I decided to simply mock responses so that I could use them to test my implementation. During the practical sessions I already confirmed Dialogflow to work with the robot and I already implemented an utility function that does this correctly, so I could simply trust this assumption and continue finishing the implementation.
What are the next steps? We received some feedback from the prototype presentation that requires feature changes (e.g. more response time). I will be working on those. Furthermore, as part of the plan we have to expand our Dialogflow intents to allow other type of Simon Says command to happen.

Finally, we would like to focus on experimentation, and as part of it I will be automating certain statistics such as response time, in the code.

Geralda

What have I worked on? I made a high-level flowchart of the interaction flow, a more specific one, and made 3 separate flowcharts of every feedback strategy. These will be used in the report to clarify the design, but for now useful for implementing what NAO has to do exactly. Additionally, this week we evaluated our prototype having multiple participants, which was really insightful and fun! Together we made some notes on the feedback we received. Lastly, we made some custom animations for letting NAO give feedback by e.g. head nodding.
What challenges did I encounter? When we tested the robot with Bob and two fellow students, some challenges arose. For example, we did not entirely think through how we would inform participants before the actual experiment with NAO would start, neither did we have any questionnaires yet to let the participants quantitatively evaluate what they thought of the robot.
How did I solve them/follow-up on those? w.r.t. Informing test subjects before testing the robot was just improvisation with some essential stuff they needed to know. And instead of questionnaires, we just talked with them about how they experienced the experiment, which was fine for now to get an idea on what went well and what could be better.
What are the next steps? Adding more stuff to Dialogflow, changing Simon Says from language learning to English-only prompts, updating report, and preparing for the 'real' pilot study, making questionnaires, interview questions, informed consent/debriefing maybe.

Floris

What have I worked on? Researched methods on how to do Dutch speech synthesization, as our current method uses the built-in speech synthesization which claims it works with Dutch language, but it does not. Implemented a method that is fast to not have a big pause in speech, uses buffers for temporary files to not clutter the file system and converts the audio to the right format that works with the robot. Tested the implementation multiple times and adjusted for small bugs found. Added more Dialogflow synonyms and example sentences to account for if the user does not exactly say the things programmed in our interaction design flowchart.

What challenges did I encounter? XXXXX
How did I solve them/follow-up on those? XXXXX
What are the next steps? XXXXX

Felix

What have I worked on? XXXXX
What challenges did I encounter? XXXXX
How did I solve them/follow-up on those? XXXXX
What are the next steps? XXXXX

Week 49 (Course Week 6)

Mohamed

What have I worked on? XXXXX
What challenges did I encounter? XXXXX
How did I solve them/follow-up on those? XXXXX
What are the next steps? XXXXX

Geralda

What have I worked on? XXXXX
What challenges did I encounter? XXXXX
How did I solve them/follow-up on those? XXXXX
What are the next steps? XXXXX

Floris

What have I worked on? XXXXX
What challenges did I encounter? XXXXX
How did I solve them/follow-up on those? XXXXX
What are the next steps? XXXXX

Felix

What have I worked on? XXXXX
What challenges did I encounter? XXXXX

How did I solve them/follow-up on those? XXXXX
What are the next steps? XXXXX

Week 50 (Course Week 7)

Mohamed

What have I worked on? XXXXX
What challenges did I encounter? XXXXX
How did I solve them/follow-up on those? XXXXX
What are the next steps? XXXXX

Geralda

What have I worked on? XXXXX
What challenges did I encounter? XXXXX
How did I solve them/follow-up on those? XXXXX
What are the next steps? XXXXX

Floris

What have I worked on? XXXXX
What challenges did I encounter? XXXXX
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What are the next steps? XXXXX

Felix

What have I worked on? XXXXX
What challenges did I encounter? XXXXX
How did I solve them/follow-up on those? XXXXX
What are the next steps? XXXXX

Week 51 (Course Week 8)

Mohamed

What have I worked on? XXXXX
What challenges did I encounter? XXXXX
How did I solve them/follow-up on those? XXXXX
What are the next steps? XXXXX

Geralda

What have I worked on? XXXXX
What challenges did I encounter? XXXXX
How did I solve them/follow-up on those? XXXXX
What are the next steps? XXXXX

Floris

What have I worked on? XXXXX
What challenges did I encounter? XXXXX
How did I solve them/follow-up on those? XXXXX
What are the next steps? XXXXX

Felix

What have I worked on? XXXXX
What challenges did I encounter? XXXXX
How did I solve them/follow-up on those? XXXXX
What are the next steps? XXXXX