UCL COMP0016 Team 12 - Lilly Neubauer, Dillon Lim, Oliver Vickers

Bi-Weekly Report: Period ending in 21st February 2020

Overview: What we've done

Lilly worked on the AR functionality and implemented the avatar turning to face the camera, making it look more lifelike and engaging. There were some issues when it turned to face the camera in all directions, i.e. it would also rotate on the Y and Z access so it looked like it was lying down! This made her realise that she needed to isolate the X value of the transform property of the camera, and use the LookAt() method with this isolated value.

We managed to create text in world space that followed the avatar. Lilly did this by learning about Parent Constraints in Unity and how you can make a child of an object follow certain properties of its parent. The main issues was, as always in AR, with scale and working out how to correctly scale the size of the text and it's relative position to the parent. Since the size of the text is not adjustable, it means if the avatar is instantiated very small, the text appears very big compared to it. This can also be fixed by using the parent constraint properties. Lilly mostly fixed this issue through experimenting with different values and then building these onto the phone. This is not the best workflow because it takes a long time to build each iteration to the android device. In an ideal world, we would have more time to spend learning about how unity treats relative space values, and there would be better documentation about building for AR in Unity.

On the backend, Oliver added tables to the database that contained information on event dates. Lilly and Oliver worked together to introduce new Dialog nodes to the chatbot concerning events, and Oliver wrote new queries to respond to these in the webhook. At this point we realised we needed a better way of managing and keeping track of different query types. We took two main steps to deal with this:

1. We introduced a queryType parameter which takes the form of a number. This is hardcoded in the dialog nodes of Watson so when it detects a particular Intent and Entity combination, it sends a JSON object with a particular query parameter. We started using a shared spreadsheet to keep track of the dialog nodes and queryTypes for each different type of request. At this point Oliver also started changing the design of the queries within the webhook so that instead of having to hard code an SQL query for each queryType, the webhook can automatically write queries in a number of different formats depending on the provided queryType.
2. We needed a flexible way of returning multiple parameters at once using the JSON return from the webhook. Previously, we had included a JSON parameter field that specified the type of information we were looking for i.e. "query":"email" to show that we wanted the email address. We decided to have each query contain all the same parameters, with "?" Token used to show which parameters we wanted to be returned. This meant we avoided issues with empty or missing parameters.

Dillon looked at some UI functionality and learnt how to make a drop down menu.

Tasks completed:

- Added new table to database
- Implemented AR avatar looking at user

- Implemented world space text
- Changed the way we handled different types of queries in the webhook
- Started documenting interaction between Watson and webhook in a shared spreadsheet
- Implemented returning multiple parameters using "?" Tokens

Are we on track?

We are slightly less on track than we were two weeks ago. The backend is evolving well but we would ideally like to adapt the chatbot to different organisations which will involve implementing more tables and queries - we need to push forward with this. It would have been good if we could have seen some implemented UI functionality by this point. In addition, Lilly didn't do as much work as she would like on the AR functionality this week.

Problems to be resolved → Steps we intend to take

- We still haven't got a proper UI → Do some mockups and design UI elements so that Dillon and Lilly can work together on this
- For some queries, we want to return multiple pieces of data within one JSON parameter - for example, if the user asks, "what events are happening today?" And there are multiple events. This needs to be returned to Watson in a human readable format because Watson doesn't have the ability to parse multiple pieces of info within a parameter → Oliver to look into how to do this in Webhook
- We want to adapt our chatbot to different settings, or show that this is a possibility for the future. When we sat down to do this we realised we needed a clear map of what new dialog we needed to create and what webhook functionality needed to be built to support this → Design additional functionality for chatbot
- Problem with UI -> Trouble with world-space and screen-space when looking into UI and AR integration -> Look into further tutorials to display UI in screen-space only -> Create a small example project to test
- Website has missing content and some sections are too text heavy -> Upload the missing content -> Reduce text and include some images / diagrams -> Tidy up the website

Plan for the next two weeks

Week one goals:

- Integrate UI and AR functionalities
- Return multiple parameters using SQL database (returning multiple events in a day)
- Draw up a design for adapting the chatbot to different organisations (Dr surgery, library etc.)

Week two goals:

- Displaying the map in world space
- Fixing the error messages in the Watson backend
- Implement error messages that tell the user to back away if they get too close