CS551H Natural Language Generation

Practical 9 – NLG in Conversational Applications

Conversational AI is changing the way users interact with their dashboards and data. Most of the current BI tools now offer natural language query interfaces to interrogate the data. These interfaces are still relying on traditional keyboard input and the results are shown in the dashboards. However, efforts are now being made to create a better user experience by creating dialog systems.

This lab session aims to show the basic building blocks and the vital role NLG plays in such a system.

A. Create a Skill

1. Log into the Alexa development console (https://developer.amazon.com/alexa/console/ask/)

2. Create a Skill
   a. Type Skill Name
   b. Set Default language to English (UK)
   c. Select Custom and Alexa-Hosted (Beta)
   d. Click **Create skill**

3. Under Build, explore the created intent model and under Code, explore the intent handlers

4. Test the “HelloWorldIntent” using the Alexa simulator by saying (or typing) sample utterances used in the intent. Familiarise yourself with the different components of the Alexa developer console.

B. BI Data and Intents

1. Use Postman to access the sample BI data source (https://f4yxn0al0f.execute-api.eu-west-1.amazonaws.com/test/testdata)

2. Investigate the metadata, the measures, and the column_names elements of the JSON data object.

Discuss

- Can you think of any questions that can be asked about the above data structure?

Try out following:

a. Add the following intent to the intent schema:

```
{"name": "MeasureSummaryIntent",
         "slots": [{"name": "measure", "type": "bi_measure"}],
         "samples": ["tell me about my {measure}",
                     "about my {measure}",
                     "how is my {measure}"]}
```

b. Under Types, add the following:

```
{"name": "bi_measure",
    "values": [{"name": {"value": "profit"}},
               {"name": {"value": "cogs"}},
               {"name": {"value": "sales"}},
               {"name": {"value": "gross sales"}}]}
```

c. Build the model.

d. Download the package settings file (https://s3-us-west-2.amazonaws.com/elasticbeanstalk-us-west-2-593615328142/package.json) and copy and paste the content into the package.json

e. Download the sample code in Node (https://s3-us-west-2.amazonaws.com/elasticbeanstalk-us-west-2-593615328142/index.js) and copy and paste the content to the index.js

f. Go to *Code* and create a handler for the added intent MeasureSummaryIntent:

```
//Handles MeasureSummaryIntent
const MeasureSummaryIntentHandler = {
    canHandle(handlerInput) {
        return handlerInput.requestEnvelope.request.type === 'IntentRequest'
            && handlerInput.requestEnvelope.request.intent.name ===
'MeasureSummaryIntent';
    },
    handle(handlerInput) {
        return new Promise((resolve) => {
            let getDataPromise=new getBIData(handlerInput);
            getDataPromise.then(function(data){
                let processDataPromise=new  processDataAndIntents(data);
                processDataPromise.then(function(data){
                    let callStudioPromise =callStudioProject(data);
                    callStudioPromise.then(function (narr){
                        let reprompt="Can I help you with anything else?"

resolve(handlerInput.responseBuilder.speak(decodeEntities(narr)).reprompt(reprompt
).getResponse());
                    });
                });
            });
        });
    }};
```

g. Click Save and click Deploy.

h. Go to Alexa simulator under *Test* and try out the `MeasureSummaryIntent` by asking or typing sample utterances in relation to *measures* such as sales, profit, and cogs.

i. Download the Studio project and upload it into your Studio account. Publish and note down the URL and the API key.

j. In the Code tab, under Skill Code, select index.js.
   Update the Studio project URL and the API key so that now it calls your Studio project.

Exercise:

1. Create an intent to query best performing "dimension" (e.g. country, product, etc.)

2. Create an intent to query measure summary by country.

   Hint: You will have to add a narrative script in your Studio project that serves this intent. Use the existing *measureSummary* script and add a step to filter the data. You will also have to introduce a new type in the Intent Schema.