



Assignment 4: Chatbot Development Using Protégé and Dialog-Flow

Use case: DEBI Chatbot.

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Group17. Team Members

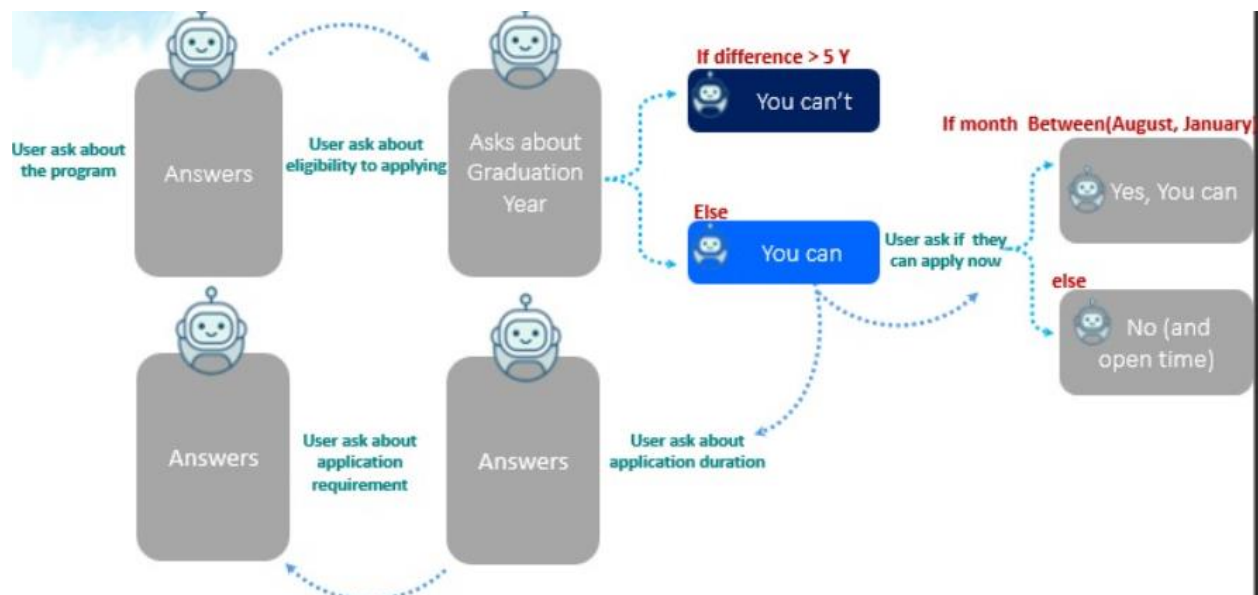
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Problem:

As we know, data is the future and the growth in data grows every day. In our country not many people know about data science fields and what scholarships, or programs exist out there. So, we want to guide those who are interested in data science through our chatbot.

Overview:

Our idea is about creating a DEBI chatbot, a chatbot that is specialized for answering questions about the scholarship we take. We thought this might be useful in a real-world scenario as actually a lot of people have inquiries about this scholarship whether students who are freshly graduated or still in college, or already graduated for a while, or even their parents. So, we thought this might be a great thing if we wanted to develop the idea further. In our use case, we focused mainly on one track that DEBI provides which is ours “AI and Data Science Uottawa” as this is just a prototype of the whole actual scenario. And here’s an overview of our flow.



Creating Ontology

We first created the ontology via protégé

- **Classes:**

Classes in ontologies are abstract groups, sets, or collections of objects.

- **Object properties:**

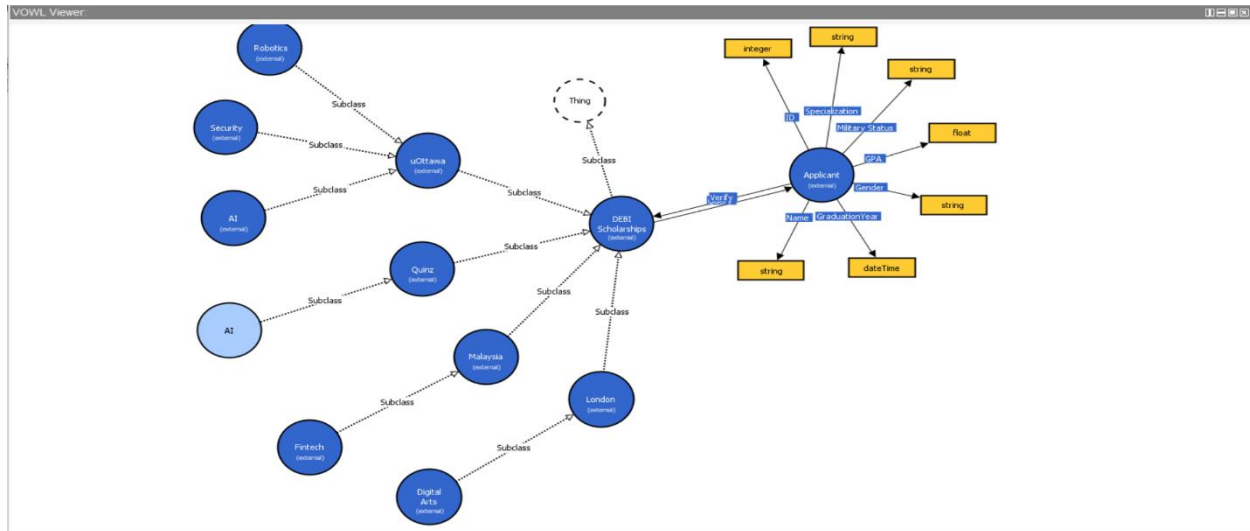
In object properties, we are concerned with describing how classes can relate to each other based on their instances.

- **Data properties**

Data properties are just like object properties except their **domains** are typed literals.

- **Individuals**

Individuals (instances) are the basic, “ground level” components of an ontology.



Initiating the chatbot

We first created our agent in Dialog-Flow that's called "DebiChatbot", then we thought it might be good to go through the small talk feature as it's an everyday question, so, we answered some questions about the chatbot with different answers so, the same user won't get the same answer every time. And these were the results after doing so.



We enabled the validation agent part of our agent to know what kind of questions people ask that our agent does not know about.

DebiBot

DONE

General

Languages

ML Settings

Export and Import

Environments

Speech

Share

Advanced

ML CLASSIFICATION THRESHOLD

Define the threshold value for the confidence score. If the returned value is less than the threshold value, then a fallback intent will be triggered, or if there is no fallback intents defined, no intent will be triggered.

0.3

AUTOMATIC SPELL CORRECTION

☐

Allow ML to correct spelling of query during request processing.

AUTOMATIC TRAINING

☐

Disable automatic re-training the agent after every agent modification.
Automatic training may slow UI responsiveness and is not recommended for large agents. You can kick off agent training manually through [API](#) or by clicking the "TRAIN" button below.

AGENT VALIDATION

☒

Automatically validate the agent when agent training is performed.

TRAIN

Creating Entities

We created 2 entities, one called MCIT_Program and the other called Tracks, we did that mainly so that we could reuse the name preferred by the user so the user would feel the chatbot more connected to them.

Intents

We have mainly 5 intents: “Know Debi”, “Application Requirements”, “Can I Apply”, “Program Duration”, and “Opening Times”. We will go through the intent as the flow of the system.

The first intent is **Know Debi**, this intent is about when the user wants to know about the program. We created different competency questions and provided different answers. Here is a look at the questions created.

”	Digital Egypt Builders Initiative
”	Debi
”	Can you provide information about the Digital Egypt Builders Initiative (DEBI)?
”	What does Debi offer?
”	What is debi?
”	Can you tell me about debi?

Now the user is aware of what the program offers, they ask whether they can apply if they are interested.

Questions:

”	I am interested in applying to Debi.
”	I want to apply to debi.
”	Am I eligible to applying to debi?
”	Can I apply?
”	Can I apply to debi?

Then chatbot asks the user about their graduation year, this part is handled now by a function, the chatbot takes the graduation year specified by the user as a parameter, then calculates the difference between the current year and the param, the logic in our system is that if the user has been graduated for more than 5 years, they can’t apply to the program. This is handled by the function shown below.

```
function Apply(agent) {
  const graduationYear = parseInt(agent.parameters.gnumber);
  const currentYear = new Date().getFullYear();
  const yearsSinceGraduation = currentYear - graduationYear;

  if (yearsSinceGraduation < 5) {
    agent.add(`Yes, You can.`);
  } else {
    agent.add(`Sorry, you can not apply to the program as it's required the applicant should be graduated at least 5 years ago`);
  }
}
```

If the user can apply, they might want to ask about opening times for the program.

Questions:

🗨	When does the application process for DEBI begin?	🗑
🗨	Can you tell me when DEBI starts accepting applications?	
🗨	What are the dates for applying to the Digital Egypt Builders Initiative (DEBI)?	
🗨	When is the application period for DEBI open?	
🗨	When will Debi be permitted to open its doors for us?	

Responses:

In this part we also used a function to make the system recognize what current month we are on and based on it, the chatbot answers if the program is open now or not.

```
function checkMonthStatus(agent) {
  const currentMonthNumber = (new Date()).getMonth();
  const monthNames = [
    "January", "February", "March", "April", "May", "June", "July",
    "August", "September", "October", "November", "December"
  ];
  const currentMonthName = monthNames[currentMonthNumber];
  const openMonths = [1, 8, 9, 10, 11, 12];


  if (openMonths.includes(currentMonthNumber)) {
    agent.add(`It's ${currentMonthName}, you can apply.`);
  } else {
    agent.add(`Sorry, it's ${currentMonthName}, you can't apply.`);
  }
}
```

If the program is currently open, the user might ask about the requirements.

Questions:

🗨	What must I have to be eligible for DEBI?
🗨	Can you list the requirements for applying to the Digital Egypt Builders Initiative?
🗨	What are the qualifications needed to apply for DEBI?
🗨	Tell me about the eligibility criteria for joining DEBI.
🗨	What are the application requirements for the Digital Egypt Builders Initiative?

Snapshot of agent responses

Text Response		
1		
	\$MCIT_Program is a free scholarship program offered to promising young graduates from specific faculties, including Engineering departments of Computer, Communications, Electronics, Biomedical, and Architecture, Computer Science, Science Department of Mathematics (Computer Science) or Statistics, Economics, Business administration, Applied Arts, Fine Arts, and Urban Planning.	

Since they know about the requirements now, it's wise they want to ask about the duration of the program to see if they should really apply and it's appropriate to their schedule or future plans.

Questions:

”	Is the duration of the DEBI scholarship the same for all eligible candidates?
”	How many months or years does the DEBI scholarship cover?
”	What is the duration of the DEBI scholarship program for successful applicants?
”	Can you provide information on the specific timeframe for the DEBI scholarship?
”	How long is the duration of the Digital Egypt Builders Initiative (DEBI) scholarship program?

Snapshot of agent responses

1	The duration of the \$mcit_program scholarship program is 12 months, starting from February and ending in February of the following year.
2	From February to the next February, the DEBI scholarship program lasts for a total of 12 months.
3	The DEBI scholarship spans 12 months, commencing in February and concluding in the subsequent February.
4	The DEBI scholarship is a year-long program, lasting from February to the following February, covering a total of 12 months.
5	The duration of the DEBI scholarship is one full year, starting from February and extending until February of the next year, totaling 12 months.

The last intent we have is when the user asks about the materials, the chatbot asks them to specify for which track, we only focused on one track as stated above, but we did that if we wanted to develop the chatbot further.

” Can you tell me about the materials for AI?

” Data Science materials

” AI materials

” AI and Data Science track materials

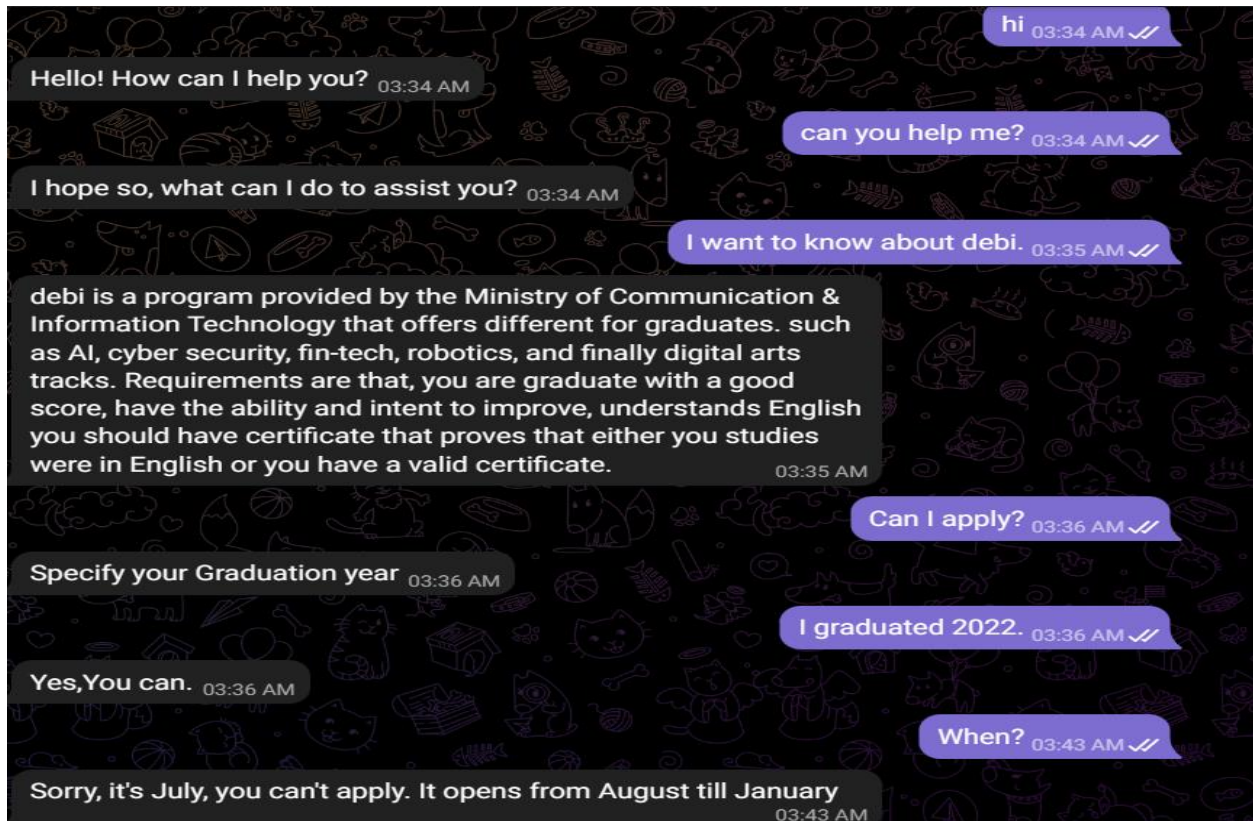
” What are the materials in AI track?

Testing our work

→ Chatbot Integration:

We integrated the chatbot with telegram, we thought that would encourage us more if we really wanted to invest in the idea in the future.

Here is a full scenario dialog between the user and the chatbot.



For telegram check this id : @debi_chatbot

<https://bot.dialogflow.com/eeb1007f-dcb3-4ab4-8b1a-522ec9a7ea6a>

Future Work

If we want to deploy this chatbot for real, there are some areas of improvement we would like to work on such as we want to make the chatbot more suggestive so that when the user inquires about something, the chatbot suggests them stuff they can ask about further. We also would like to include the rest of the tracks and make it more detailed.