



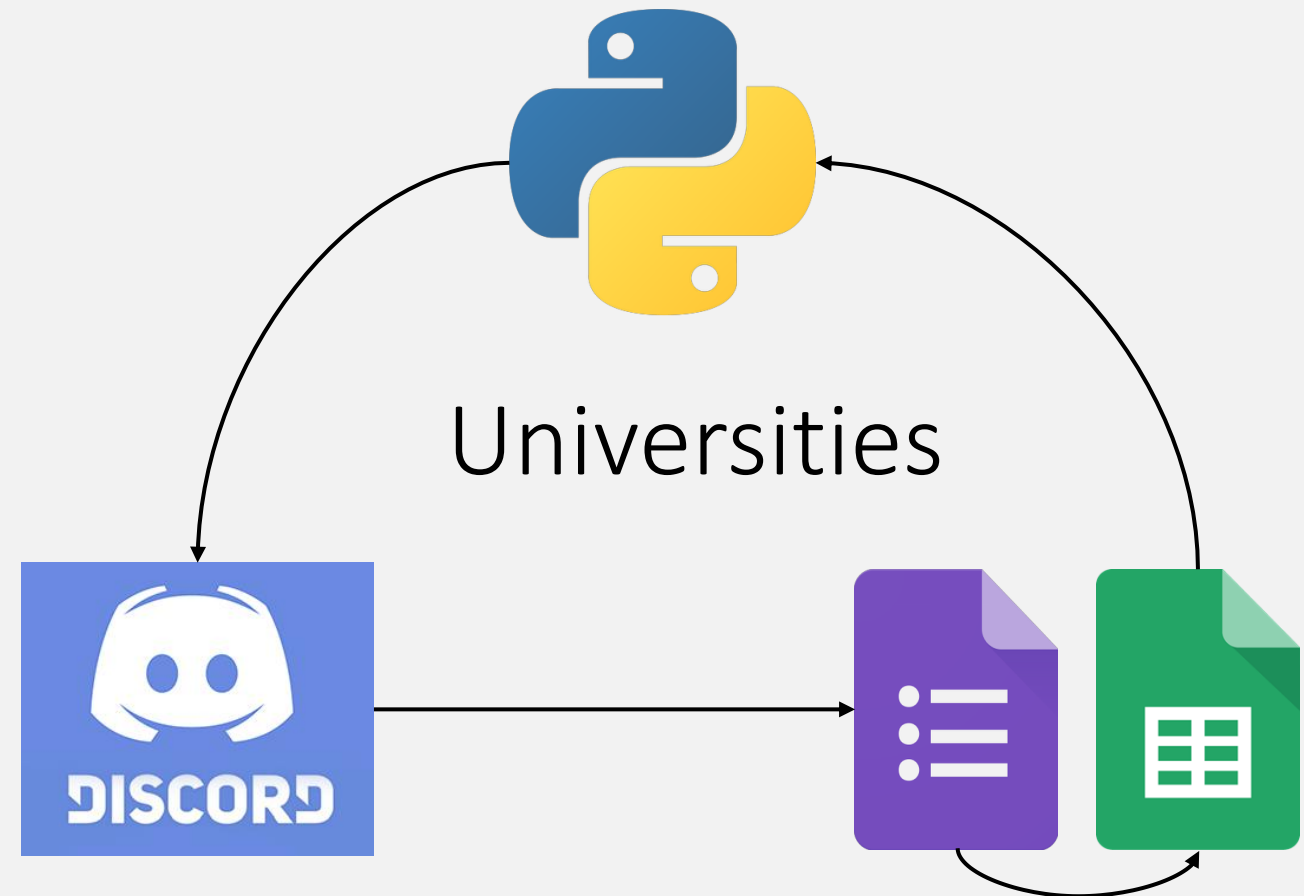
UNIVERSE

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The UNIVERSE chatbot

- The main purpose of UNIVERSE is to help users find information on universities all around the world.
- It can find universities by countries or by name and can display the university's domain and website.
- UNIVERSE was built with a recommender system that can give the top 3 universities matching best the user, according to certain criteria.

- UNIVERSE is coded in *Python*
- It is connected via a *Discord* server
- The recommender system considers the response of a Google Form from a user and get the response via a Google Sheet



Python

We wrote 4 python scripts:

- We have the *univ.py* in which we imported the *universities* library. We wrote different functions to get the countries and name of universities.
- There is the *pattern.py* in which we implemented regular expressions for UNIVERSE. We wrote different scenarios such as 'welcome', 'help' and 'exit' and more personalized with 'countries', 'name' and 'recommender'.

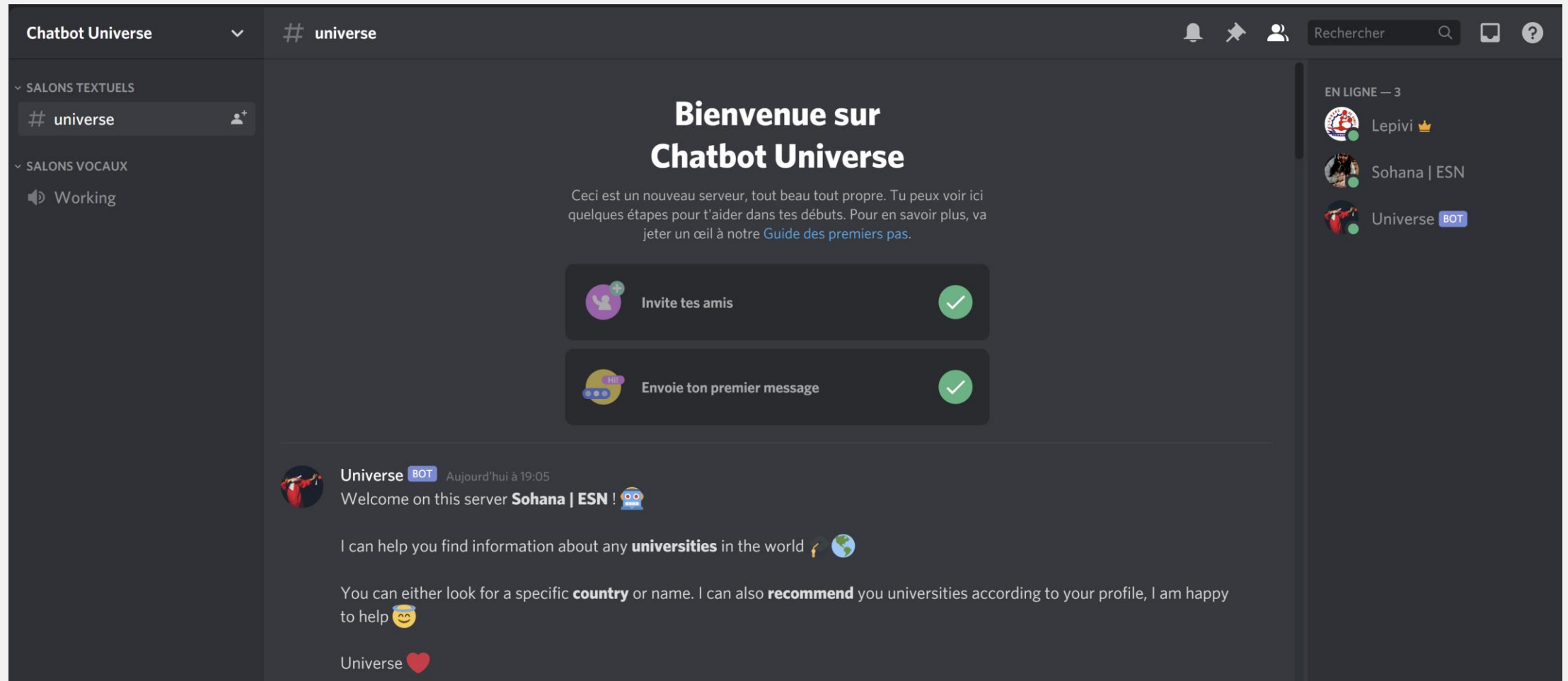
Python

- In *recommender.py*, we wrote functions to recommend the top 3 universities considering some parameters regarding universities criteria. You will find more information about our recommender system on page .
- Finally, there is the *main.py*, in which we imported the three other *python* files and created the connection to a *Discord* server. This is the file you will launch to use UNIVERSE.

Discord

- After creating an account and clicked on the invitation to the Chatbot Universe server, you will find yourself in a server with one general channel.
- The server is where you can converse with UNIVERSE according to the regular expressions previously mentioned.

Discord



Recommender System

- To build our recommender system, we used a rule-based method. We focused on a content-based recommender.
- To train our recommender, we used a dataset about world university rankings. We decided to take into account the number of students, the score in teaching, research, citations, industry income and the international outlook. The idea was to ask the user to fill this information and get a top 3 results.

Recommender System

- The process was to normalize our data, use a cosine similarity method to find similarity between universities and then make some predictions.
- Please feel free to check our *Universe_Recommender_System.ipynb* Jupyter Notebook file or its .html version in which everything is explained in details. In those files, you can either test it yourself or simply just check our thinking steps.

Recommender System

Data Exploration

Explore The Data: What Data Are We Using?

We are using the World University Rankings 2020 dataset for our Universe bot. This dataset contains information about 1395 universities from 92 countries. Using the information about these universities, the challenge is to build a model to recommend the top universities that fit the user, based on the following fields:


- **Rank_Char** (object) - Ranking of the university according to The Times Higher Education
- **Score_Rank** (int64) - Ranking of the university according to the `Score_Result`
- **University** (object) - Name of the university
- **Country** (object) - Country where the university is located
- **Number_students** (object) - Number of students enrolled in the university
- **Numb_students_per_Staff** (float64) - Ratio between the number of students and the university staff
- **International_Students** (object) - Percentage of international students
- **Percentage_Female** (object) - Percentage of female students
- **Percentage_Male** (object) - Percentage of male students
- **Teaching** (float64) - Score in teaching
- **Research** (float64) - Score in reasearch
- **Citations** (float64) - Score in citations
- **Industry_Income** (float64) - Score in industry income
- **International_Outlook** (float64) - Score in international outlook
- **Score_Result** (float64) - Resulting score calculated by taking into account 30% of `Teaching` , 30% of `Research` , 30% of `Citations` , 7.5% of `International_Outlook` and 2.5% of `Industry_Income`)
- **Overall_Ranking** (object) - Overall ranking of the university according to The Times Higher Education


For our recommender system, we will use a content-based system and we will take into account : `Number_students` , `Teaching` , `Research` , `Citations` , `Industry_income` and `International_Outlook` .


Scenarios


1. Hi > Hello, Hello dear friend ! Tell me what you need
I am looking for a university > Of course ! Are you
looking for a specific country, a university name or are
you lost and need my help ?
yes, a specific country please > Which country is it ?
France > '5 random university names
2. Hi > Hello, Hello dear friend ! Tell me what you need
I am looking for a university > Of course ! Are you
looking for a specific country, a university name or are
you lost and need my help ?
yes, I have a specific name > Which university is it ?
Ecole Normale Supérieure de Cachan > Name: Ecole
Normale Supérieure de Cachan
Country: France
Domains:
- ens-cachan.fr
Web Pages:
- <http://www.ens-cachan.fr/>


Scenario 1


 **Sohana | ESN** Aujourd'hui à 19:05
hello !


 **Universe BOT** Aujourd'hui à 19:05
Hello dear friend ! Tell me what you need 💡


 **Sohana | ESN** Aujourd'hui à 19:05
I am looking for a university 😊

 **Universe BOT** Aujourd'hui à 19:05
Of course ! Are you looking for a specific **country**, a **university** name or are you lost and need my **help** ? 😊


 **Sohana | ESN** Aujourd'hui à 19:05
yes, a specific country please


 **Universe BOT** Aujourd'hui à 19:05
Which **country** is it ? 🤔


 **Sohana | ESN** Aujourd'hui à 19:05
france


 **Universe BOT** Aujourd'hui à 19:05
Université Louis Pasteur (Strasbourg I)
Université Denis Diderot (Paris VII)
Institut Supérieur d'Agriculture Rhone-Alpes
Université d'Orléans
Ecole Normale Supérieure de Cachan

Scenario 2

 **Sohana | ESN** Aujourd'hui à 19:06
university

 **Universe BOT** Aujourd'hui à 19:06
Which **university** is it ? 🤔

 **Sohana | ESN** Aujourd'hui à 19:06
Ecole Normale Supérieure de Cachan

 **Universe BOT** Aujourd'hui à 19:06
Name: Ecole Normale Supérieure de Cachan
Country: France
Domains:
- ens-cachan.fr
Web Pages:
- <http://www.ens-cachan.fr/>

Scenarios

3. I am lost > Sorry I don't understand you.
Please type help if you need !

help > Hey don't worry, here is what I can do
for you :

1 - If you type a country name, I'll give
you 5 random universities of this country
(as you understand, if you type the same
country several times, you'll get different
results every time)

2 - If you type a university name, I'll give
you the following information :
Name,Country,Domains,Website (you
have to give the exact name)

3 - If you type recommender, follow my
lead !

Scenario 3



Sohana | ESN Aujourd'hui à 19:06
Can you give info on a specific one ?



Universe BOT Aujourd'hui à 19:06
Sorry I don't understand you 😞
Please type **help** if you need !



Sohana | ESN Aujourd'hui à 19:07
help



Universe BOT Aujourd'hui à 19:07
Hey don't worry, here is what I can do for you :

- 1 - If you type a **country** name, I'll give you 5 random universities of this country (as you understand, if you type the same country several times, you'll get different results every time 😊)
- 2 - If you type a **university** name, I'll give you the following information : Name, Country, Domains, Website (you have to give the exact name 🤖)
- 3 - If you type **recommender**, follow my lead ! 😊

Scenarios

4. I want to test the recommender system >
<https://forms.gle/CgjzjjjnPC6cTfsQ7>

Once it's done type done, finish or
result!!

I am done > 'gives 3 universities'

If you want another recommendation,
please type again recommender !

Thank you, bye > You are leaving so soon.
Thank you for having me ! Always a
pleasure to help !

Scenario 4



Sohana | ESN Aujourd'hui à 19:07
recommender, please 😊



Universe BOT Aujourd'hui à 19:07
<https://forms.gle/CgjzjjjnPC6cTfsQ7>

Google Docs

UNIVERSE - Find your top universities that fit you best !

In this Google Forms, you will answer to some questions regarding your preferences in universities. Universe does all the work and will find you your top fitting universities.



Once it's done type **done**, **finish** or **result** !!



Sohana | ESN Aujourd'hui à 19:08
I am done !



Universe BOT Aujourd'hui à 19:08
St Marianna University School of Medicine
Hyogo College of Medicine
Nippon Medical School

If you want another recommendation, please type again **recommender** ! 🔄



Sohana | ESN Aujourd'hui à 19:08
Thank you, bye 😊

Thank you !

We had a lot of fun working on this project and we hope you will enjoy UNIVERSE as much as us 😊 !



UNIVERSE

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