

Artificial Intelligence: Exercise sheet 1

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Python version 3.6

1. Introduction to Python – Chatbot

Conversation 1

```
In [6]: runfile('C:/Users/DELL/Desktop/study/AI/exercise1/Chatbot_Yu_Xiang_MatrikeiNr_3529787.py', wdir='C:/Users/DELL/Desktop/study/AI/exercise1')
```

Hi!

What is your name?

User input: Xiang

Nice to meet you Xiang

What's your plan for the weekend?

User input: i will go to a movie. BTW, what is your name?

What a coincidence, I have the same plan for the weekend as you.

You can call Xiang.

What is your hobby?

User input: I like to play football.

Awesome! I like football as well. We could have fun together then!

What do you do?

User input: I am a student. Shall we hang out some time?

Wow, my sibling has the same job too.

Definitely!

Do you want to see how a Gauss curve looks like?

Yes

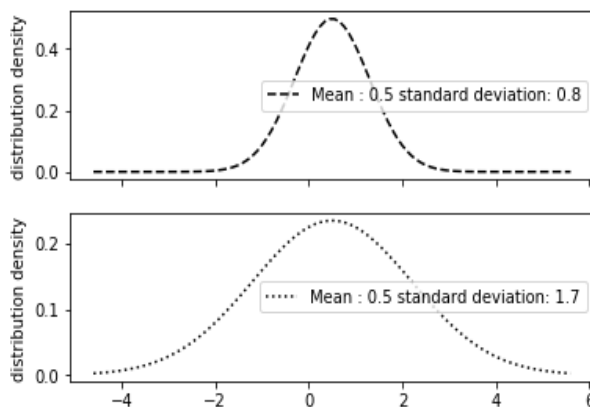
Cool! Then you need to give me a random number between 0 and 1 for the mean

0.5

I want to show you 2 Gaussians with different standard deviations. So I need two numbers now between 0 and 1

0.8, 1.7

Gauss distribution with the same mean, different standard deviations



I have a call coming, I will talk to you later

In [7]:

Conversation 2:

```
In [10]: runfile('C:/Users/DELL/Desktop/study/AI/exercise1/Chatbot_Yu_Xiang_MatrikeiNr_3529787.py', wdir='C:/Users/DELL/Desktop/study/AI/exercise1')
```

Hi there!

What's your name?

User input: Emily. BTW, what is your name?

Nice to meet you Emily

You can call Xiang.

What is your hobby?

User input: I like running. What are you busy with nowadays?

Awesome! I like running as well. We could have fun together then!

I am occupied with talking to you!

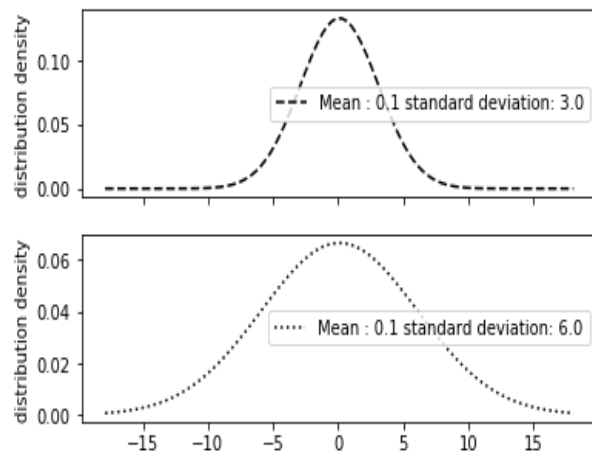
Do you want to see how a Gauss curve looks like?

Yes

Cool! Then you need to give me a random number between 0 and 1 for the mean
0.1

I want to show you 2 Gaussians with different standard deviations. So I need two numbers now between 0 and 1
3,6

Gauss distribution with the same mean, different standard deviations



What's your plan for the weekend?

User input: I will go running.

What a coincidence, I have the same plan for the weekend as you.

What do you do?

User input: I work in a software company.

Wow, my sibling has the same job too.

Nice talking to you, but my class will begin soon. I have to leave now. Bye

```
In [11]: |
```

2. Agents – chatbot

a). PEAS description

- Performance measure: time and semantic correctness.
Here time could refer to the maximum time that the user cannot tell whether the chat is from a human being or a machine; semantic correctness means that the answer and questions from the machine is similar to that from human being.
- Environment: Computers, rooms, staff
- Actuators: screen display
- Sensors: keyboard

b). The environment is fully observable, deterministic, sequential (not episodic), static, discrete and single – agent.

- Fully observable: The sensor (keyboard) gives the chatbot the complete state of the environment at each point in time.
- Deterministic: The next state (talk, questions and answer) of the environment is completely determined by the current state (current question and answer) and the action (the chat) executed by the agent (chatbot).
- Sequential: The last step of the chat has influence on current chat. The choice of action in each episode depends on previous episode.
- Static: The environment is unchanged.
- Discrete: There are only a limited number of distinct, clearly defined percepts and action. The chatbot can give meaningful answers to a limit number of questions.
- Single Agent: The chatbot is operated by itself in an environment.

c). Yes: e.g. Google Allo and Zopim

- The Google Allo purpose is to provide accurate answer to the user questions, it could also learn from the conversation and feedback from the user and improve the correctness. It could also do some casual talks with the user. This is a learning agent.
- Zopim is a chatbot for customer service. Zopim's purpose is to help to user to find the answer to the questions more quickly. The questions are pre-defined and stored, it will be able to find the relevant answers based on the keyword, however, it could not find answer to questions who are not in the database. This agent could also suggest some possible solutions if the exact answer is not found. This is a model-based reflex agent.

d). Our chatbot is a simple reflex agent. Because it follows very simple rule. Based on this rule, if the current condition matches, then the agent does the right thing associated with that rule.