Introduction to conversational software

BUILDING CHATBOTS IN PYTHON

Alan Nichol
Co-founder and CTO, Rasa

datacamp

A short history

Conversational software is not a new idea!

- Dates back to at least 1960s
- First wave: command line applications
- ELIZA: 1966

Course content

- Implementing smalltalk, ELIZA style
- How to use regex and ML to extract meaning from free-form text
- Build chatbots that can
  - Query a database
  - Plan a trip
  - Help you order coffee
- Handling statefulness

EchoBot I

```
USER: Hello!
```

```
BOT: I can hear you, you said: 'Hello!'
```

```
USER: How are you?
```

```
BOT: I can hear you, you said: 'How are you?'
```

EchoBot II

```
def respond(message):
    return "I can hear you! you said: {}".format(message)
def send_message(message):
    # calls respond() to get response
send_message("hello!")
```

```
USER: hello!
BOT : I can hear you! you said: hello!
```

EchoBot III

```
import time
time.sleep(0.5)
```

Let's practice!

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Creating a personality

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Why personality?

- Difference between a command line app and a chatbot
- Makes chatbots and voice assistants more accessible and fun to use
- Your users will expect it!

Smalltalk

```
responses = {
    "what's your name?": "my name is EchoBot",
    "what's the weather today?": "it's sunny!"
}
def respond(message):
    if message in responses:
        return responses[message]
respond("what's your name?")
```

```
'my name is EchoBot'
```

Including variables

```
responses = {
    "what's today's weather?": "it's {} today"
}
weather_today = "cloudy"

def respond(message):
    if message in responses:
        return responses[message].format(weather_today)

respond("what's today's weather?")
```

```
"it's cloudy today"
```

Choosing responses

```
responses = {
    "what's your name?": [
      "my name is EchoBot",
      "they call me EchoBot",
      "the name's Bot, Echo Bot"
    ]
}
import random
def respond(message):
    if message in responses:
        return random.choice(responses[message])
respond("what's your name?")
```

```
"the name's Bot, Echo Bot"
```

Asking questions

```
responses = [ "tell me more!", "why do you think that?" ]

import random

def respond(message):
    return random.choice(responses)

respond("I think you're really great")
```

```
'why do you think that?'
```

Let's practice!

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Text processing with regular expressions

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Regular expressions

- Match messages against known patterns
- Extract key phrases
- Transform sentences grammatically

The regex behind ELIZA

USER: *"do you remember when you ate strawberries in the garden?"*

ELIZA: *"How could I forget when I ate strawberries in the garden?"*

Pattern matching

```
import re
pattern = "do you remember .*"
message = "do you remember when you ate strawberries
            in the garden"
match = re.search(pattern, message)
if match:
    print("string matches!")
```

```
string matches!
```

Extracting key phrases

```
import re
pattern = "if (.*)"
message = "what would happen if bots took over the world"

match = re.search(pattern, message)
match.group(0)
```

```
'what would happen if bots took over the world'
```

```
match.group(1)
```

```
'bots took over the world'
```

Grammatical transformation

```
import re

def swap_pronouns(phrase):
    if 'I' in phrase:
        return re.sub('I', 'you', phrase)
    if 'my' in phrase:
        return re.sub('my', 'your', phrase)

    else:
        return phrase
swap_pronouns("I walk my dog")
```

```
'You walk your dog'
```

Putting it all together

```
pattern = 'do you remember (.*)'
message = 'do you remember when you ate strawberries
            in the garden'
phrase = pattern.search(pattern, message).group(1)
phrase
```

```
'when you ate strawberries in the garden'
```

```
response = choose_response(pattern)
response
```

```
'how could I forget {}'
```

Putting it all together

```
phrase = swap_pronouns(phrase)
phrase
```

```
'when I ate strawberries in the garden'
```

```
response.format(phrase)
```

```
'how could I forget when I ate strawberries in the garden'
```

Let's practice!

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