Методи обробки природної мови
Natural Language Processing

TTS
text-to-speech

Лекція 2

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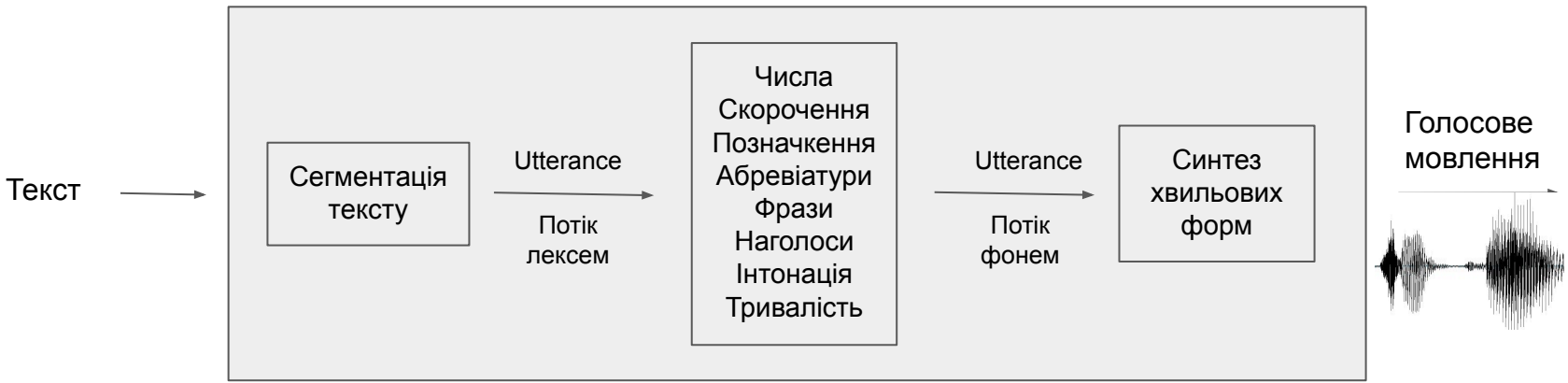
1. TTS
2. TTS+STT

TTS
text-to-speech



pyttsx3

Offline Text To Speech (TTS) converter for Python

TTS_01.VoicesList.py

```python
import pyttsx3

engine = pyttsx3.init()
voices = engine.getProperty('voices')

print('\nСписок локально доступних голосів:\n')
for voice in voices:
    print(voice.name)

print('\nТой же список з доступом через індекс:\n')
for i in range(0,len(voices)):
    print(voices[i].name)
```

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```python
import pyttsx3

engine = pyttsx3.init()
voices = engine.getProperty('voices')

print('\nСписок локально доступних голосів:\n')
for voice in voices:
    print(voice.name)
```

```
Список локально доступних голосів:

Microsoft David Desktop - English (United States)
Microsoft Zira Desktop - English (United States)
Microsoft Irina Desktop - Russian
Anatol
Marianna
Natalia
Volodymyr
```

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TTS_01.VoicesList.py

```
10  print('\nТой же список з доступом через індекс:\n')
11  for i in range(0,len(voices)):
12      print(voices[i].name)
```

```
Той же список з доступом через індекс:

Microsoft David Desktop - English (United States)
Microsoft Zira Desktop - English (United States)
Microsoft Irina Desktop - Russian
Anatol
Marianna
Natalia
Volodymyr
```

pyttsx3

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TTS_02.Speak.py

pyttsx3

Offline Text To Speech (TTS) converter for Python

```
class Voice(object):
    def __init__(self, id, name=None, languages=[], gender=None, age=None):
        self.id = id
        self.name = name
        self.languages = languages
        self.gender = gender
        self.age = age

    def __str__(self):
        return """<Voice id=%(id)s
          name=%(name)s
          languages=%(languages)s
          gender=%(gender)s
          age=%(age)s>""" % self.__dict__

```

pyttsx3

Offline Text To Speech (TTS) converter for Python

The Engine factory

https://pyttsx3.readthedocs.io/en/latest/engine.html#the-engine-factory

pyttsx3

Offline Text To Speech (TTS) converter for Python

TTS_03.Listening_for_events.py

tts

A lightweight python TTS wrapper

https://github.com/DeepHorizons/tts

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TTS_11.Speak.py

```
1  import tts.sapi
2
3  voice = tts.sapi.Sapi()
4
5  voice.say("Hello")
6
7  voice.set_voice("Volodymyr")
8
9  voice.create_recording('output.wav', "Тут запис у wav-файл")
10
11 voice.say("Тут говоримо  в нормальному темпі")
12 voice.set_rate(5)
13 voice.say("А тут - швидко")
14
15 voice.set_volume(30)
16 voice.say("А тут тихо")
```

tts

A lightweight python TTS wrapper

https://github.com/DeepHorizons/tts

TTS_12.SSML.py

```
import tts.sapi
import tts.flags

voice = tts.sapi.Sapi()

voice.say('<PRON SYM = "h eh l ow"/>', tts.flags.SpeechVoiceSpeakFlags.IsXML.value)
voice.say('<speak version="1.0" xmlns="https://www.w3.org/2001/10/synthesis" xml:lang="en-US"><phoneme
alphabet="sapi" ph="w er 1 l d"></phoneme></speak>', tts.flags.SpeechVoiceSpeakFlags.IsXML.value)

txt = """
<speak version="1.0" xmlns="http://www.w3.org/2001/10/synthesis" xml:lang="uk-UA">
    <voice name="Anatol">
        Так то воно так!
    </voice>
    <voice name="Marianna">
        Але трішки не так!
    </voice>
</speak>
"""
voice.say(txt)
```

SSML

Speech Synthesis Markup Language

https://docs.microsoft.com/en-us/azure/cognitive-services/speech-service/speech-synthesis-markup?tabs=csharp

Text to Speech | Microsoft Azure

Try Text to Speech with this demo app, built on our JavaScript SDK

https://azure.microsoft.com/en-in/products/cognitive-services/text-to-speech/#features

ukrainian-tts

Україномовний🇺🇦 TTS за допомогою Coqui TTS

https://huggingface.co/spaces/robinhad/ukrainian-tts

Google Cloud

Put Text-to-Speech into action
Google Cloud Text-to-Speech

https://cloud.google.com/text-to-speech/#section-1

Free TTS

Put Text-to-Speech into action
Google Cloud Text-to-Speech

https://freetts.com/

pyttsx3
Offline Text To Speech (TTS) converter for Python

Модуль STT

https://github.com/Uberi/speech_recognition

See the `examples/` directory in the repository root for usage examples:

- Recognize speech input from the microphone
- Transcribe an audio file
- Save audio data to an audio file
- Show extended recognition results
- Calibrate the recognizer energy threshold for ambient noise levels
- Listening to a microphone in the background
- Various other useful recognizer features

ASR + TTS

STT + TTS

TTS_13. & STT.py

```python
import pyttsx3 # pyttsx3 is a text-to-speech conversion library in Python
import speech_recognition as s #Google Speech API in Python

def speech_to_text():
    sr=s.Recognizer()# an object r which recognises the voice
    with s.Microphone() as source:
        audio = sr.listen(source)
        recognized_text = sr.recognize_google(audio,language="uk-UA", show_all=True)
        print("recognized_text = '{0}'\n\n".format(recognized_text))
        print("ви сказали: '{0}'".format(recognized_text['alternative'][0]['transcript']))
    return "Було сказано: " + recognized_text['alternative'][0]['transcript']

def text_to_speech(text):
    eng= pyttsx3.init()
    voices = eng.getProperty('voices')
    voice = voices[3]
    eng.setProperty('voice', voice.id)
    eng.say(text)
    eng.runAndWait()

txt = speech_to_text()
text_to_speech(txt)
```