Wojskowa Akademia Techniczna
im. Jarosława Dąbrowskiego

Wydział Cybernetyki, kierunek informatyka - inżynieria systemów

Sprawozdanie z laboratorium z przedmiotu:

Standarty w projektowaniu systemów dialogowych

Temat laboratoriów:

Implementacja prostego chatbota w języku Python

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Spis treści

Brakujący kod do uczenia chatbota

```
# my code
training = []

# Create training set by converting sentences to a bag-of-words
for doc in documents:
    pattern_words = doc[0]
    # Lemmatize each word in the sentence
    pattern_words = [lemmatizer.lemmatize(word.lower()) for word in pattern_words]
    # Create a bag of words
    bag = []
    for w in words:
        bag.append(1) if w in pattern_words else bag.append(0)

    # Output is a 'one hot' encoded list of results
    output_row = [0] * len(classes)
    output_row[classes.index(doc[1])] = 1

    # Append the bag of words and output row to training data
    training.append([bag, output_row])

# Shuffle the training data and convert it into a NumPy array for training
random.shuffle(training)
training = np.array(training, dtype=object)

# Create train and test lists
train_patterns = np.array([t[0] for t in training])
train_intents = np.array([t[1] for t in training])

if train_patterns.shape[0] == 0:
    raise ValueError("Empty training data")

print("Training data shape: %s\t train_x shape: %s\t train_y shape: %s" % (
    training.shape, train_patterns.shape, train_intents.shape))
```

Kolejne kroki:

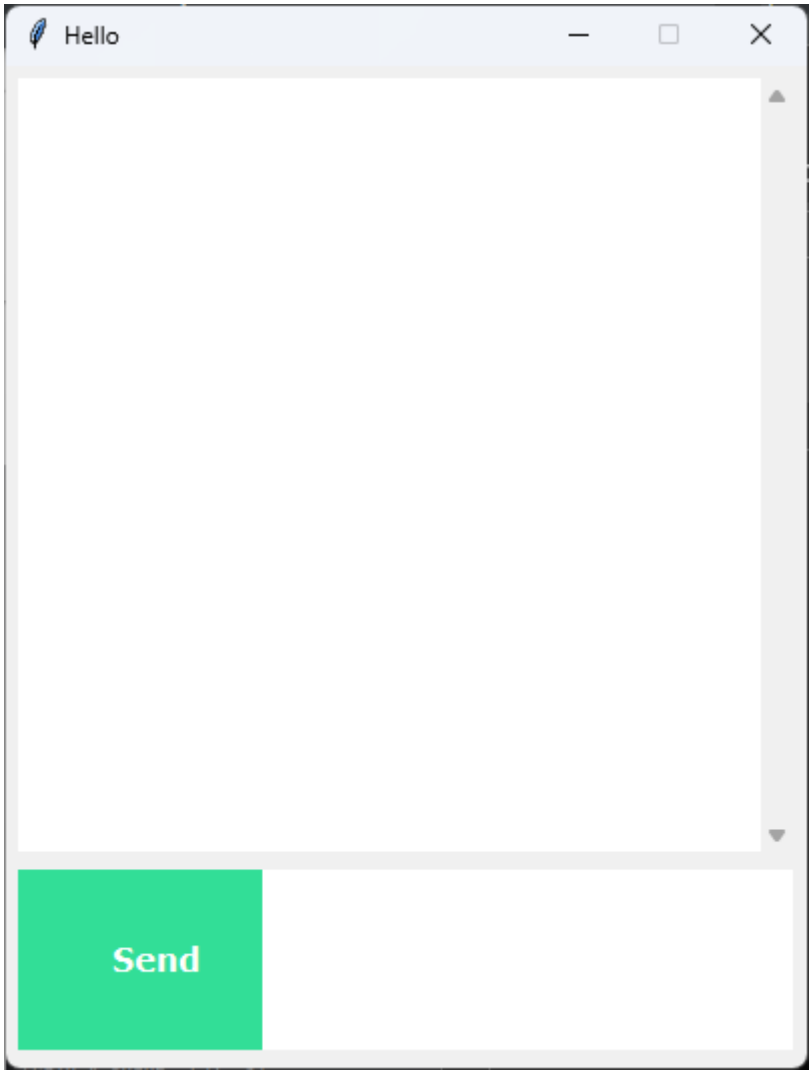
1. Tworzenie worków słów na podstawie słów z patternów z pliku „intents.json”.
2. Tworzenie etykiet wyjściowych do interpretacji przez model.
3. Losowe ułożenie danych treningowych.
4. Stworzenie listy danych treningowych z podziałem na dane wejściowe i wyjściowe

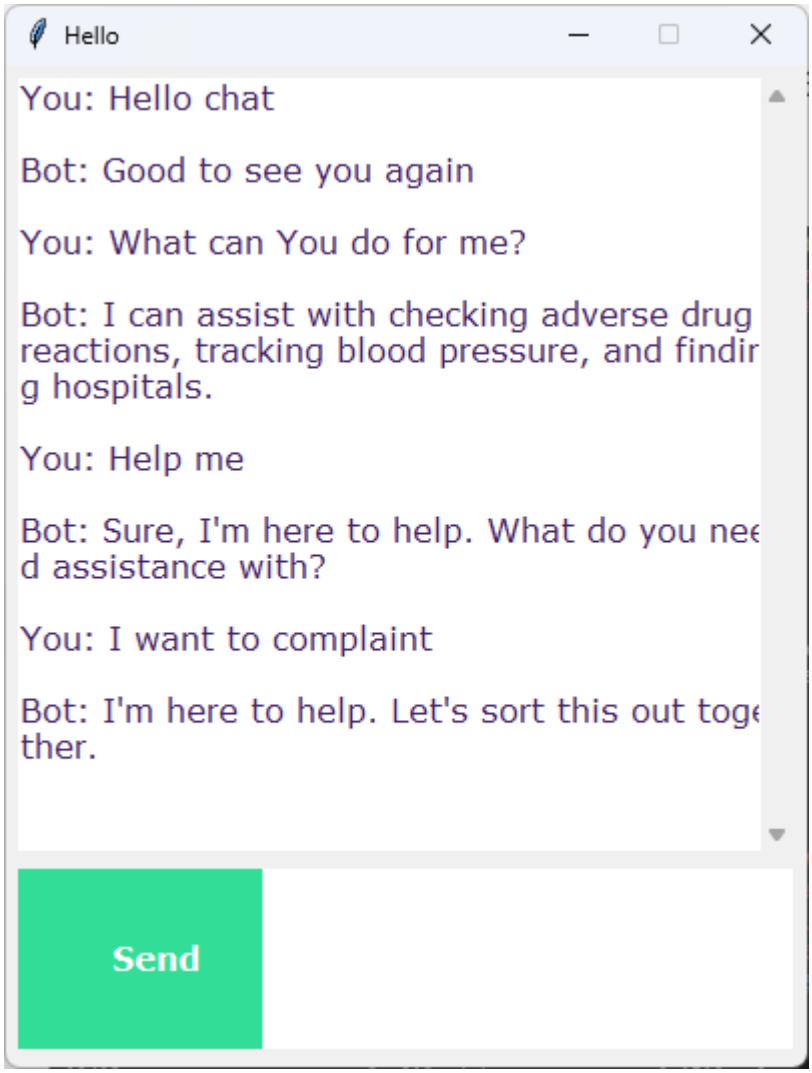
Uruchomienie treningu

```
C:\Users\                                \Python\Python312\python.exe "C:\Users\
2024-05-22 21:23:01.387117: I tensorflow/core/util/port.cc:113] oneDNN custom operations are on. You may see slightly different numerical results due to floating-point round-off errors f
2024-05-22 21:23:02.300225: I tensorflow/core/util/port.cc:113] oneDNN custom operations are on. You may see slightly different numerical results due to floating-point round-off errors f
C:\Users\                                \Python\Python312\Lib\site-packages\keras\src\layers\core\dense.py:87: UserWarning: Do not pass an `input_shape`/`input_dim` argument to a layer. When
  super().__init__(activity_regularizer=activity_regularizer, **kwargs)
2024-05-22 21:23:05.028685: I tensorflow/core/platform/cpu_feature_guard.cc:210] This TensorFlow binary is optimized to use available CPU instructions in performance-critical operations.
To enable the following instructions: AVX2 FMA, in other operations, rebuild TensorFlow with the appropriate compiler flags.
50 documents
8 classes ['adverse_drug', 'complaint', 'feedback', 'goodbye', 'greeting', 'help', 'options', 'thanks']
83 unique lemmatized words ["'d", "'m", "'s", ',', 'a', 'adverse', 'an', 'anyone', 'appreciated', 'are', 'assist', 'assistance', 'available', 'awesome', 'be', 'bye', 'can', 'catch', 'chat
Training data shape: (50, 2)     train_x shape: (50, 83)     train_y shape: (50, 8)
C:\Users                                \Python\Python312\Lib\site-packages\keras\src\optimizers\base_optimizer.py:33: UserWarning: Argument `decay` is no longer supported and will be ignored
  warnings.warn(
Epoch 1/200
10/10 ━━━━━━━━━━━━━━━━━━━━ 1s 2ms/step - accuracy: 0.1766 - loss: 2.0939
```

```
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 901us/step - accuracy: 1.0000 - loss: 0.0412
Epoch 197/200
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 948us/step - accuracy: 1.0000 - loss: 0.0157
Epoch 198/200
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 946us/step - accuracy: 1.0000 - loss: 0.0088
Epoch 199/200
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 830us/step - accuracy: 1.0000 - loss: 0.0121
Epoch 200/200
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 889us/step - accuracy: 1.0000 - loss: 0.0448
WARNING:absl:You are saving your model as an HDF5 file via `model.save()` or `keras.saving.save_model(model)`. This file format is considered legacy. We recomm
model created
```

Uruchomienie GUI




Hello
You: Hello chat
Bot: Good to see you again
You: What can You do for me?
Bot: I can assist with checking adverse drug reactions, tracking blood pressure, and findir g hospitals.
You: Help me
Bot: Sure, I'm here to help. What do you nee d assistance with?
You: I want to complaint
Bot: I'm here to help. Let's sort this out toge ther.
Send