**Training Step**

Start in the correct folder:

D:\Github\Python\Python\_Data\_Science\NLP Deep Learning\Module 16 - Chatbot\food-chatbot

Also make sure to activate the rasa environment.

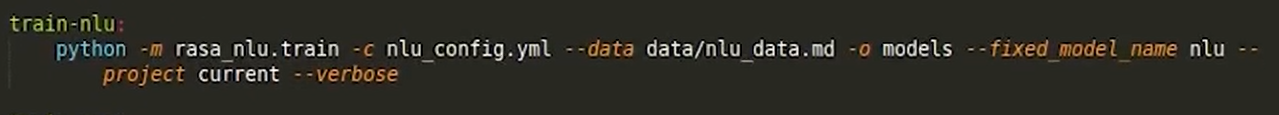
* Service identity had to be installed. [Conda](https://anaconda.org/scrapinghub/service_identity) install resulted in many conflicts so installed using [pip](https://pypi.org/project/service-identity/).

The Anaconda command for non Linux machines

python -m rasa\_nlu.train -c nlu\_config.yml --data data/nlu\_data.md -o models --fixed\_model\_name nlu --project current --verbose

On a Linux machine with make installed simply use make train-nlu. Can always use the above longer command too.

There is a file called Makefile that shows the mapping between shot Linux commands and the longer detailed commands.



Nav to correct folder and execute

(rasa) D:\Github\Python\Python\_Data\_Science\NLP Deep Learning\Module 16 - Chatbot\food-chatbot\practice\_version>python -m rasa\_nlu.train -c nlu\_config.yml --data data/nlu\_data.md -o models --fixed\_model\_name nlu --project current --verbose

Can remove fixed\_model\_name nlu above and rasa will name the file the same as the timestamp when the training occurs.

Output from command above

C:\Users\czwea\anaconda3\envs\rasa\lib\site-packages\h5py\\_\_init\_\_.py:36: FutureWarning: Conversion of the second argument of issubdtype from `float` to `np.floating` is deprecated. In future, it will be treated as `np.float64 == np.dtype(float).type`.

from .\_conv import register\_converters as \_register\_converters

2021-09-17 14:14:30 INFO rasa\_nlu.utils.spacy\_utils - Trying to load spacy model with name 'en'

2021-09-17 14:14:31 INFO rasa\_nlu.components - Added 'nlp\_spacy' to component cache. Key 'nlp\_spacy-en'.

2021-09-17 14:14:31 INFO rasa\_nlu.training\_data.loading - Training data format of data/nlu\_data.md is md

2021-09-17 14:14:31 INFO rasa\_nlu.training\_data.training\_data - Training data stats:

- intent examples: 37 (6 distinct intents)

- Found intents: 'thanks', 'affirm', 'restaurant\_search', 'deny', 'goodbye', 'greet'

- entity examples: 3 (2 distinct entities)

- found entities: 'location', 'cuisine'

2021-09-17 14:14:31 INFO rasa\_nlu.model - Starting to train component nlp\_spacy

2021-09-17 14:14:31 INFO rasa\_nlu.model - Finished training component.

2021-09-17 14:14:31 INFO rasa\_nlu.model - Starting to train component tokenizer\_spacy

2021-09-17 14:14:31 INFO rasa\_nlu.model - Finished training component.

2021-09-17 14:14:31 INFO rasa\_nlu.model - Starting to train component intent\_featurizer\_spacy

2021-09-17 14:14:31 INFO rasa\_nlu.model - Finished training component.

2021-09-17 14:14:31 INFO rasa\_nlu.model - Starting to train component intent\_entity\_featurizer\_regex

2021-09-17 14:14:31 INFO rasa\_nlu.model - Finished training component.

2021-09-17 14:14:31 INFO rasa\_nlu.model - Starting to train component ner\_crf

2021-09-17 14:14:31 INFO rasa\_nlu.model - Finished training component.

2021-09-17 14:14:31 INFO rasa\_nlu.model - Starting to train component ner\_synonyms

2021-09-17 14:14:31 INFO rasa\_nlu.model - Finished training component.

2021-09-17 14:14:31 INFO rasa\_nlu.model - Starting to train component intent\_classifier\_sklearn

Fitting 2 folds for each of 6 candidates, totalling 12 fits

[Parallel(n\_jobs=1)]: Using backend SequentialBackend with 1 concurrent workers.

[Parallel(n\_jobs=1)]: Done 12 out of 12 | elapsed: 0.0s finished

2021-09-17 14:14:32 INFO rasa\_nlu.model - Finished training component.

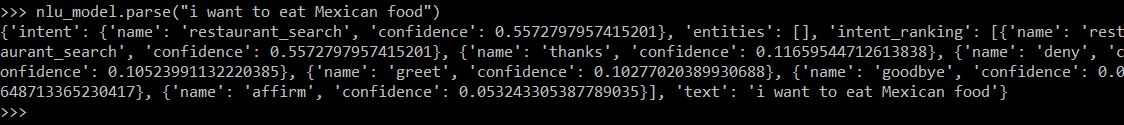
2021-09-17 14:14:33 INFO rasa\_nlu.model - Successfully saved model into 'D:\Github\Python\Python\_Data\_Science\NLP Deep Learning\Module 16 - Chatbot\food-chatbot\practice\_version\models\current\nlu'

2021-09-17 14:14:33 INFO \_\_main\_\_ - Finished training

**Running Step**

(rasa) D:\Github\Python\Python\_Data\_Science\NLP Deep Learning\Module 16 - Chatbot\food-chatbot\practice\_version>

* From this folder, run python by simply typing *python* from the Anaconda prompt
* from rasa\_nlu.model import Interpreter
* nlu\_model = Interpreter.load(“./models/current/nlu”)  
  A screenshot of a computer screen

  Description automatically generated with medium confidence
* Test with simple phrase: “I want to eat Mexican food”  
  nlu\_model.parse(I want to eat Mexican food”)  
    
  Notice no entities were identified. Try an example with entities we know are configured like “what are the best biriyani places in Chennai?”  
  A picture containing text

  Description automatically generated  
  Still no entities are identified. The practice version of nlu\_data.md does not have enough examples. Rasa does not require huge training data but you do need to provide a variety of examples.  
  Updating the nlu\_data with more examples copied from the complete version produces better results. Here is the full execution using the updated data file and created a new model called simply nlu2:  
    
  (rasa) D:\Github\Python\Python\_Data\_Science\NLP Deep Learning\Module 16 - Chatbot\food-chatbot\practice\_version>python -m rasa\_nlu.train -c nlu\_config.yml --data data/nlu\_data2.md -o models --fixed\_model\_name nlu2 --project current --verbose
* C:\Users\czwea\anaconda3\envs\rasa\lib\site-packages\h5py\\_\_init\_\_.py:36: FutureWarning: Conversion of the second argument of issubdtype from `float` to `np.floating` is deprecated. In future, it will be treated as `np.float64 == np.dtype(float).type`.
* from .\_conv import register\_converters as \_register\_converters
* 2021-09-21 16:28:48 INFO rasa\_nlu.utils.spacy\_utils - Trying to load spacy model with name 'en'
* 2021-09-21 16:28:49 INFO rasa\_nlu.components - Added 'nlp\_spacy' to component cache. Key 'nlp\_spacy-en'.
* 2021-09-21 16:28:49 INFO rasa\_nlu.training\_data.loading - Training data format of data/nlu\_data2.md is md
* 2021-09-21 16:28:49 INFO rasa\_nlu.training\_data.training\_data - Training data stats:
* - intent examples: 66 (6 distinct intents)
* - Found intents: 'deny', 'affirm', 'greet', 'thanks', 'goodbye', 'restaurant\_search'
* - entity examples: 28 (2 distinct entities)
* - found entities: 'cuisine', 'location'
* 2021-09-21 16:28:49 INFO rasa\_nlu.model - Starting to train component nlp\_spacy
* 2021-09-21 16:28:49 INFO rasa\_nlu.model - Finished training component.
* 2021-09-21 16:28:49 INFO rasa\_nlu.model - Starting to train component tokenizer\_spacy
* 2021-09-21 16:28:49 INFO rasa\_nlu.model - Finished training component.
* 2021-09-21 16:28:49 INFO rasa\_nlu.model - Starting to train component intent\_featurizer\_spacy
* 2021-09-21 16:28:49 INFO rasa\_nlu.model - Finished training component.
* 2021-09-21 16:28:49 INFO rasa\_nlu.model - Starting to train component intent\_entity\_featurizer\_regex
* 2021-09-21 16:28:49 INFO rasa\_nlu.model - Finished training component.
* 2021-09-21 16:28:49 INFO rasa\_nlu.model - Starting to train component ner\_crf
* 2021-09-21 16:28:49 INFO rasa\_nlu.model - Finished training component.
* 2021-09-21 16:28:49 INFO rasa\_nlu.model - Starting to train component ner\_synonyms
* 2021-09-21 16:28:49 INFO rasa\_nlu.model - Finished training component.
* 2021-09-21 16:28:49 INFO rasa\_nlu.model - Starting to train component intent\_classifier\_sklearn
* Fitting 2 folds for each of 6 candidates, totalling 12 fits
* [Parallel(n\_jobs=1)]: Using backend SequentialBackend with 1 concurrent workers.
* [Parallel(n\_jobs=1)]: Done 12 out of 12 | elapsed: 0.0s finished
* 2021-09-21 16:28:50 INFO rasa\_nlu.model - Finished training component.
* 2021-09-21 16:28:50 INFO rasa\_nlu.model - Successfully saved model into 'D:\Github\Python\Python\_Data\_Science\NLP Deep Learning\Module 16 - Chatbot\food-chatbot\practice\_version\models\current\nlu2'
* 2021-09-21 16:28:50 INFO \_\_main\_\_ - Finished training
* (rasa) D:\Github\Python\Python\_Data\_Science\NLP Deep Learning\Module 16 - Chatbot\food-chatbot\practice\_version>python
* Python 3.6.13 (default, Feb 19 2021, 05:17:09) [MSC v.1916 64 bit (AMD64)] on win32
* Type "help", "copyright", "credits" or "license" for more information.
* >>> from rasa\_nlu.model import Interpreter
* >>> nlu\_model = Interpreter.load("./models/current/nlu2")
* C:\Users\czwea\anaconda3\envs\rasa\lib\site-packages\h5py\\_\_init\_\_.py:36: FutureWarning: Conversion of the second argument of issubdtype from `float` to `np.floating` is deprecated. In future, it will be treated as `np.float64 == np.dtype(float).type`.
* from .\_conv import register\_converters as \_register\_converters
* >>> nlu\_model.parse("what are the best biriyani places in chennai?")
* {'intent': {'name': 'restaurant\_search', 'confidence': 0.8826466746811209}, **'entities': [{'start': 18, 'end': 26, 'value': 'biriyani', 'entity': 'cuisine', 'confidence': 0.5421894084917006, 'extractor': 'ner\_crf'}, {'start': 37, 'end': 44, 'value': 'chennai', 'entity': 'location', 'confidence': 0.9262661701535398, '**extractor': 'ner\_crf'}], 'intent\_ranking': [{'name': 'restaurant\_search', 'confidence': 0.8826466746811209}, {'name': 'thanks', 'confidence': 0.05714609628912692}, {'name': 'goodbye', 'confidence': 0.02065144797121753}, {'name': 'greet', 'confidence': 0.015319923045182446}, {'name': 'deny', 'confidence': 0.012609099280914275}, {'name': 'affirm', 'confidence': 0.011626758732437917}], 'text': 'what are the best biriyani places in chennai?'}

nlu\_data files can can use lookup files to expand its understanding:  
Text

Description automatically generated  
Will need to add examples under intent:restaurant\_search where the city name is more than one word like New York City.

**Making Conversational**

Diagram

Description automatically generated

Next step is dialogue management system – we just did entity detection.

Graphical user interface, text, application, email

Description automatically generated

This is called a story:

Graphical user interface, text

Description automatically generated

Graphical user interface, text

Description automatically generated

In the file called stories.md :

Text

Description automatically generated

Note the lines with the asterisks match entries in the nlu\_data file.

Graphical user interface, text, application

Description automatically generated

Text

Description automatically generated

Slots maintain state until another value is provided by the user.

python -m rasa\_core.train -d domain.yml -s data/stories.md -o models/current/dialogue -c policies.yml

Lots of output but here is the last few lines:

Epoch 96/100

119/119 [==============================] - 0s 117us/step - loss: 0.5891 - acc: 0.9412

Epoch 97/100

119/119 [==============================] - 0s 109us/step - loss: 0.5954 - acc: 0.9160

Epoch 98/100

119/119 [==============================] - 0s 117us/step - loss: 0.5764 - acc: 0.9580

Epoch 99/100

119/119 [==============================] - 0s 117us/step - loss: 0.5835 - acc: 0.9664

Epoch 100/100

119/119 [==============================] - 0s 151us/step - loss: 0.5461 - acc: 0.9496

2021-09-21 18:04:43 INFO rasa\_core.policies.keras\_policy - Done fitting keras policy model

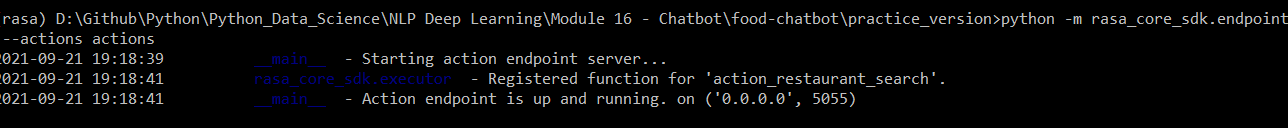
Processed actions: 48it [00:00, 6856.94it/s, # examples=48]

2021-09-21 18:04:44 INFO rasa\_core.agent - Persisted model to 'D:\Github\Python\Python\_Data\_Science\NLP Deep Learning\Module 16 - Chatbot\food-chatbot\practice\_version\models\current\dialogue'

Diagram

Description automatically generated

python -m rasa\_core\_sdk.endpoint –action action



Open new anaconda terminal

python -m rasa\_core.run -d models/current/dialogue -u models/current/nlu2 --endpoints endpoints.yml

**Steps in Complete Version**

1. D:\Github\Python\Python\_Data\_Science\NLP Deep Learning\Module 16 - Chatbot\food-chatbot\complete\_version  
   Also make sure to activate the rasa environment.
2. python -m rasa\_nlu.train -c nlu\_config.yml --data data/nlu\_data.md -o models --fixed\_model\_name nlu --project current --verbose  
   Need only run once because the model is saved.
3. python -m rasa\_core.train -d domain.yml -s data/stories.md -o models/current/dialogue -c policies.yml  
   need only once uless you want to retrain the model
4. python -m rasa\_core\_sdk.endpoint --actions actions  
   let this run and open new terminal for next step
5. python -m rasa\_core.run -d models/current/dialogue -u models/current/nlu --endpoints endpoints.yml
6. Test with examples to confirm it is working
   1. where can i get pizza in chennai

[Slack API: Applications | Slack](https://api.slack.com/apps)

Graphical user interface, text, application, email

Description automatically generated

[Create a bot for your workspace | Slack](https://slack.com/intl/en-in/help/articles/115005265703-Create-a-bot-for-your-workspace#add-a-bot-user)