Custom Name Entity Mode with spaCy

Domain: WTA Tournament Press Conferences

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General Assembly

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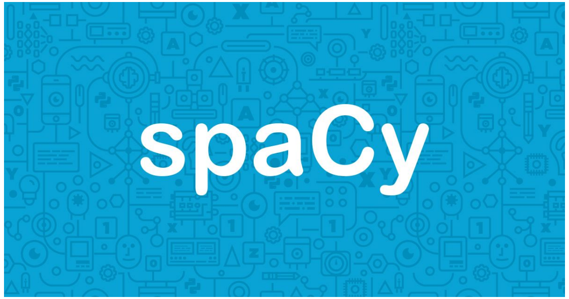
01

Overview

Core:

A custom name entity model



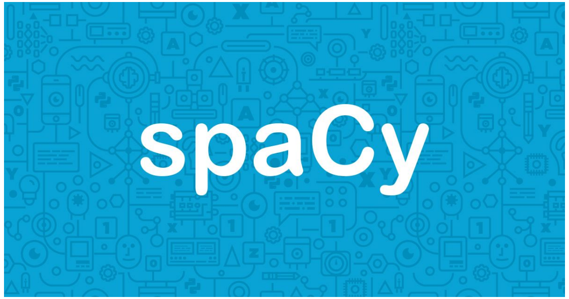
spaCy

Core:

A custom name entity model

Domain:

WTA tournament press conferences



Core:

A custom name entity model

Domain:

WTA tournament press conferences

Tool:

spaCy

Core:

A custom name entity model

Domain:

WTA tournament press conferences

Tool:

spaCy

Target:

English/Chinese interpreters

02

Why this

Problem 1

Going through everything without skipping

Problem 1

Going through everything without skipping

Solution

Reduce the amount to read

Problem 2

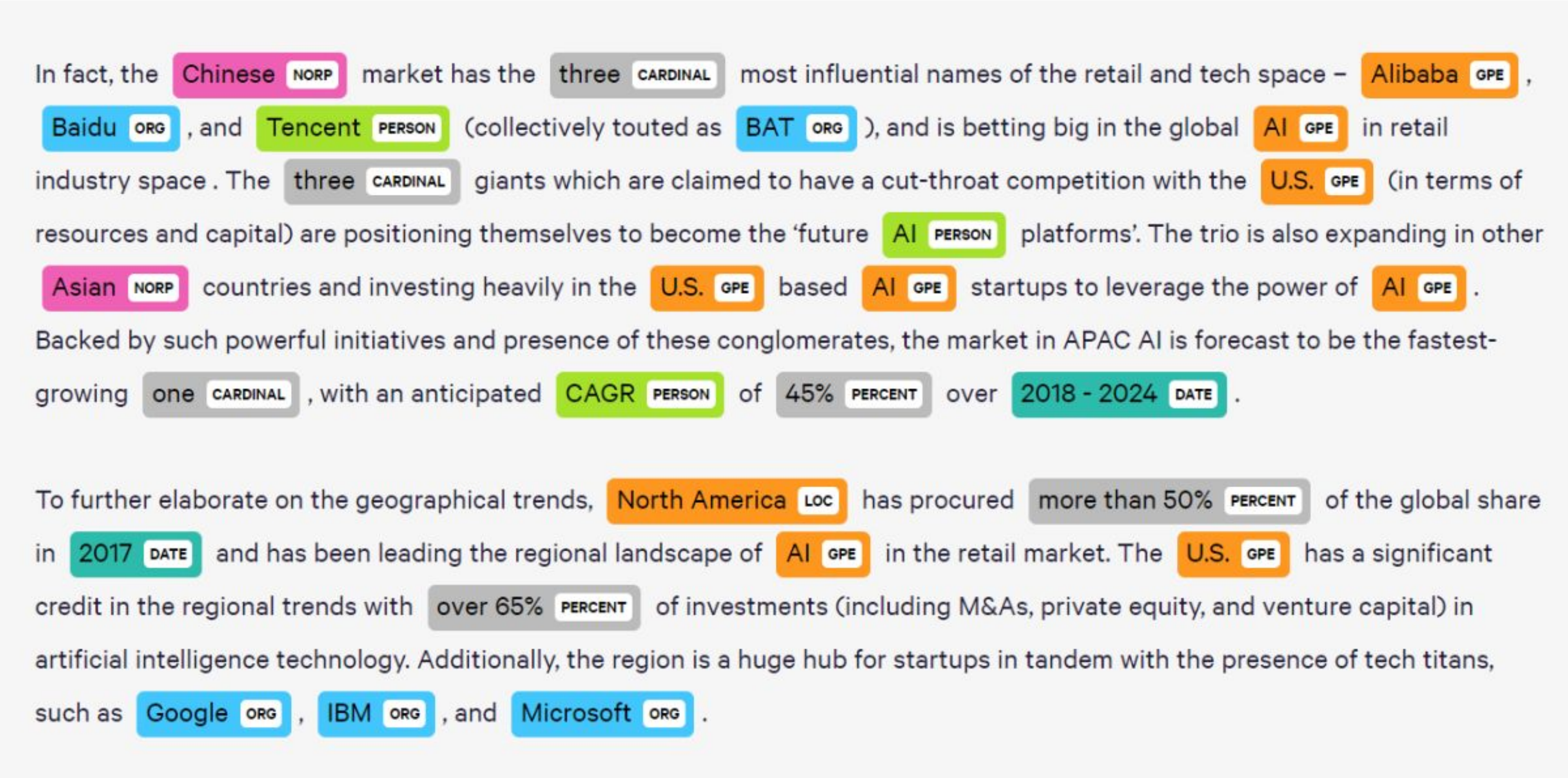
Google things in China

Problem 2

Google things in China

Solution

Provide extra information (context/category, etc.)



In fact, the Chinese NORP market has the three CARDINAL most influential names of the retail and tech space – Alibaba GPE , Baidu ORG , and Tencent PERSON (collectively touted as BAT ORG), and is betting big in the global AI GPE in retail industry space . The three CARDINAL giants which are claimed to have a cut-throat competition with the U.S. GPE (in terms of resources and capital) are positioning themselves to become the 'future AI PERSON platforms'. The trio is also expanding in other Asian NORP countries and investing heavily in the U.S. GPE based AI GPE startups to leverage the power of AI GPE . Backed by such powerful initiatives and presence of these conglomerates, the market in APAC AI is forecast to be the fastest-growing one CARDINAL , with an anticipated CAGR PERSON of 45% PERCENT over 2018 - 2024 DATE .

To further elaborate on the geographical trends, North America LOC has procured more than 50% PERCENT of the global share in 2017 DATE and has been leading the regional landscape of AI GPE in the retail market. The U.S. GPE has a significant credit in the regional trends with over 65% PERCENT of investments (including M&As, private equity, and venture capital) in artificial intelligence technology. Additionally, the region is a huge hub for startups in tandem with the presence of tech titans, such as Google ORG , IBM ORG , and Microsoft ORG .

Domain

WTA Tournament Press Conferences

Sloane Stephens, 2017 US Open Champion

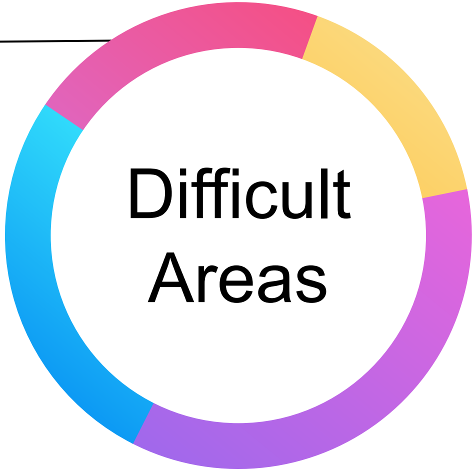
Categories

Difficult Areas

Categories

Tournament titles

Grand Slams
Fed Cup
Location-based ones



Difficult Areas

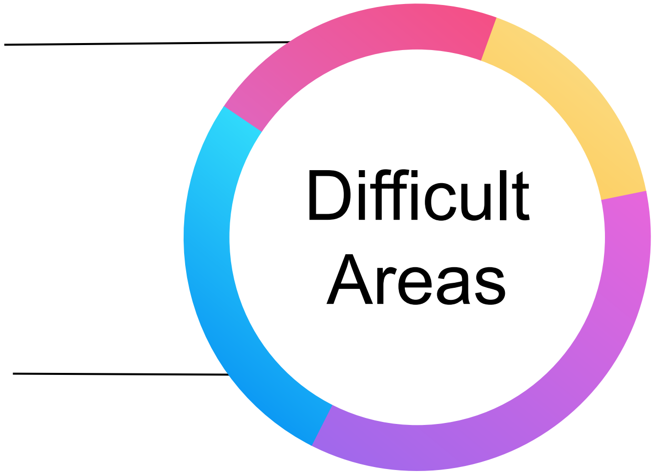
Categories

Tournament titles

Grand Slams
Fed Cup
Location-based ones

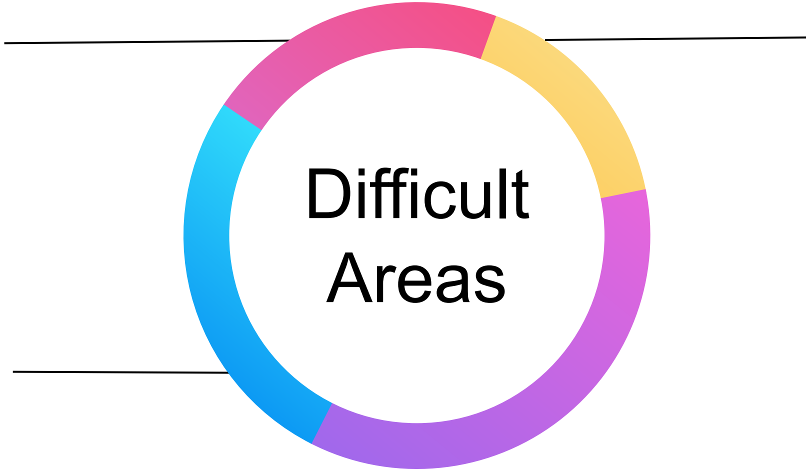
Tennis game terms

Serving sets
Break points
The eagle eye



Difficult Areas

Categories



Difficult Areas

Tournament titles

Grand Slams
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Location-based ones

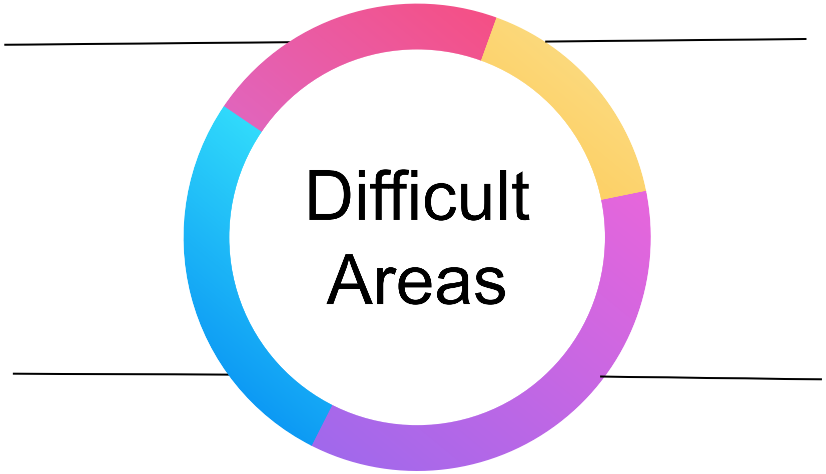
Tennis game terms

Serving sets
Break points
The eagle eye

Tennis players

Names
Styles
Rankings
Career achievements

Categories



Tournament titles

Grand Slams
Fed Cup
Location-based ones

Tennis game terms

Serving sets
Break points
The eagle eye

Tennis players

Names
Styles
Rankings
Career achievements

Generic words

that mean something different in this context

03

Data

Data

Word documents

Data

Word documents

Cleaned

Data

Word documents

Cleaned

Split

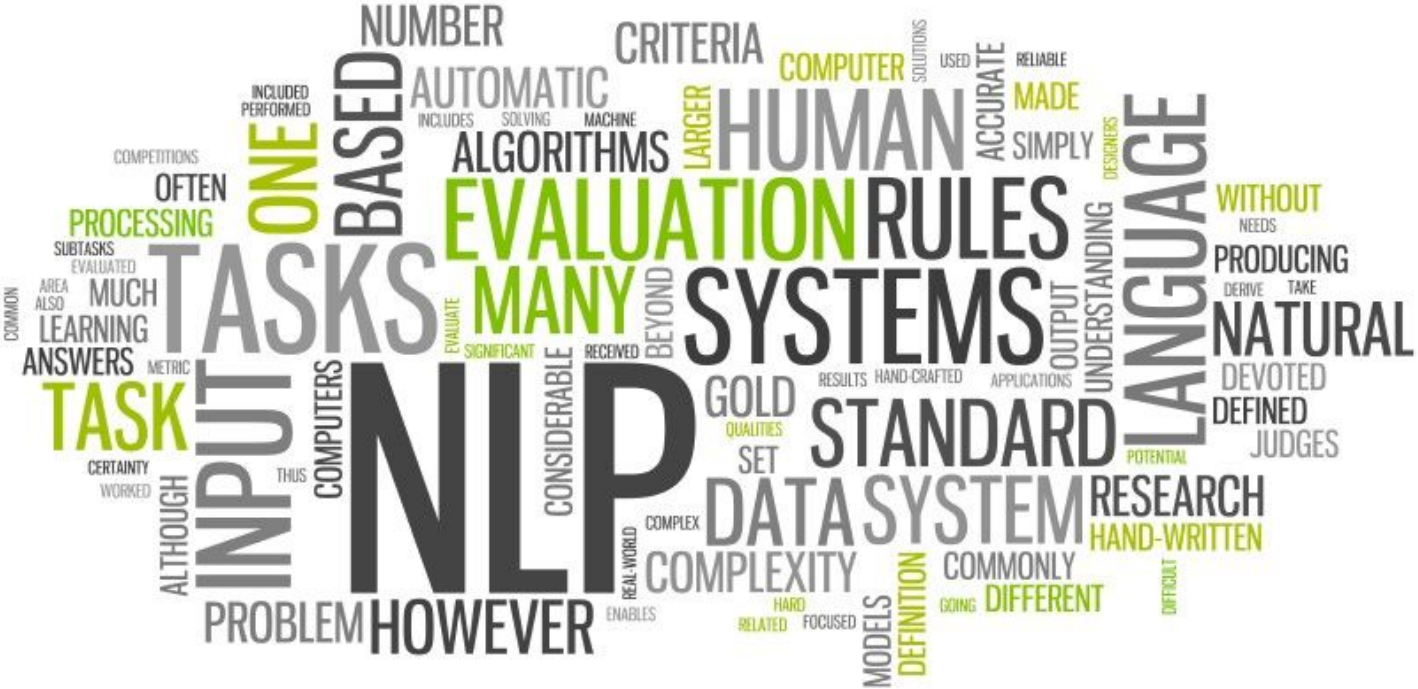
Data

Word documents

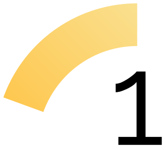
Cleaned

Split

Saved

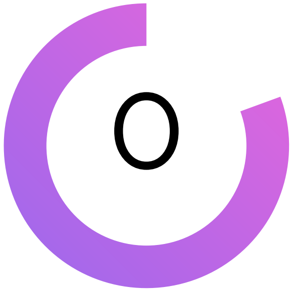

NUMBER
CRITERIA
COMPUTER
SOLUTIONS
USED
ACCURATE
RELIABLE
INCLUDED
PERFORMED
BASED
AUTOMATIC
INCLUDES
SOLVING
MACHINE
LARGER
HUMAN
MADE
SIMPLY
DESIGNERS
LANGUAGE
COMPETITIONS
ONE
ALGORITHMS
OFTEN
PROCESSING
EVALUATION
RULES
WITHOUT
NEEDS
SUBTASKS
EVALUATED
PRODUCING
COMMON
AREA
ALSO
MUCH
LEARNING
TASKS
MANY
BEYOND
SYSTEMS
OUTPUT
UNDERSTANDING
DERIVE
TAKE
NATURAL
ANSWERS
METRIC
EVALUATE
SIGNIFICANT
RECEIVED
RESULTS
HAND-CRAFTED
APPLICATIONS
DEVOTED
TASK
INPUT
COMPUTERS
NLP
CONSIDERABLE
GOLD
QUALITIES
STANDARD
DEFINED
JUDGES
POTENTIAL
CERTAINTY
WORKED
THUS
SET
ALTHOUGH
COMPLEX
DATA
SYSTEM
RESEARCH
HAND-WRITTEN
REAL-WORLD
COMPLEXITY
DEFINITION
COMMONLY
DIFFICULT
MODELS
PROBLEM
HOWEVER
ENABLES
HARD
RELATED
FOCUSED
GOING
DIFFERENT

Labels



11%

210

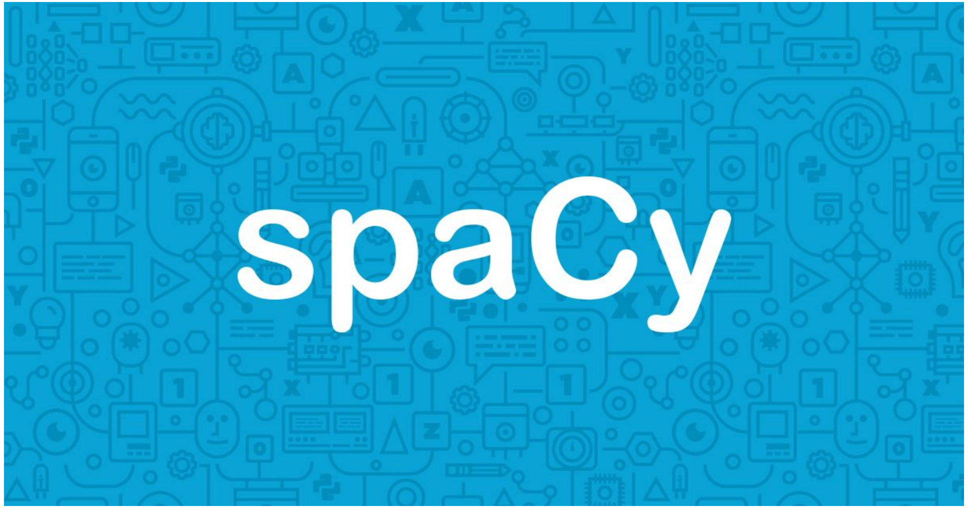


89%

1701

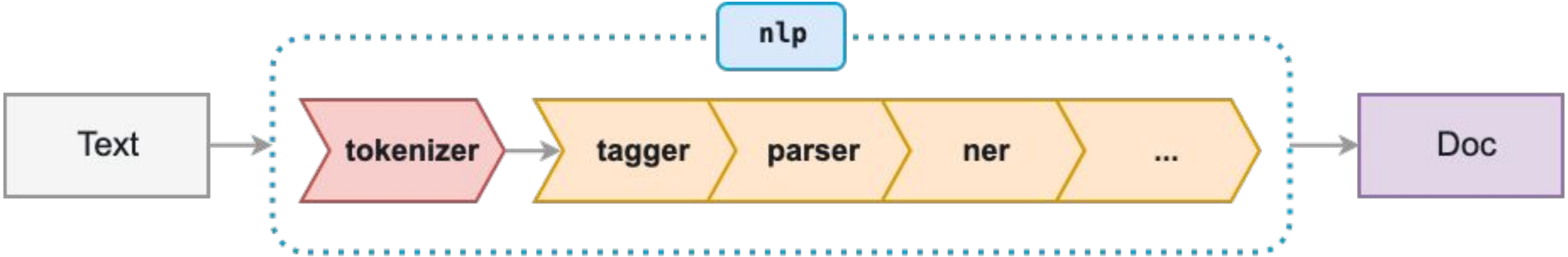
04

Framework



An open-source software library for advanced natural language processing

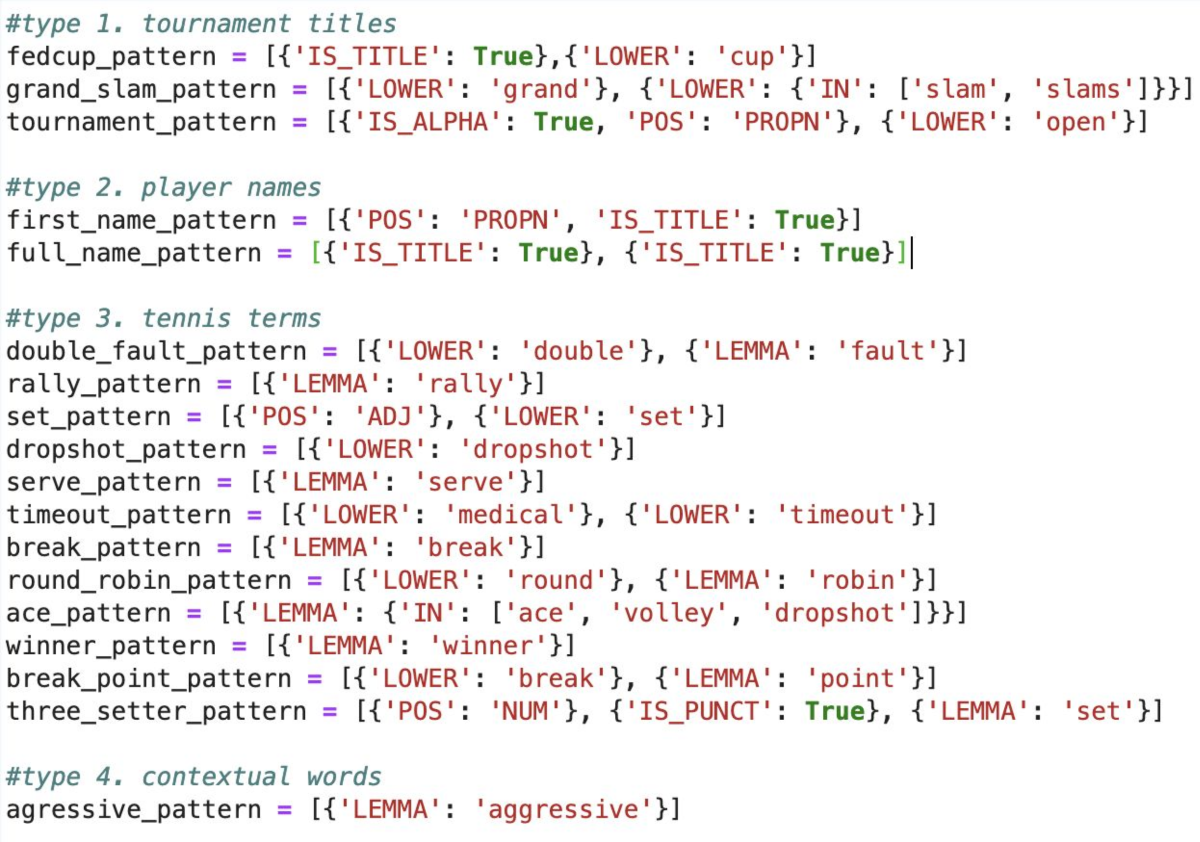
Pipeline



05

Features

spaCy rule-based matching



```
#type 1. tournament titles
fedcup_pattern = [{'IS_TITLE': True},{'LOWER': 'cup'}]
grand_slam_pattern = [{'LOWER': 'grand'}, {'LOWER': {'IN': ['slam', 'slams']}}]
tournament_pattern = [{'IS_ALPHA': True, 'POS': 'PROPN'}, {'LOWER': 'open'}]

#type 2. player names
first_name_pattern = [{'POS': 'PROPN', 'IS_TITLE': True}]
full_name_pattern = [{'IS_TITLE': True}, {'IS_TITLE': True}]

#type 3. tennis terms
double_fault_pattern = [{'LOWER': 'double'}, {'LEMMA': 'fault'}]
rally_pattern = [{'LEMMA': 'rally'}]
set_pattern = [{'POS': 'ADJ'}, {'LOWER': 'set'}]
dropshot_pattern = [{'LOWER': 'dropshot'}]
serve_pattern = [{'LEMMA': 'serve'}]
timeout_pattern = [{'LOWER': 'medical'}, {'LOWER': 'timeout'}]
break_pattern = [{'LEMMA': 'break'}]
round_robin_pattern = [{'LOWER': 'round'}, {'LEMMA': 'robin'}]
ace_pattern = [{'LEMMA': {'IN': ['ace', 'volley', 'dropshot']}}]
winner_pattern = [{'LEMMA': 'winner'}]
break_point_pattern = [{'LOWER': 'break'}, {'LEMMA': 'point'}]
three_setter_pattern = [{'POS': 'NUM'}, {'IS_PUNCT': True}, {'LEMMA': 'set'}]

#type 4. contextual words
agressive_pattern = [{'LEMMA': 'aggressive'}]
```

```
[(" At the US Open I had problem on my foot, but now I'm much better", {'entities': [(8, 15, '网球比赛名称')]}),

 ('Earlier this year you play Shenzhen Open and a lost to a Chinese player', {'entities': [(27, 40, '网球比赛名称')]}),

 ("I think for a long time, maybe back 10, 15 years ago when Hingis was winning Grand Slams at 16, 17, if you're not at least top 20, top 10, you don't have a chance", {'entities': [(77, 88, '网球比赛名称')]})]
```

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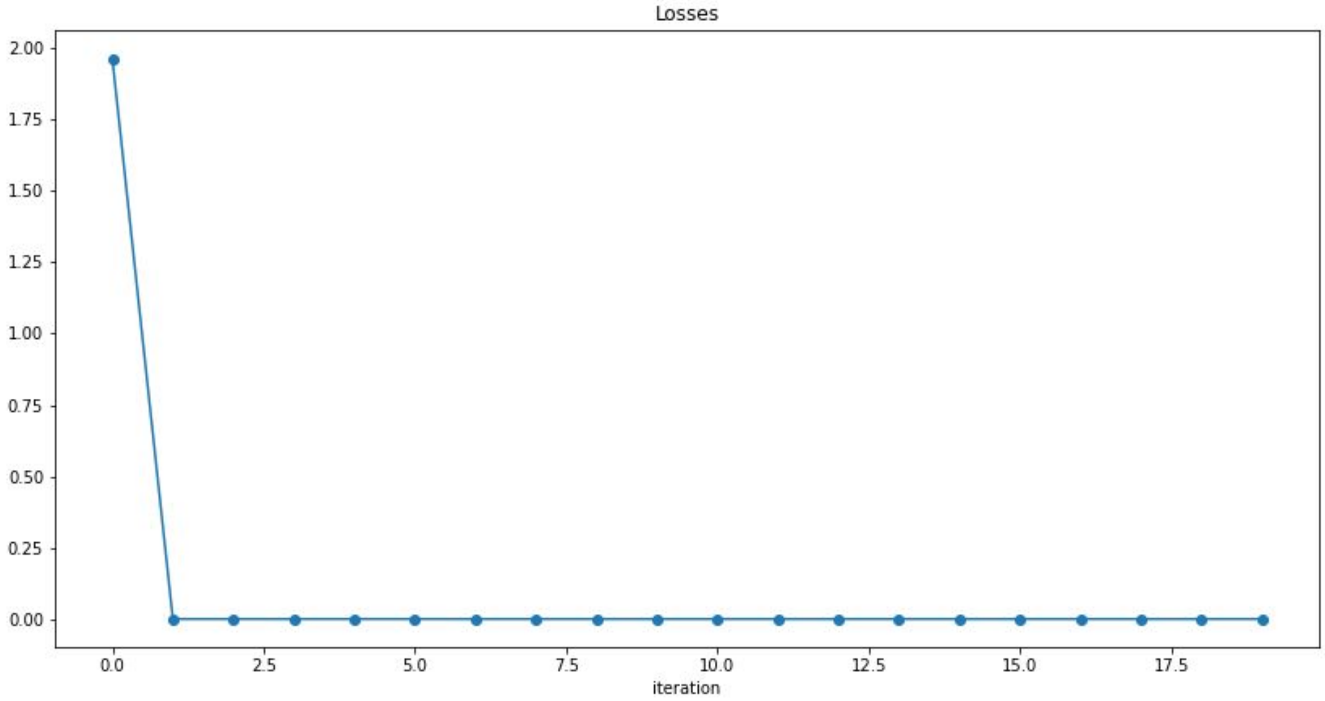
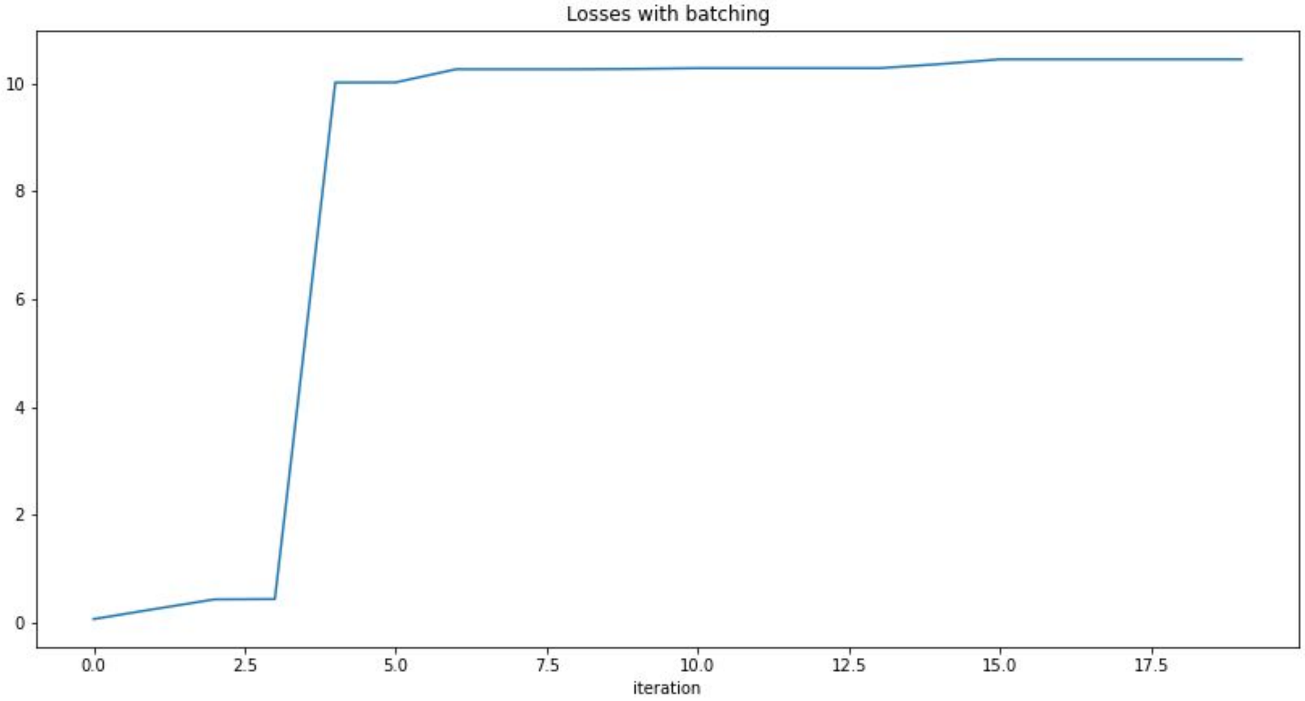
Training


Losses
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
iteration

Training


Losses with batching
10
8
6
4
2
0
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
iteration

06 Difficulties

Difficulties

Creating matches

1. How patterns work
2. What you want
3. How many to create

Difficulties

Creating matches

1. How patterns work
2. What you want
3. How many to create

Working with spaCy

1. Version
2. Doc

07

Next

- Include more labels

- Include more labels
- Evaluate

- Include more labels
- Evaluate
- Streamlit app

08

References

Natural Language Processing in Python [YouTube]

Intro to NLP with spaCy [YouTube]

spaCy documentation

Thanks!

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