

NLP EXPERIMENT NO - 8

AIM - Implement Named Entity Recognizer for the Given Text Input

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पहिला सेल: spaCy install कर

!pip install spacy

!python -m spacy download en_core_web_sm

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Requirement already satisfied: spacy in /usr/local/lib/python3.12/dist-packages (3.8.7)
Requirement already satisfied: spacy-legacy<3.1.0,>=3.0.11 in /usr/local/lib/python3.12/dist-packages (from spacy) (3.0.12)
Requirement already satisfied: spacy-loggers<2.0.0,>=1.0.0 in /usr/local/lib/python3.12/dist-packages (from spacy) (1.0.5)
Requirement already satisfied: murmurhash<1.1.0,>=0.28.0 in /usr/local/lib/python3.12/dist-packages (from spacy) (1.0.13)
Requirement already satisfied: cymem<2.1.0,>=2.0.2 in /usr/local/lib/python3.12/dist-packages (from spacy) (2.0.11)
Requirement already satisfied: preshed<3.1.0,>=3.0.2 in /usr/local/lib/python3.12/dist-packages (from spacy) (3.0.10)
Requirement already satisfied: thinc<8.4.0,>=8.3.4 in /usr/local/lib/python3.12/dist-packages (from spacy) (8.3.6)
Requirement already satisfied: wasabi<1.2.0,>=0.9.1 in /usr/local/lib/python3.12/dist-packages (from spacy) (1.1.3)
Requirement already satisfied: srsly<3.0.0,>=2.4.3 in /usr/local/lib/python3.12/dist-packages (from spacy) (2.5.1)
Requirement already satisfied: catalogue<2.1.0,>=2.0.6 in /usr/local/lib/python3.12/dist-packages (from spacy) (2.0.10)
Requirement already satisfied: weasel<0.5.0,>=0.1.0 in /usr/local/lib/python3.12/dist-packages (from spacy) (0.4.1)
Requirement already satisfied: typer<1.0.0,>=0.3.0 in /usr/local/lib/python3.12/dist-packages (from spacy) (0.16.1)
Requirement already satisfied: tqdm<5.0.0,>=4.38.0 in /usr/local/lib/python3.12/dist-packages (from spacy) (4.67.1)
Requirement already satisfied: numpy>=1.19.0 in /usr/local/lib/python3.12/dist-packages (from spacy) (2.0.2)
Requirement already satisfied: requests<3.0.0,>=2.13.0 in /usr/local/lib/python3.12/dist-packages (from spacy) (2.32.4)
Requirement already satisfied: pydantic!=1.8,!1.8.1,<3.0.0,>=1.7.4 in /usr/local/lib/python3.12/dist-packages (from spacy) (2.11.7)
Requirement already satisfied: Jinja2 in /usr/local/lib/python3.12/dist-packages (from spacy) (3.1.6)
Requirement already satisfied: setuptools in /usr/local/lib/python3.12/dist-packages (from spacy) (75.2.0)
Requirement already satisfied: packaging>=20.0 in /usr/local/lib/python3.12/dist-packages (from spacy) (25.0)
Requirement already satisfied: langcodes<4.0.0,>=3.2.0 in /usr/local/lib/python3.12/dist-packages (from spacy) (3.5.0)
Requirement already satisfied: language-data>=1.2 in /usr/local/lib/python3.12/dist-packages (from langcodes<4.0.0,>=3.2.0->spacy) (1.3)
Requirement already satisfied: annotated-types>=0.6.0 in /usr/local/lib/python3.12/dist-packages (from pydantic!=1.8,!1.8.1,<3.0.0,>=1.7)
Requirement already satisfied: pydantic-core==2.33.2 in /usr/local/lib/python3.12/dist-packages (from pydantic!=1.8,!1.8.1,<3.0.0,>=1.7)
Requirement already satisfied: typing-extensions>=4.12.2 in /usr/local/lib/python3.12/dist-packages (from pydantic!=1.8,!1.8.1,<3.0.0,>=1.7)
Requirement already satisfied: typing-inspection>=0.4.0 in /usr/local/lib/python3.12/dist-packages (from pydantic!=1.8,!1.8.1,<3.0.0,>=1.7)
Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.12/dist-packages (from requests<3.0.0,>=2.13.0->spacy)
Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.12/dist-packages (from requests<3.0.0,>=2.13.0->spacy) (3.10)
Requirement already satisfied: urllib3<3,>=1.21.1 in /usr/local/lib/python3.12/dist-packages (from requests<3.0.0,>=2.13.0->spacy) (2.5)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.12/dist-packages (from requests<3.0.0,>=2.13.0->spacy) (2025)
Requirement already satisfied: blis<1.4.0,>=1.3.0 in /usr/local/lib/python3.12/dist-packages (from thinc<8.4.0,>=8.3.4->spacy) (1.3.0)
Requirement already satisfied: confection<1.0.0,>=0.0.1 in /usr/local/lib/python3.12/dist-packages (from thinc<8.4.0,>=8.3.4->spacy) (0)
Requirement already satisfied: click>=8.0.0 in /usr/local/lib/python3.12/dist-packages (from typer<1.0.0,>=0.3.0->spacy) (8.2.1)
Requirement already satisfied: shellingham>=1.3.0 in /usr/local/lib/python3.12/dist-packages (from typer<1.0.0,>=0.3.0->spacy) (1.5.4)
Requirement already satisfied: rich>=10.11.0 in /usr/local/lib/python3.12/dist-packages (from typer<1.0.0,>=0.3.0->spacy) (13.9.4)
Requirement already satisfied: cloudpathlib<1.0.0,>=0.7.0 in /usr/local/lib/python3.12/dist-packages (from weasel<0.5.0,>=0.1.0->spacy)
Requirement already satisfied: smart-open<8.0.0,>=5.2.1 in /usr/local/lib/python3.12/dist-packages (from weasel<0.5.0,>=0.1.0->spacy) (7)
Requirement already satisfied: MarkupSafe>=2.0 in /usr/local/lib/python3.12/dist-packages (from Jinja2->spacy) (3.0.2)
Requirement already satisfied: marisa-trie>=1.1.0 in /usr/local/lib/python3.12/dist-packages (from language-data>=1.2->langcodes<4.0.0,>=1.3)
Requirement already satisfied: markdown-it-py>=2.2.0 in /usr/local/lib/python3.12/dist-packages (from rich>=10.11.0->typer<1.0.0,>=0.3)
Requirement already satisfied: pygments<3.0.0,>=2.13.0 in /usr/local/lib/python3.12/dist-packages (from rich>=10.11.0->typer<1.0.0,>=0.3)
Requirement already satisfied: wrapt in /usr/local/lib/python3.12/dist-packages (from smart-open<8.0.0,>=5.2.1->weasel<0.5.0,>=0.1.0->spacy)
Requirement already satisfied: mdurl~0.1 in /usr/local/lib/python3.12/dist-packages (from markdown-it-py>=2.2.0->rich>=10.11.0->typer<1.0.0,>=0.3)
Collecting en-core-web-sm==3.8.0
  Downloading https://github.com/explosion/spacy-models/releases/download/en_core_web_sm-3.8.0/en_core_web_sm-3.8.0-py3-none-any.whl (12.8/12.8 MB 97.0 MB/s eta 0:00:00)

```

✓ Download and installation successful

You can now load the package via spacy.load('en_core_web_sm')

⚠ Restart to reload dependencies

If you are in a Jupyter or Colab notebook, you may need to restart Python in order to load all the package's dependencies. You can do this by selecting the 'Restart kernel' or 'Restart runtime' option.

दुसरा सेल: NER code

import spacy

from spacy import displacy

nlp = spacy.load("en_core_web_sm")

text = ""

Apple Inc. is planning to open a new office in Seattle, Washington by the end of 2024.

Tim Cook, the CEO of Apple, announced this during the annual shareholders meeting.

The company is investing \$5 billion in this expansion. Meanwhile, Microsoft Corporation, based in Redmond, is also looking to expand its cloud services.

doc = nlp(text)

entities = {}

for ent in doc.ents:

```

entities.setdefault(ent.label_, set()).add(ent.text)

print("Named Entities found:\n")
for label, ents in entities.items():
    print(f"{label}:")
    for e in sorted(ents):
        print(f" - {e}")
    print()

# Visualization in notebook (inline)
displacy.render(doc, style="ent", jupyter=True)

```



Named Entities found:

ORG:

- Apple
- Apple Inc.
- Microsoft Corporation

GPE:

- France
- Germany
- Redmond
- Seattle
- Washington

DATE:

- annual
- the end of 2024

PERSON:

- Tim Cook

MONEY:

- \$5 billion

LOC:

- Europe

Apple Inc. **ORG** is planning to open a new office in **Seattle GPE** , **Washington GPE** by the end of 2024 **DATE** .

Tim Cook **PERSON** , the CEO of **Apple ORG** , announced this during the **annual DATE** shareholders meeting.

The company is investing **\$5 billion MONEY** in this expansion. Meanwhile, **Microsoft Corporation ORG** , based in **Redmond GPE** , is also looking to expand its cloud services in **Europe LOC** , particularly in **Germany GPE** and **France GPE** .