



NLP for Sensitive Data

Sensitive Text Detection with Custom Natural Language Processing (NLP) Models



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Agenda

1

Demo: Custom Entity Recogniser

2

Process

3

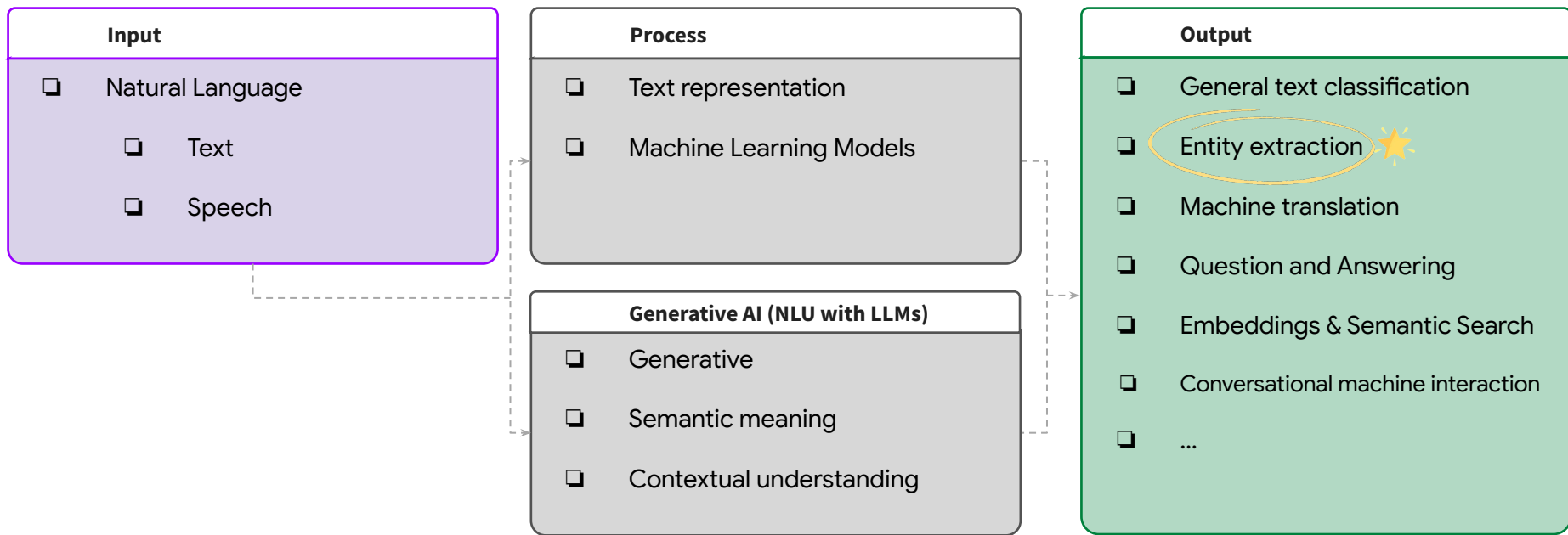
Real world use-cases

A futuristic telescope with a large lens is mounted on a tripod. The scene is set in a dark, rocky landscape under a large, glowing blue and orange planet. In the background, there are futuristic buildings and a bright orange light source. The overall color palette is dominated by dark blues, oranges, and purples.

Demo

Custom Named Entity Recogniser

What is Natural Language Processing (NLP)?



Process

- 1 Identifying the right NLP Use Cases
- 2 Annotate data with the help of Generative AI
- 3 Train a custom Named Entity Recognition (NER) model & refine
- 4 Evaluate, test, custom NER model
- 5 Deploy and integrate

Today's Tools

- Google Colab (shared)
- spaCy NLP library
- Google Cloud Platform

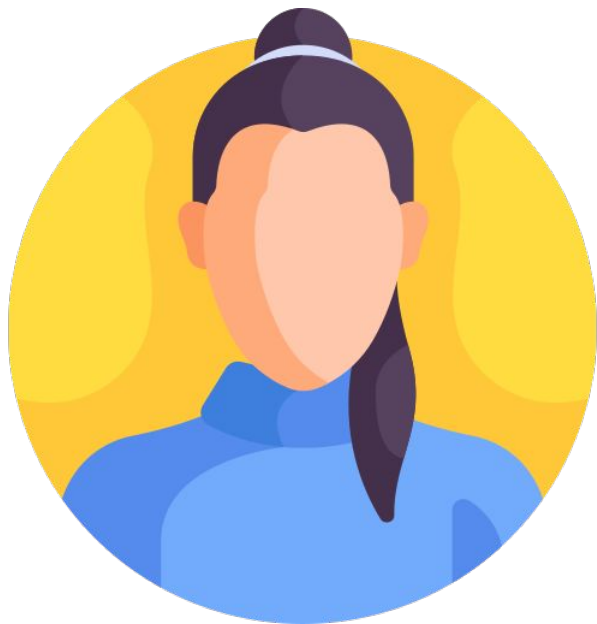
Identifying the right NLP Use Cases

Don't “A.I.”
all the things.

Human-centered needs analysis for A.I.



Identifying the right NLP Use Cases

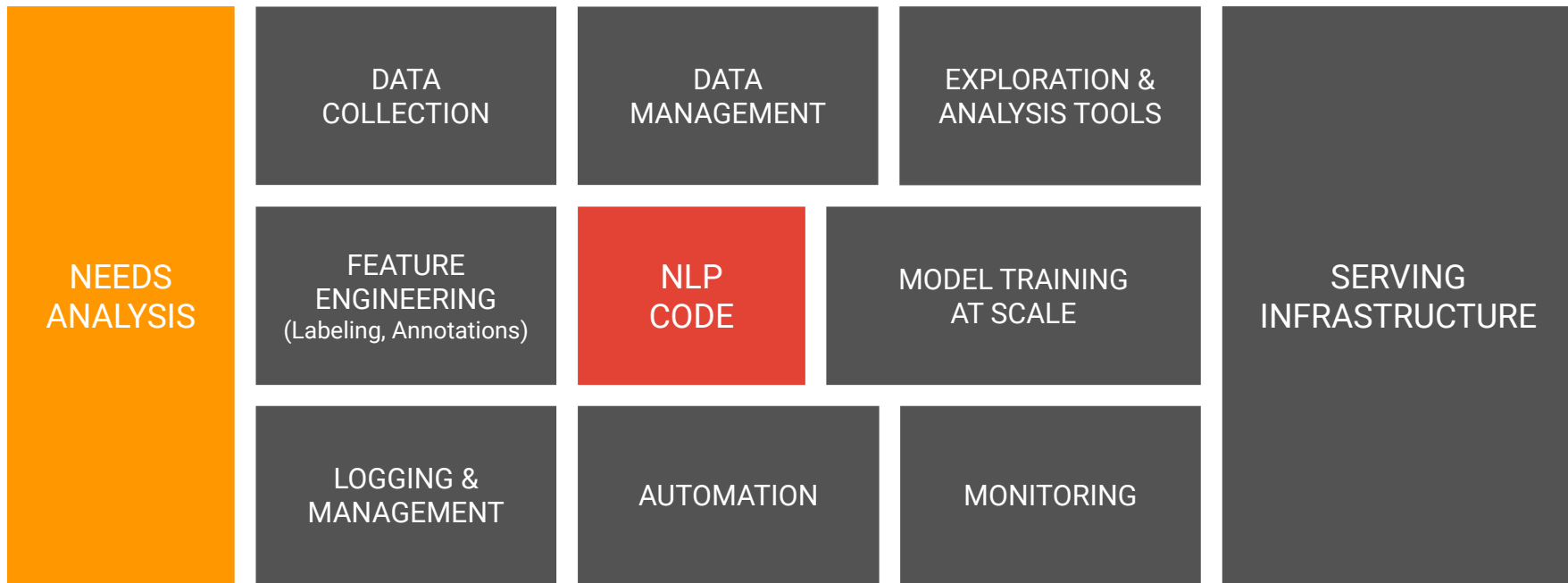


User patterns



Scope

Production grade ML/NLP

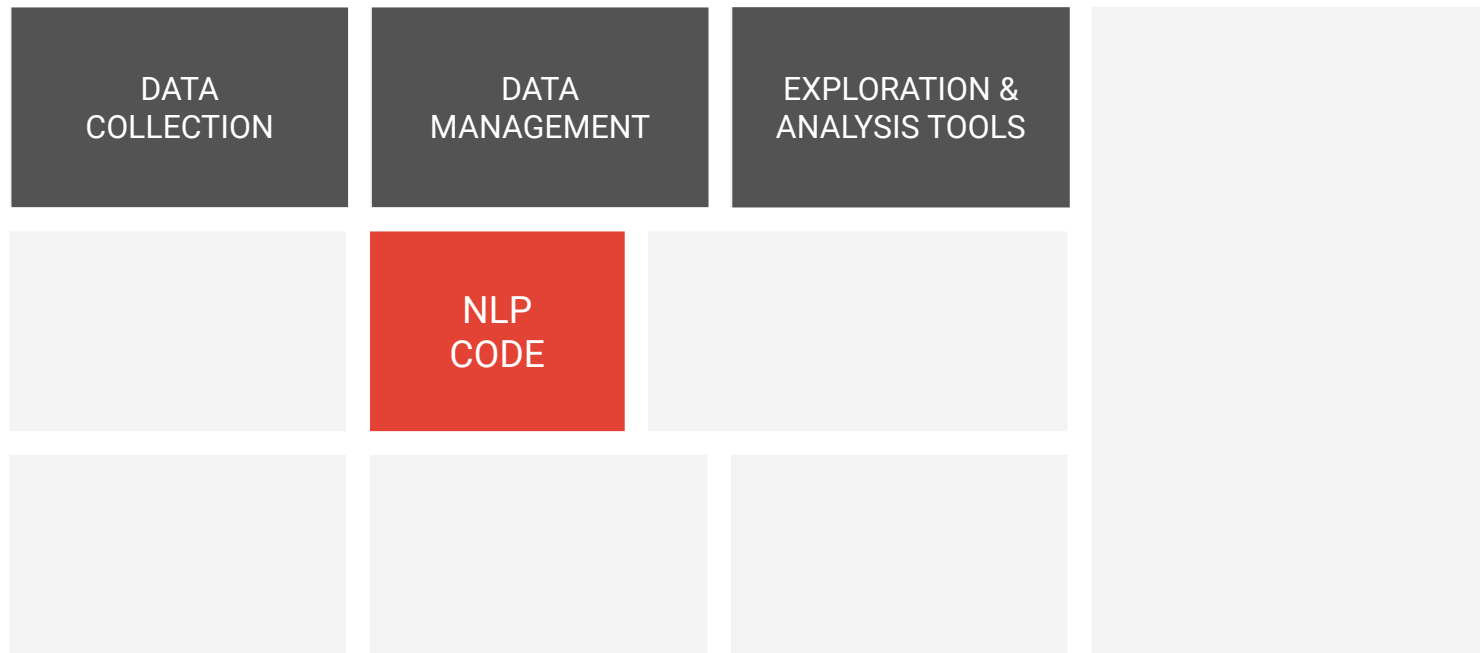


Identifying the right NLP Use Cases

If Machine Learning and NLP is needed, which type is best?

Automation	Augmentation
User doesn't know how to do something	User feels responsible for task
User can't do something	High stakes situation
Task is boring, repetitive , or dangerous	Complicated personal preferences

Setting expectations



Process

1

~~Identifying the right NLP Use Cases~~

2

Annotate data with the help of Generative AI

3

Train a custom NER model & refine

4

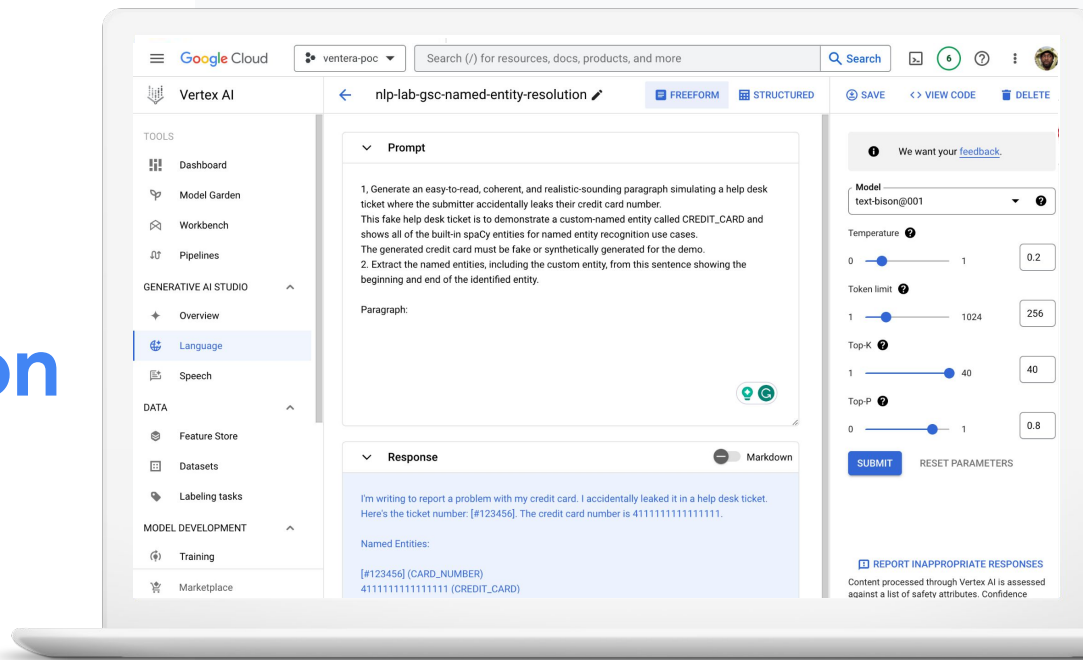
Evaluate, test, custom NER model

5

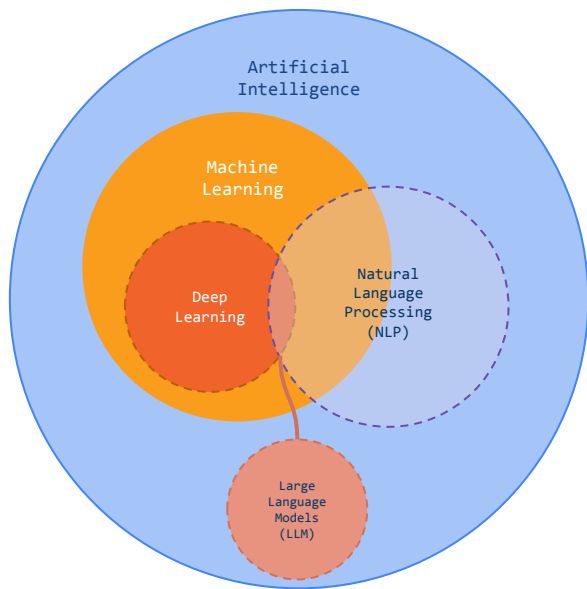
Deploy and integrate

Labeling

Annotating your text for Entity Recognition



A brief bit about how NLU, LLM, GenAI play into NER workflow



Teacher: Class, pay attention

Transformer Models:



Process

1

~~Identifying the right NLP Use Cases~~

2

~~Annotate data with the help of Generative AI~~

3

Train a custom NER model & refine

4

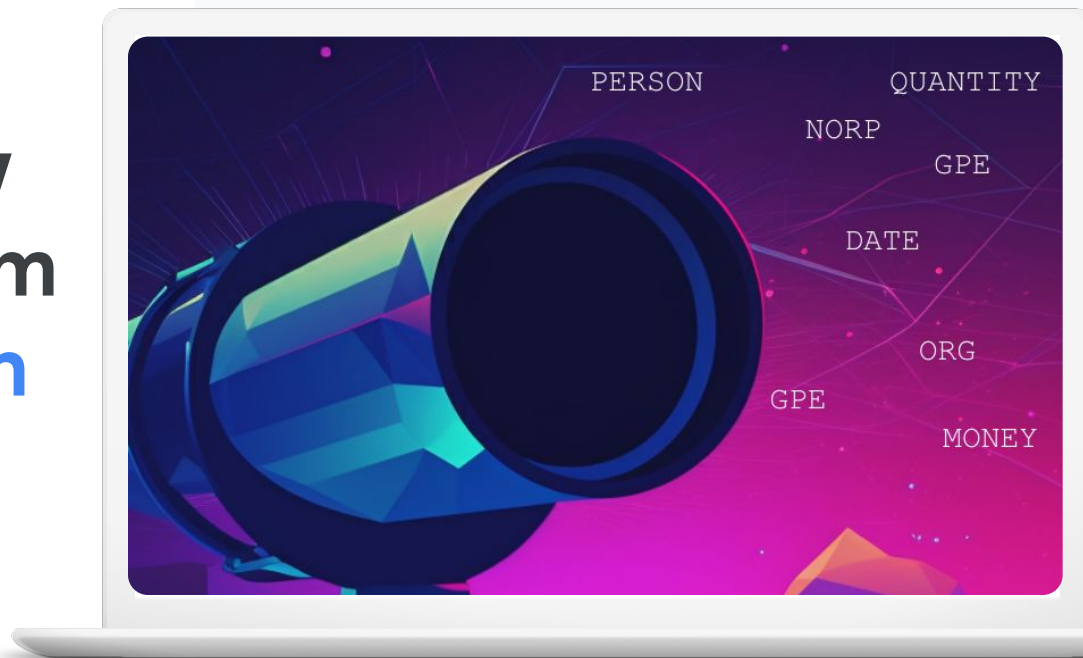
Evaluate, test, custom NER model

5

Deploy and integrate

...with Large Language Models

The NLP workflow for training custom Entity Recognition



Starting with Pre-trained NER Models

```
txt = "In West Philadelphia born and raised, on the playground is where Noble Ackerson spent most of the  
December. "  
txt += "Chillin out maxing relaxing in the Ghanaian farmlands he spent 25 dollars on 2 pounds of corn. "  
txt += "He used this Visa 4290 7558 4051 5357 which seemed expired so he moved up to live with his auntie  
and uncle in Bel Air."  
doc = nlp(txt)  
  
html = displacy.render(doc, style='ent', jupyter=False, page=True)  
displacy.render(doc, style='ent')  
display(HTML(html))
```

In West Philadelphia GPE born and raised, on the playground is where Noble Ackerson PERSON
spent most of the December DATE . Chillin out maxing relaxing in the Ghanaian NORP farmlands he
spent 25 dollars MONEY on 2 pounds QUANTITY of corn. He used this Visa ORG 4290 7558 4051
5357 which seemed expired so he moved up to live with his auntie and uncle in Bel Air ORG .

Process

- 1 ~~Identifying the right NLP Use Cases~~
- 2 ~~Annotate data with the help of Generative AI~~
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```
from fastapi import FastAPI
from pydantic import BaseModel
import spacy

app = FastAPI()

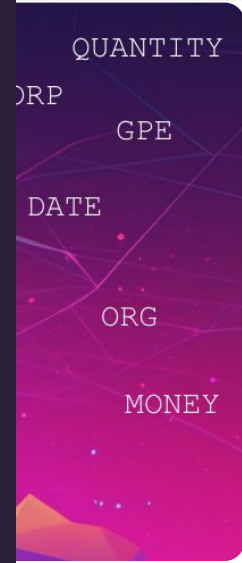
# Load the trained model from disk
nlp = spacy.load("./custom_ner_model")

class Item(BaseModel):
    text: str


@app.post("/predict/")
def predict(item: Item):
    # Process the text with the trained NER model
    doc = nlp(item.text)

    # For each entity in the document...
    entities = []
    for ent in doc.ents:
        # Add the entity to the list of entities
        entities.append({"text": ent.text, "start_char": ent.start_char, "end_char": ent.end_char,
"label": ent.label_})

    # Return the entities
    return {"entities": entities}
```



QUANTITY
GPE
DATE
ORG
MONEY



```
...

exports.dialogflowFirebaseFulfillment = functions.https.onRequest((request, response) =>
{ const agent = new WebhookClient({ request, response });

  function callModel(agent) {
    const text = agent.parameters.any; // Get the text parameter from Dialogflow
    return axios.post('http://54.183.22.123:8000/predict/', {"text": text})
      .then((result) => {
        // Send the entities from the model back to the Dialogflow agent
        agent.add(`Entities: ${JSON.stringify(result.data.entities)}`);
      });
  }

  let intentMap = new Map();
  intentMap.set('Creditcard-leak', callModel);
});
```

Wrap up

1

~~Demo: Custom Entity Recogniser~~

2

~~Process~~

3

Real world use-cases

Healthcare Clinical Documentation

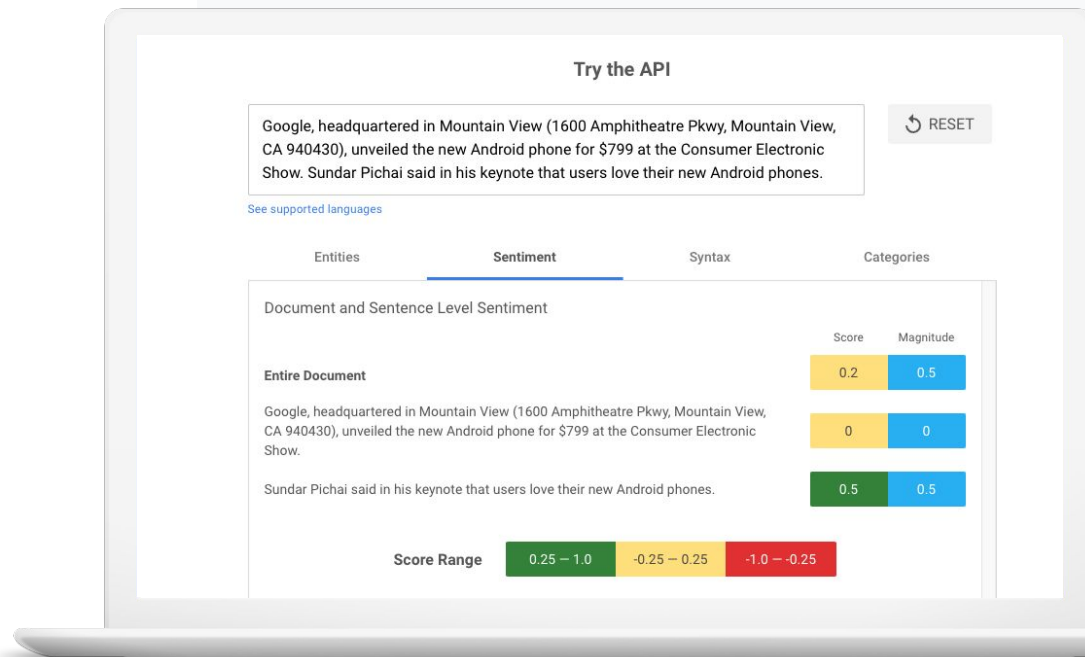


Legal Contract Analysis



Sentiment Analysis Use Case

cloud.google.com/natural-language



<https://cloud.google.com/translate>

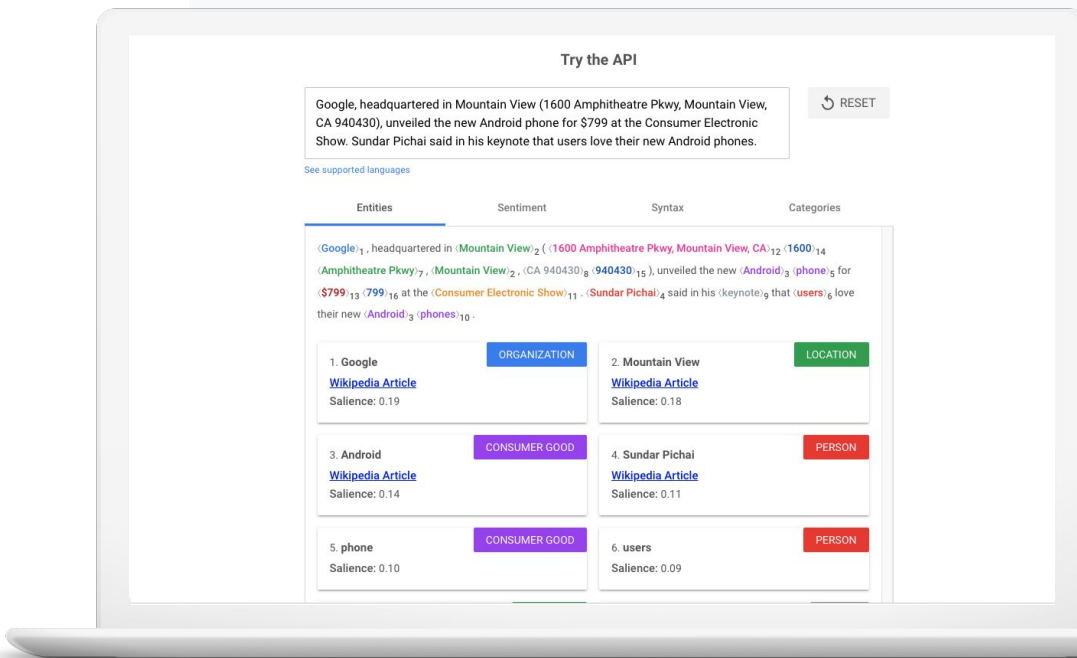
Translation Use Case




cloud.google.com/natural-language

All-industries

Try Natural Language AI on Google Cloud





Good luck and Thank you!



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AI Product Lead, GDE Alumni



medium.com/@nobleackerson



youtube.com/c/nobleackerson

Resources

[What is Natural Language Processing?](#) [Google Cloud]

[Natural Language Processing on Google Cloud](#) [Cloud Skills Boost]

[TensorFlow Models NLP Library](#) [tensorflow.org]

Identifying Use Cases for LLMs



Risk Tolerance



Human Review

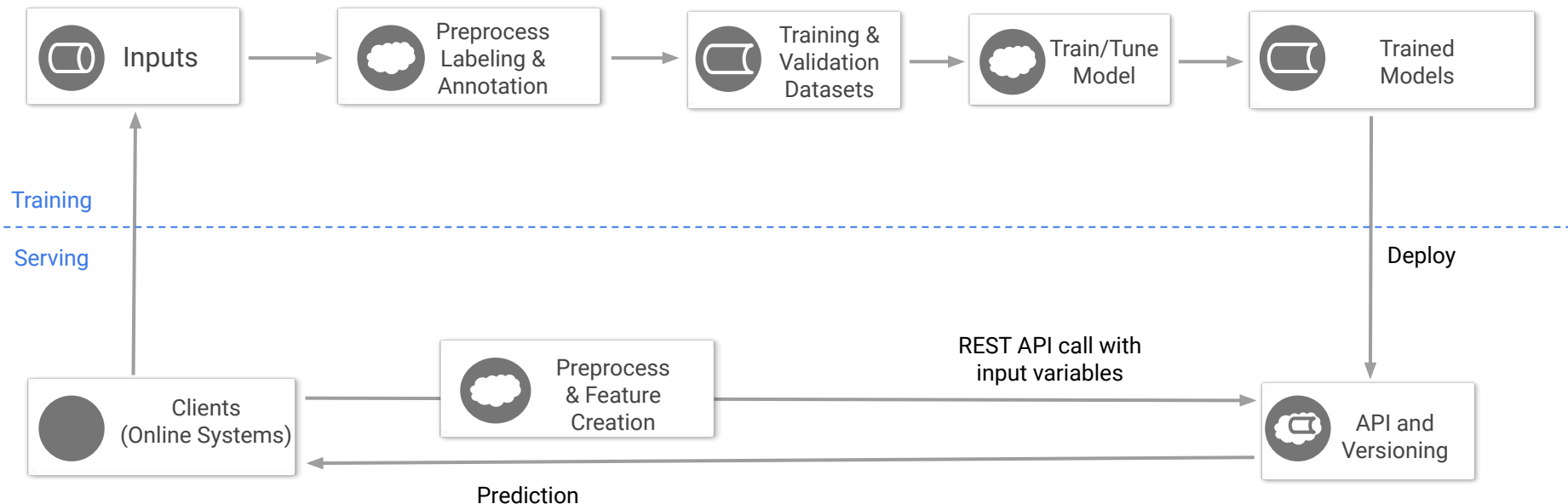


Text (or Code) Intensive



Business Value

Token Classification with Custom NER models



In case of demo fail

