Case Study on Named Entity Recognition

Agenda:

- Introduction
- Application Workflow
- System Architecture
- Demo
- User Stories
- Impact

Before proceeding further with the presentation

To Do:

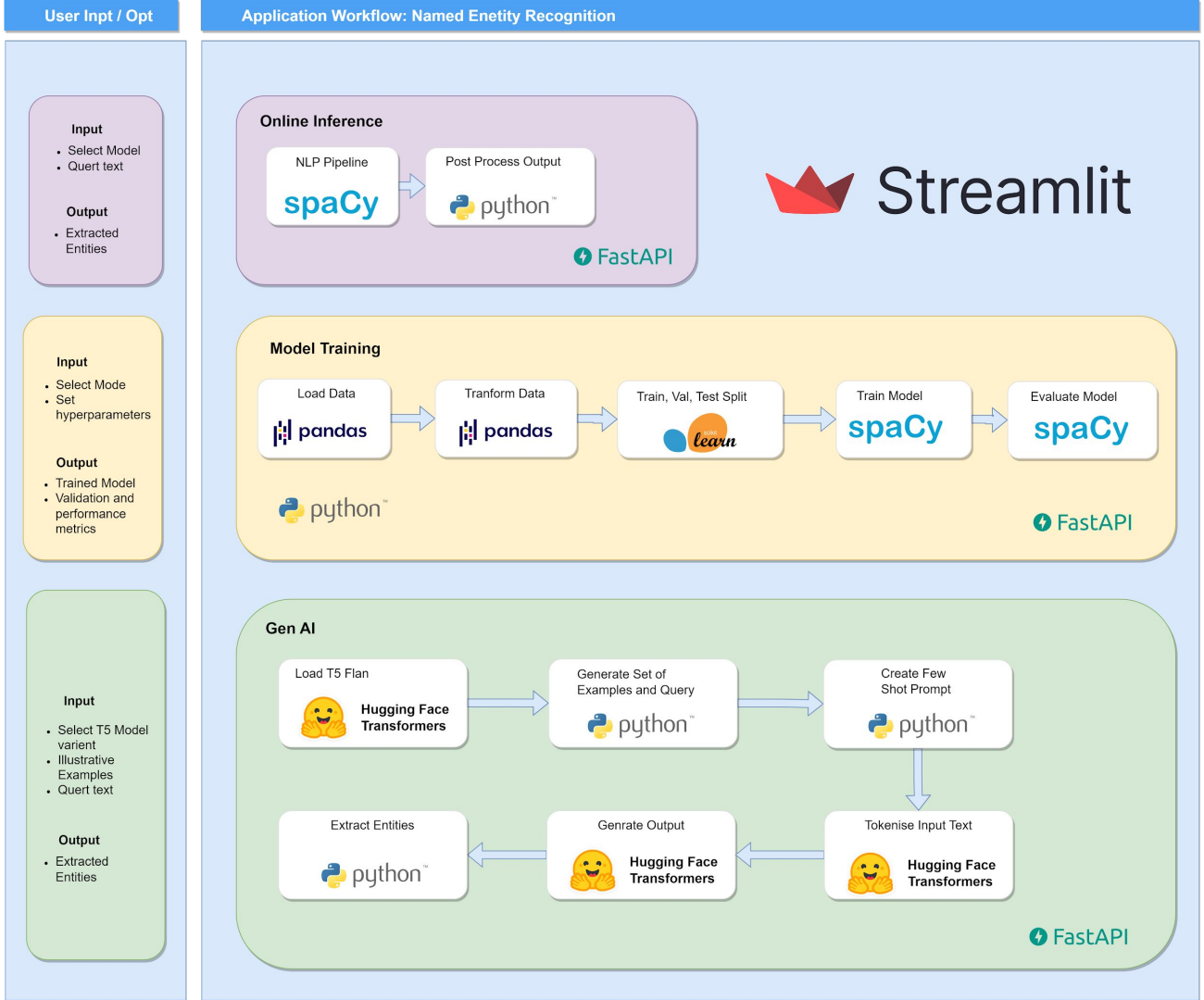
- For accessing Demo hoisted on Hugging Face spaces Click on the following HF logo:

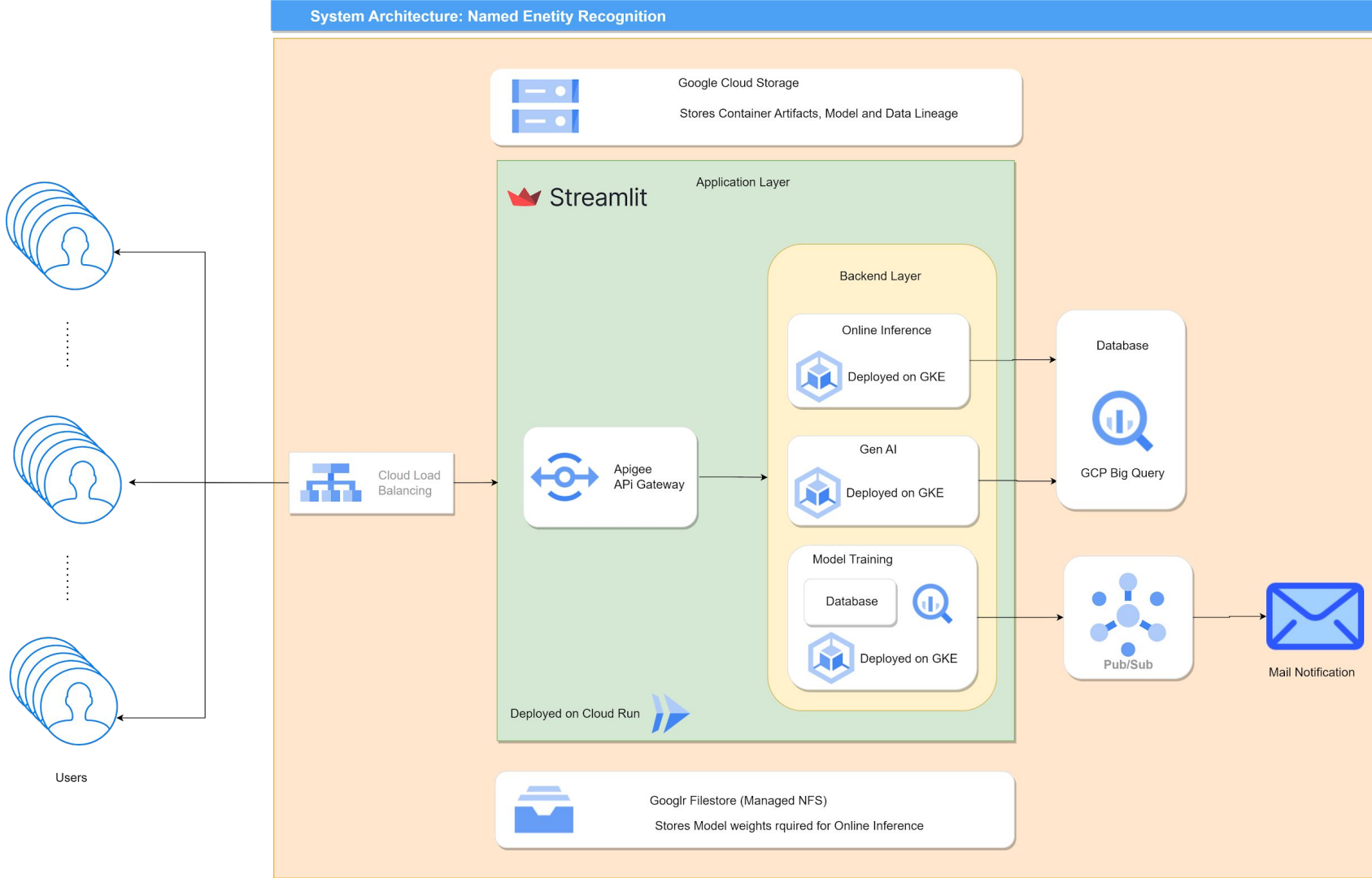
Click to Launch app

- For accessing limited functionality app hosted online, Start the app instance and resume back to this ppt. by clicking on the Following streamlit logo :

Click to Launch limited functionality app

Solution created by Sudhir Arvind Deshmukh


User Inpt / Opt
Application Workflow: Named Enetity Recognition
Input
Select Model
Quert text
Output
Extracted Entities
Online Inference
NLP Pipeline
spaCy
Post Process Output
python
FastAPI
Streamlit
Input
Select Mode
Set hyperparameters
Output
Trained Model
Validation and performance metrics
Model Training
Load Data
pandas
Tranform Data
pandas
Train, Val, Test Split
learn
Train Model
spaCy
Evaluate Model
spaCy
python
FastAPI
Input
Select T5 Model varient
Illustrative Examples
Quert text
Output
Extracted Entities
Gen AI
Load T5 Flan
Hugging Face Transformers
Generate Set of Examples and Query
python
Create Few Shot Prompt
python
Tokenise Input Text
Hugging Face Transformers
Genrate Output
Hugging Face Transformers
Extract Entities
python
FastAPI


System Architecture: Named Enetity Recognition
Google Cloud Storage
Stores Container Artifacts, Model and Data Lineage
Streamlit
Application Layer
Backend Layer
Online Inference
Deployed on GKE
Gen AI
Deployed on GKE
Model Training
Database
Deployed on GKE
Database
GCP Big Query
Pub/Sub
Mail Notification
Cloud Load Balancing
Apigee API Gateway
Deployed on Cloud Run
Users
Googlr Filestore (Managed NFS)
Stores Model weights rquired for Online Inference

Demo

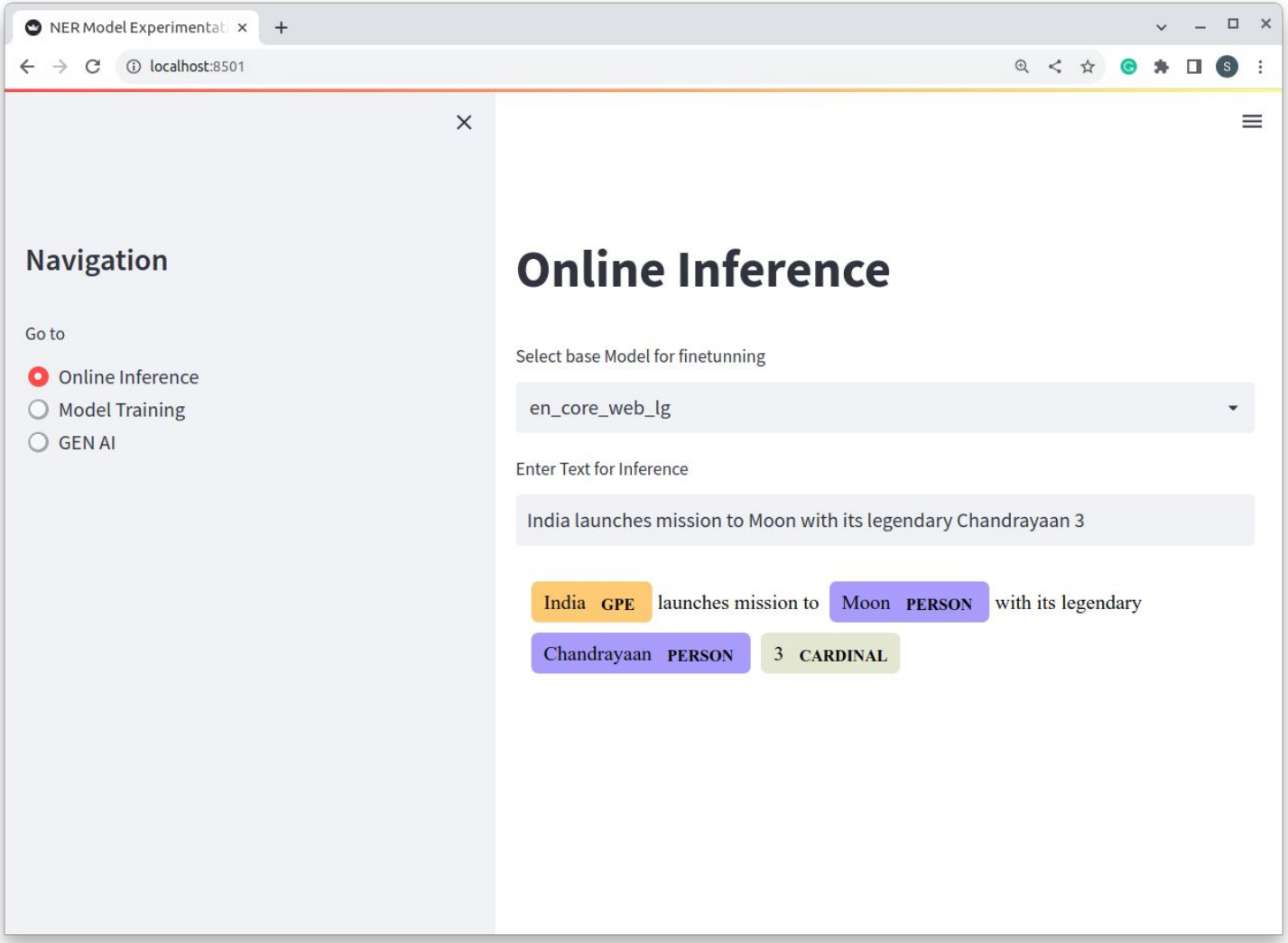
Launch Full Application Hosted Locally

- Online Version of the app is available at : Hugging Face spaces : Link
- Limited functionality app is also available at : Streamlit cloud : Link

User Stories

Online Inference

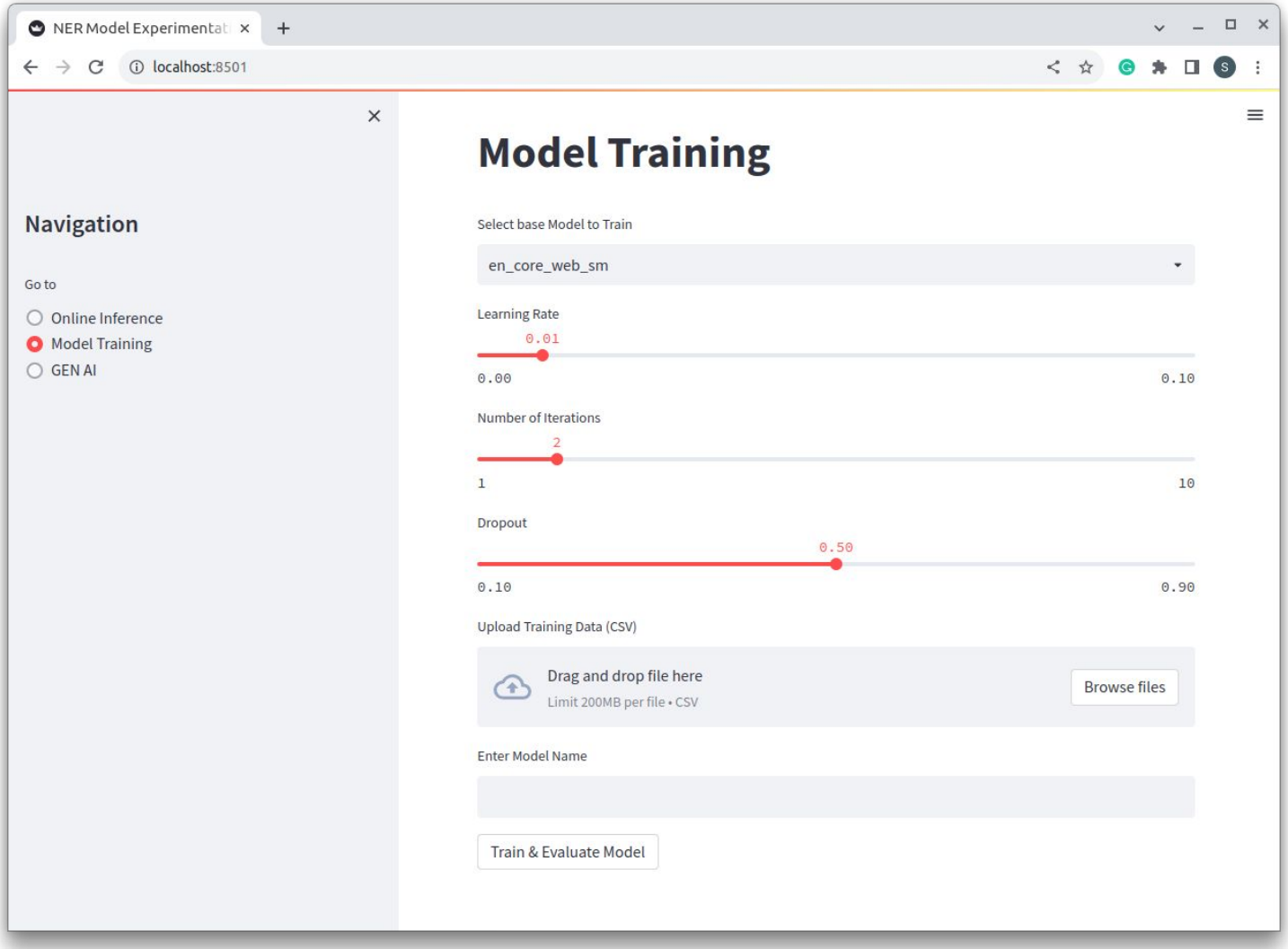
- Select model
- Pass input Query text
- Entities will be extracted



User Stories

Model Training

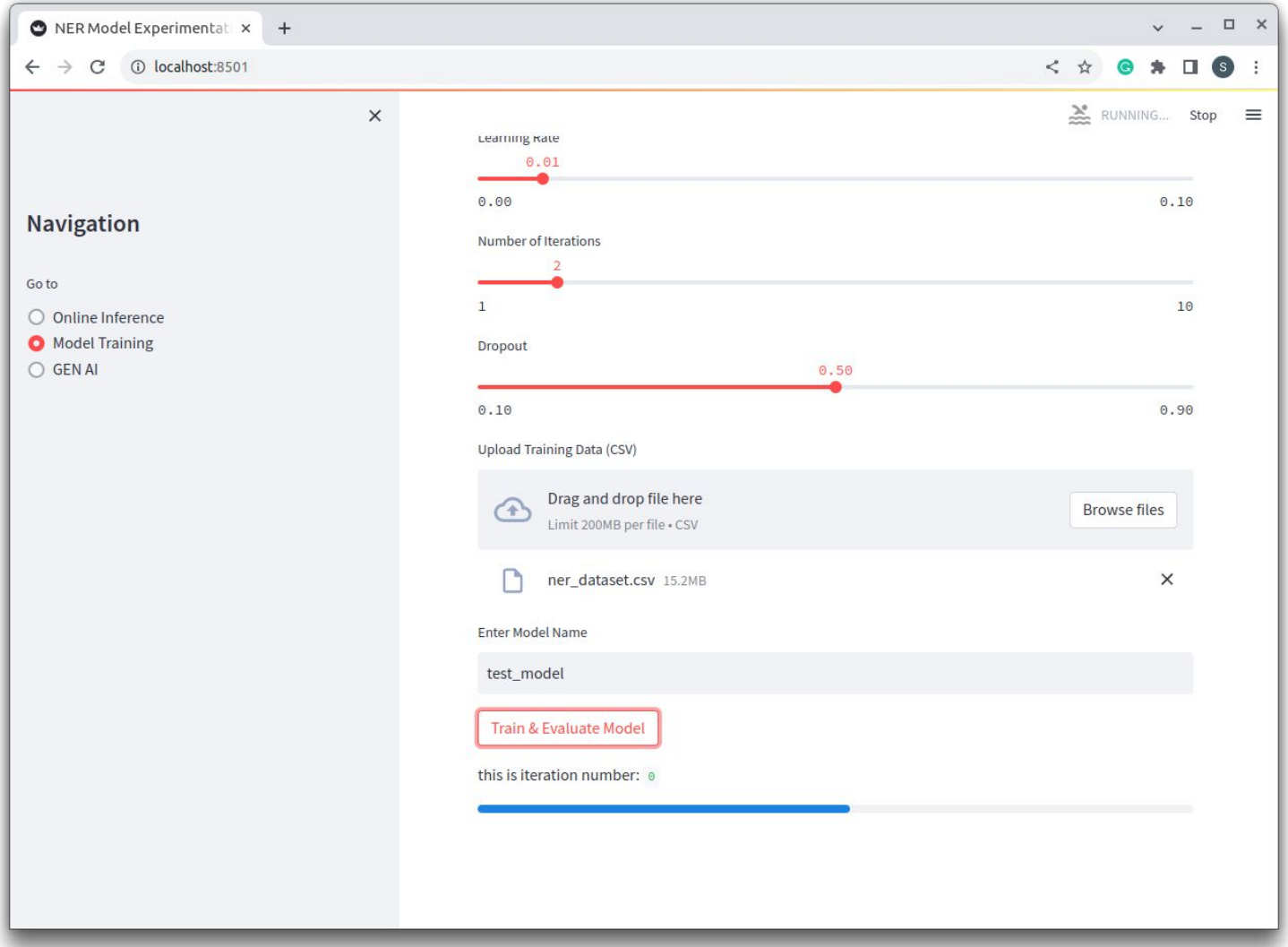
- Select model
- Set Hyperparameters
- Upload Data



User Stories

Model Training

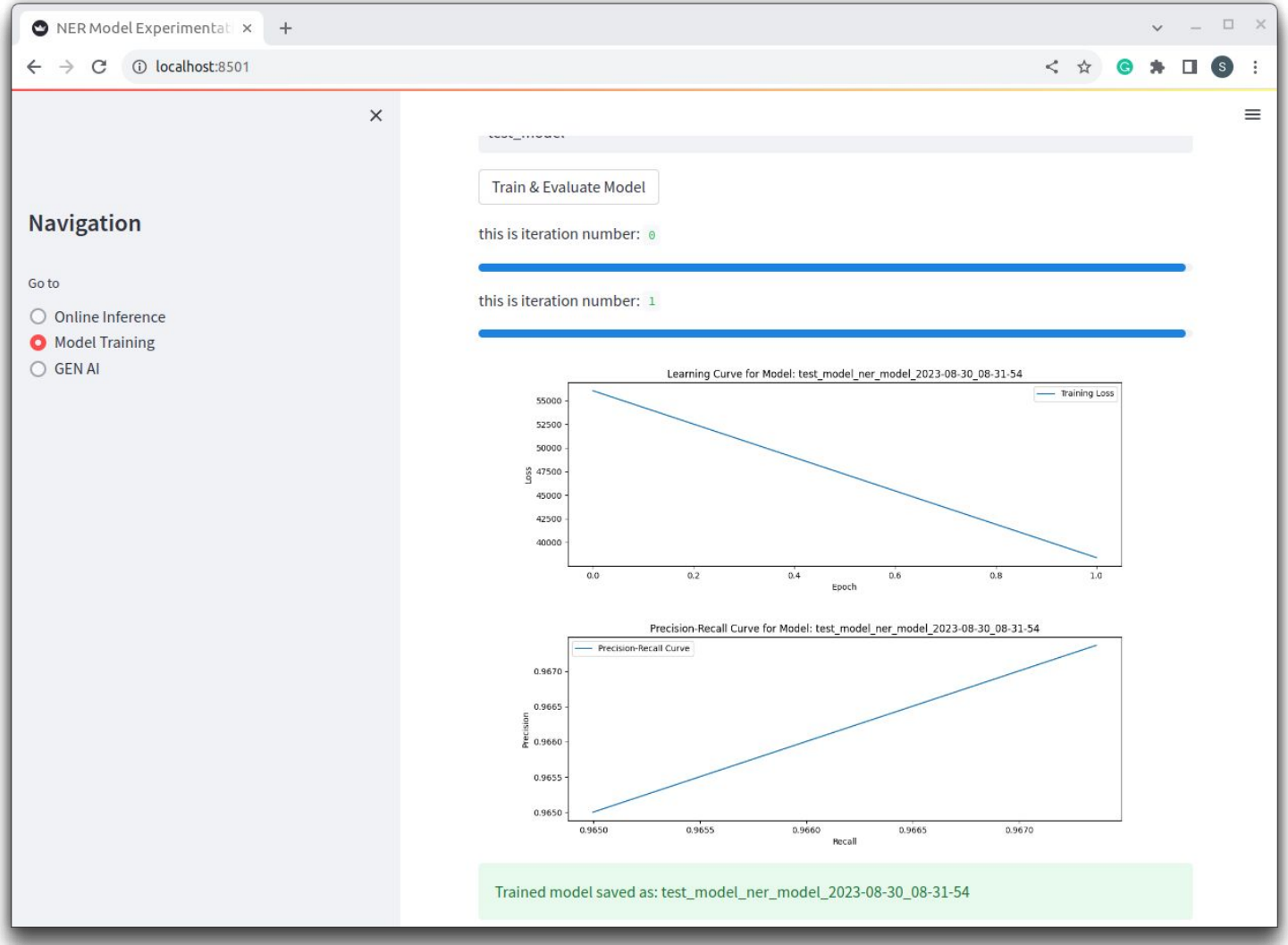
- Progress



User Stories

Model Training

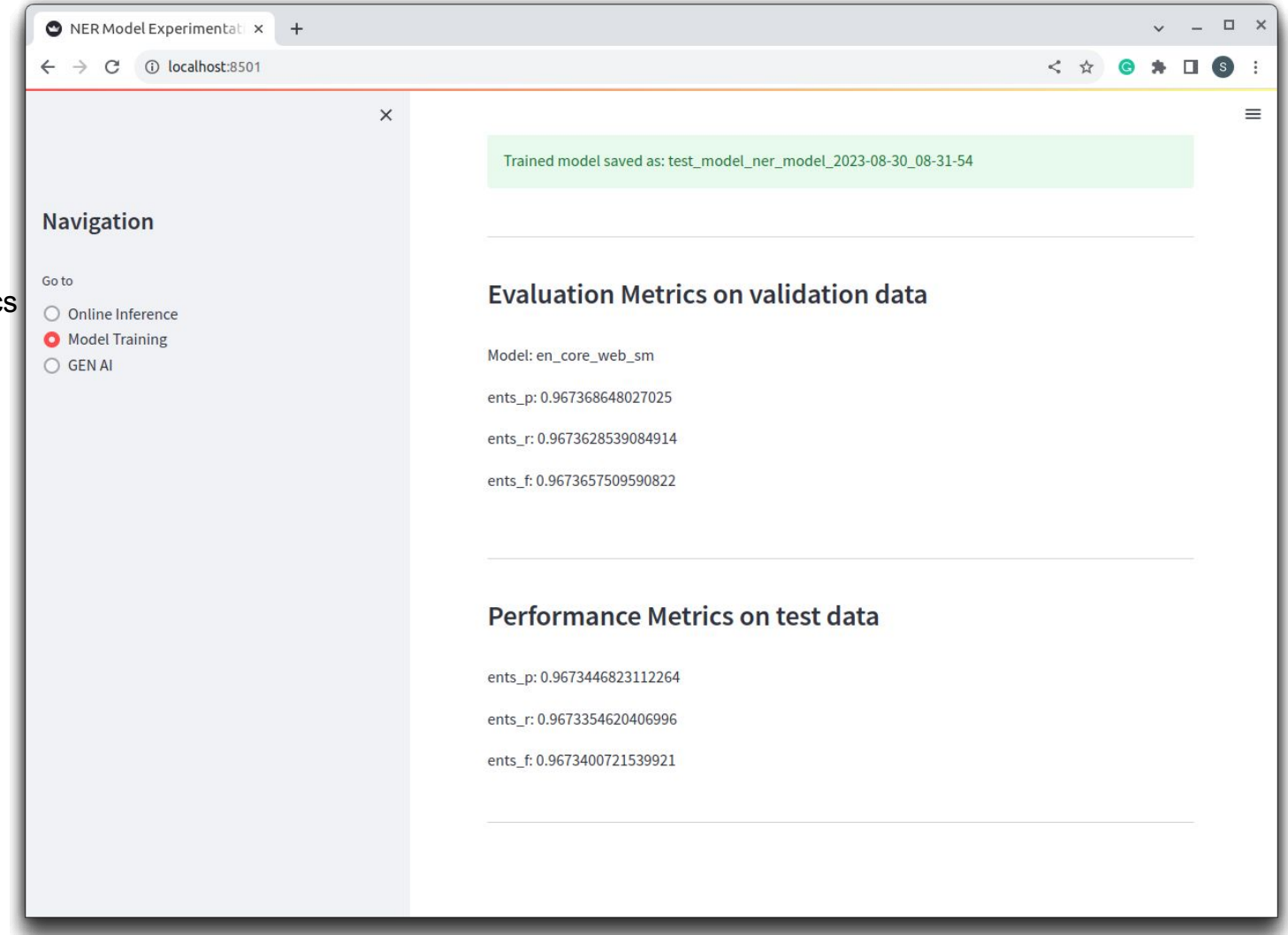
- Training Complete
- Training Curves



User Stories

Model Training

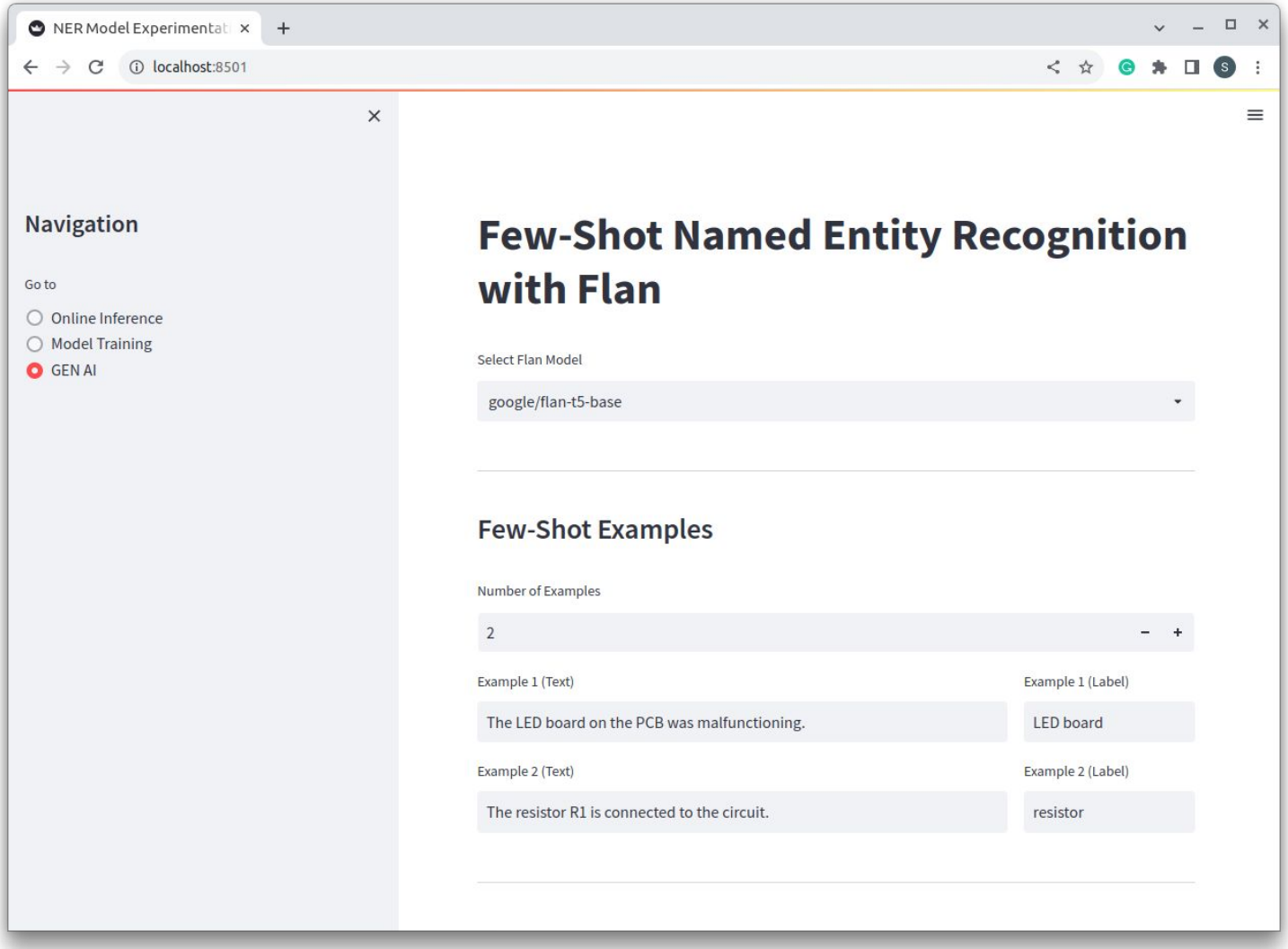
- Validation Metric
- Test performance metrics



User Stories

Gen AI

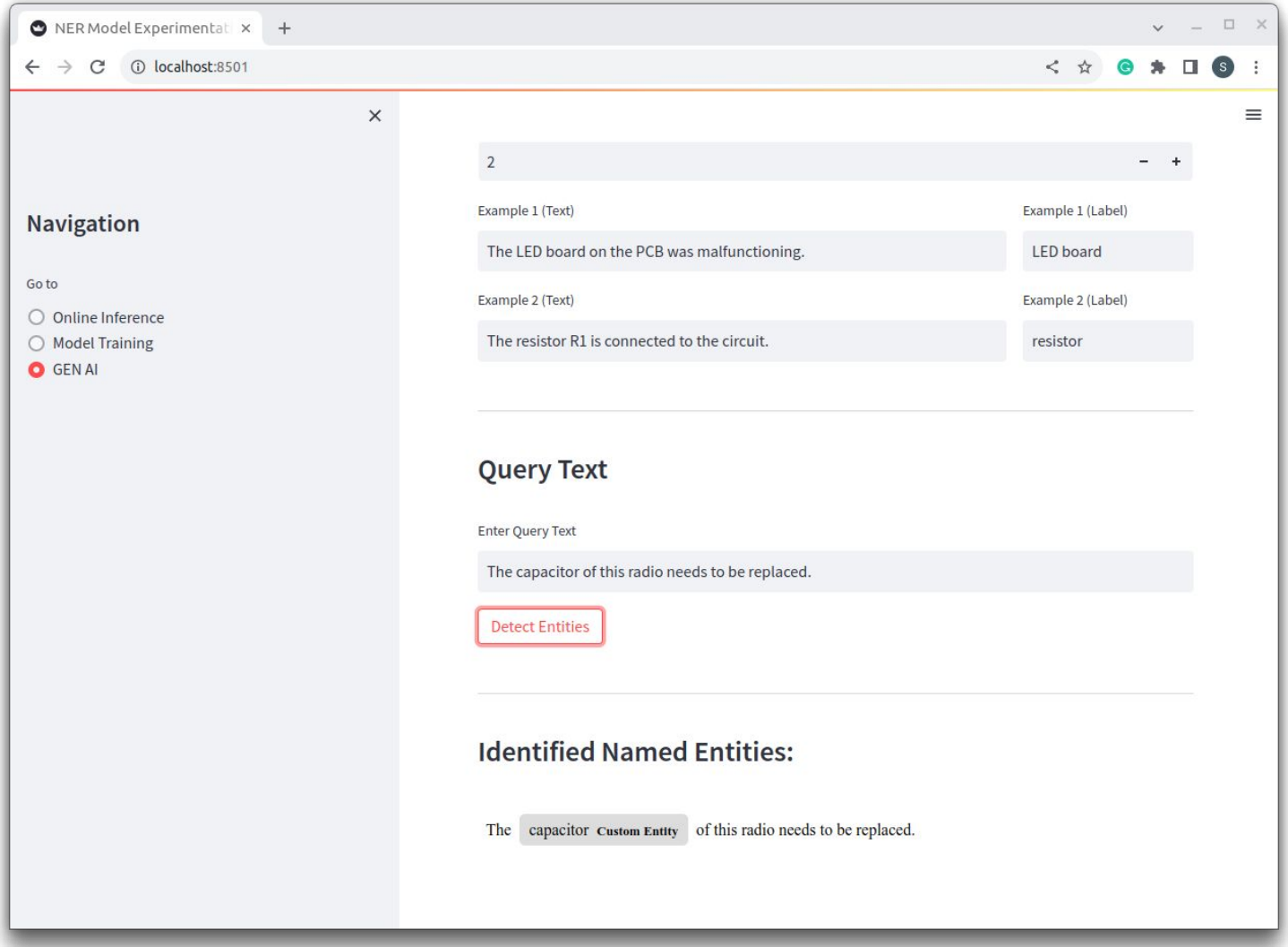
- Select Model
- Set intended number of examples
- Provide examples with corresponding label



User Stories

Gen AI

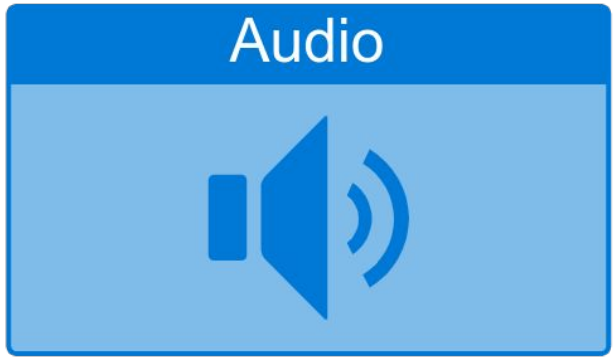
- Pass input Query text
- Entities are extracted



Impact

This solution will have impact across industries where unstructured data of following nature needs to be processed

Processes textual references in image or video



Processes speech in audio signal

Processes unstructured textual data

Thank You

To know more about me

- My website: https://www.brainpower.net.in/
- Linkedin: https://www.linkedin.com/in/sudhir-deshmukh/

CERTIFICATIONS

Google Cloud Certified Professional
Associate Cloud Engineer

Google Cloud Certified Professional
Machine Learning Engineer

Deep learning certification
from IIT Madras (NPTEL)