PSG Hackathon – IHACKMYPLACE @ Societe Generale

INCIDENT MANAGEMENT AUTO-RESOLUTION USING AI SELF-HEAL

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PROBLEM STATEMENT

Incident management auto resolution – using AI selfheal for batch failure/ unexpected anomaly, to resolve issues automatically, based on frequency and history of resolution.

OBJECTIVE

The objective of this project is to create an AI-powered resolution platform to deal with the current volume of tickets created every day that provides automated suggestions and resolutions for issues based on the incident by utilizing the created database.

DATASET

Dataset contains approximately 100 rows of incidence categorized into 10 categories and its corresponding resolutions which is the sample dataset that we created.

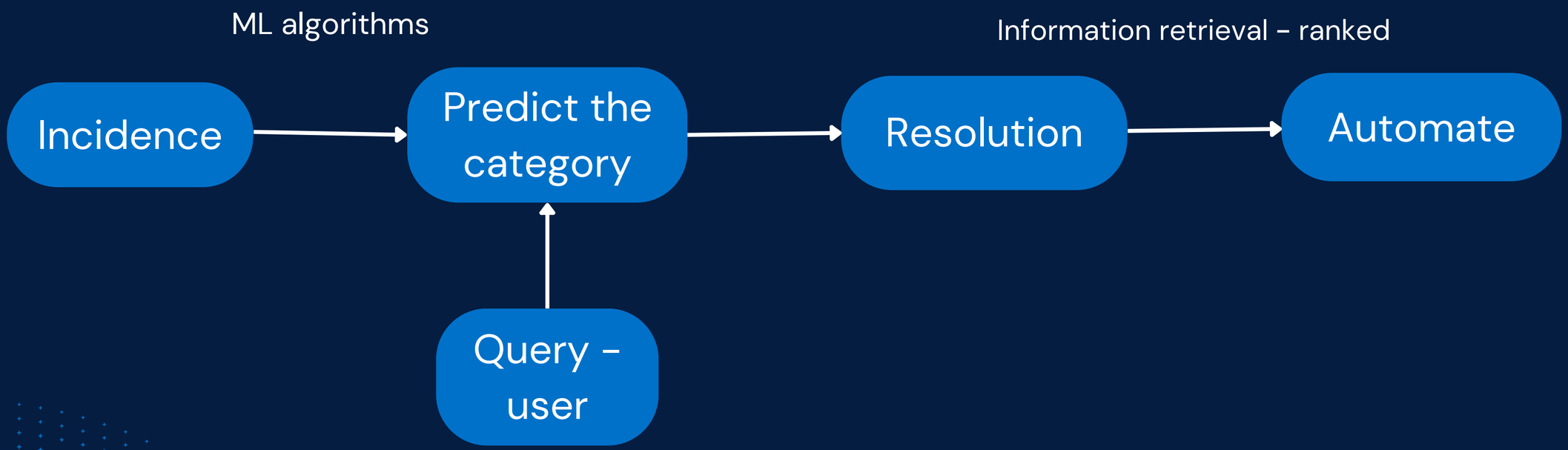
Data is preprocessed - splitting text into individual words, converting it to lowercase, removing stopwords, eliminating punctuation using NLP.

Dataset

APPROACH 1

1. Predict the resolution category using ML algorithms.
2. Extracting the most suitable resolution techniques using cosine similarity.
3. UI design using streamlit to get the query from user and perform automatic resolution

APPROACH 1 PIPELINE



MODEL BUILDING - ML

After preprocessing step, the dataset is converted into TF-IDF matrix that is used to further build the ML models :

- SVM
- KNN
- Logistic Regression
- Naive Bayes

Out of the 4 models built SVM gives a better accuracy which is used to predict the category of the incidence query given by the user.

```
Given query:  Files transfers fail
Predicted category:  ['FTR']
```

```
Given query:  Data lost due to hardware in cloud
Predicted category:  ['Cloud services ']
```

Using the category predicted, all the incidence and its corresponding resolution pairs are collected.

Cosine similarity is applied on the pairs to find the similarities between the incidence and the query to retrieve the relevant resolution.

```
Query: 'Data lost due to hardware in cloud'
Relevant resolution:
Regularly back up data to different geographic regions.
Use versioning for object storage to restore previous versions.
Implement data encryption at rest and in transit.
Test data recovery processes.
```

In the this approach, both the incident text and its corresponding resolution text were utilized to suggest the suitable resolution text in response to a user query.

Recommending a resolution text for a user's new query, which is not present in the provided incident and resolution texts, poses a challenge.

APPROACH 2

Leveraging the BERT model addresses the limitations encountered in the previous approach.

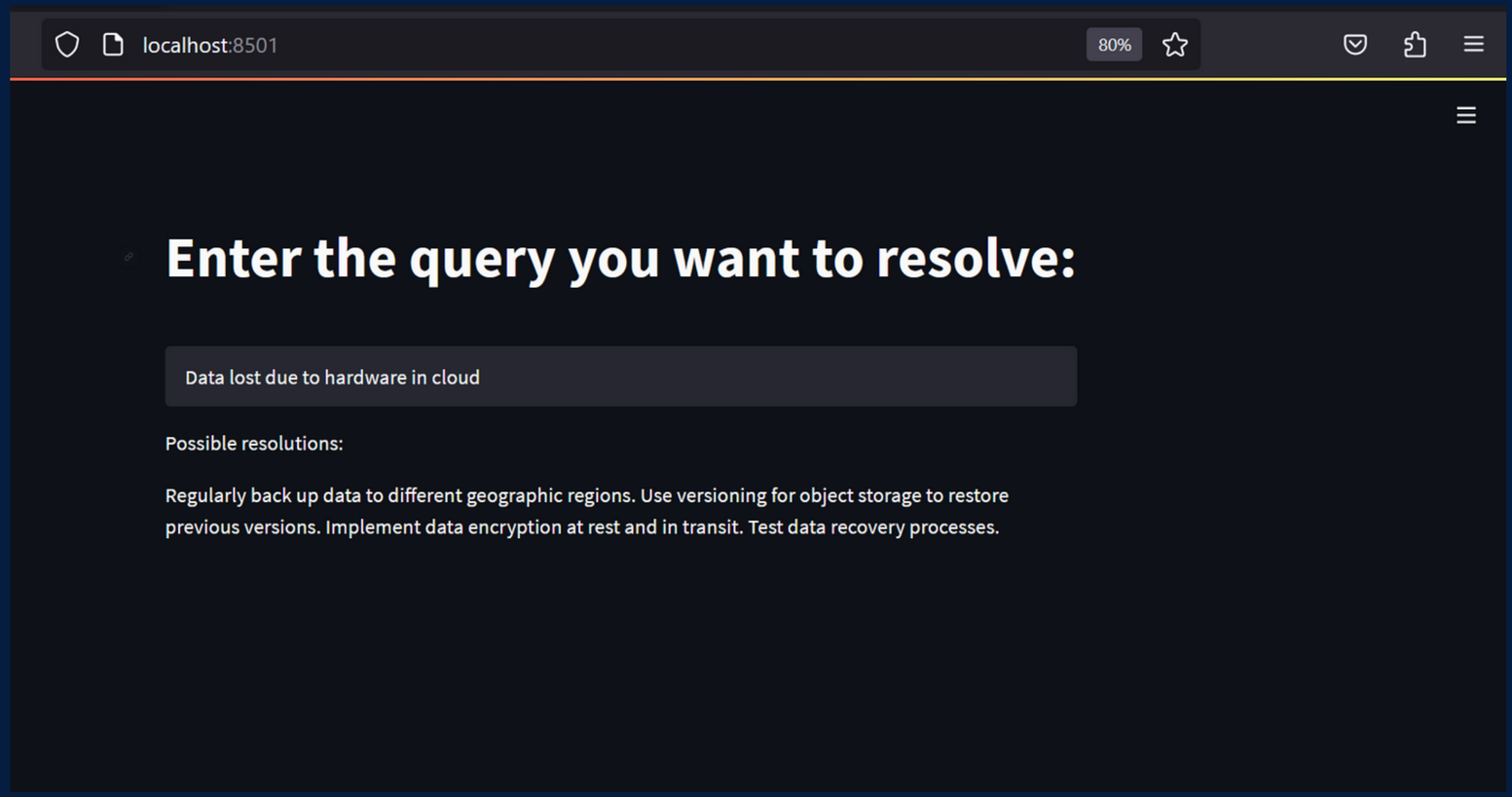
BERT's remarkable language comprehension enables it to identify pertinent resolution texts without the necessity of both incidence and resolution texts.

This is possible due to BERT's capability to uncover similar or pertinent resolution texts within a provided dataset.

MODEL BUILDING USING BERT

- Initially, the pre-trained BERT model is loaded and the given user incident text is tokenized.
- The incident text is iterated throughtout the resolution text and the similarity scores are calculated using the embeddings.
- The resolution text with the maximum similarity score will be recommended for the user

UI BUILT :


localhost:8501
80%
Enter the query you want to resolve:
Data lost due to hardware in cloud
Possible resolutions:
Regularly back up data to different geographic regions. Use versioning for object storage to restore previous versions. Implement data encryption at rest and in transit. Test data recovery processes.

THANK YOU!