PODCAST SUMMARIZER

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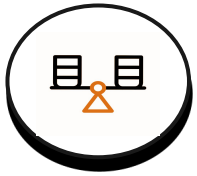
OVERVIEW

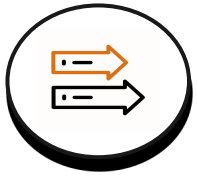
- Developed and fine-tuned an extractive summarization model that will automatically generate summaries of audio podcasts in approximately 4 to 5 sentences
- Implemented a sentiment analysis script to detect the sentiment of the summarized text
- Designed a web app using Flask for publishing the summarized text along with its sentiment

AWS TECHNOLOGIES

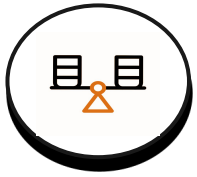
S3



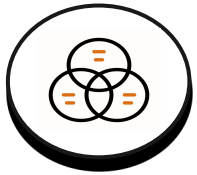
LAMBDA



TRANSCRIBE



TERRAFORM

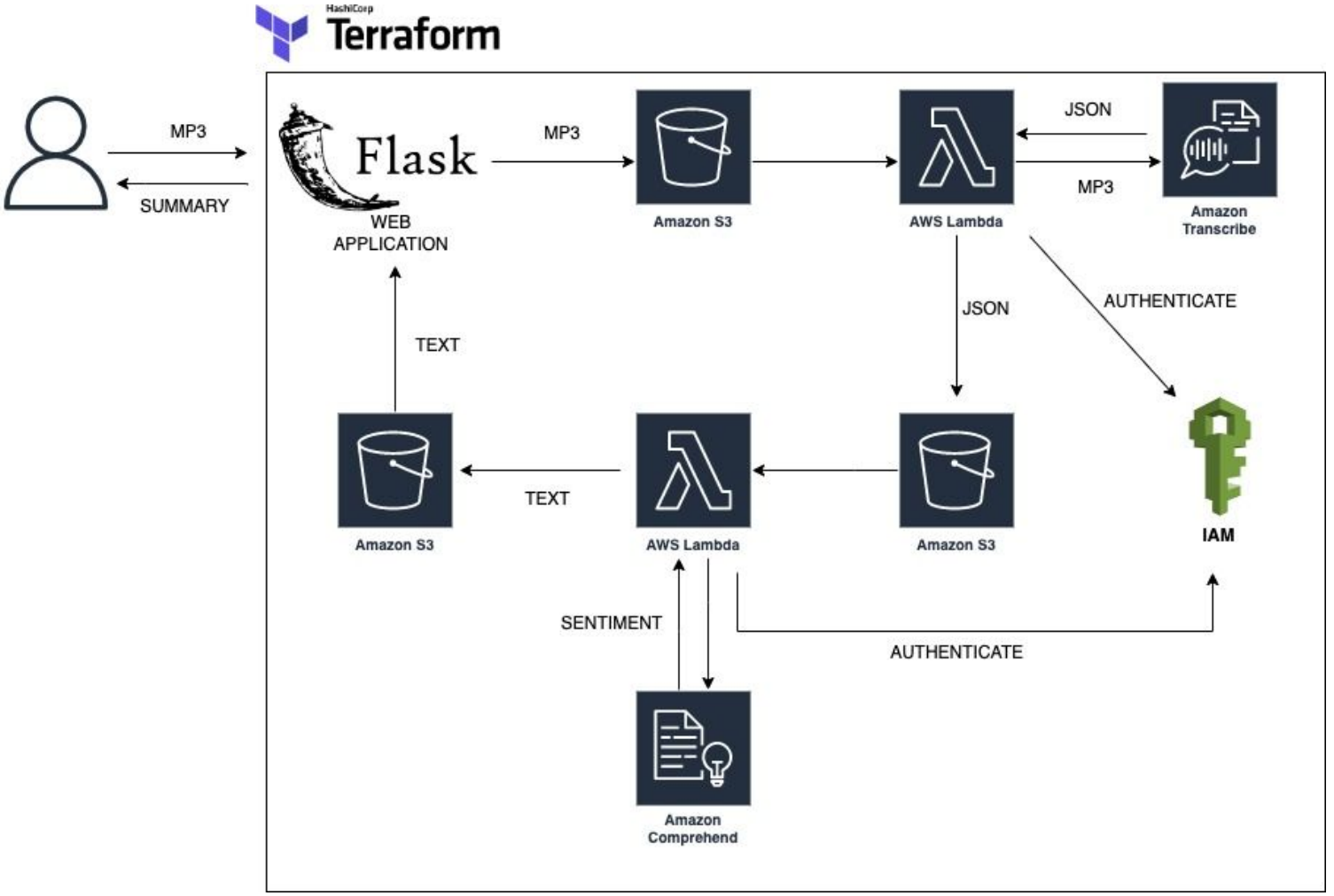


EC2

IAM

COMPREHEND

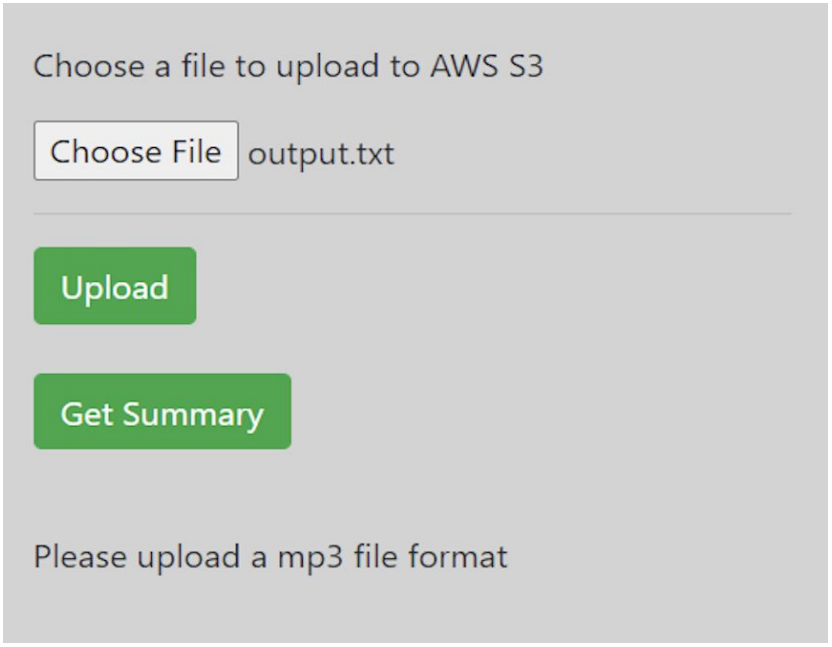
HIGH LEVEL ARCHITECTURE



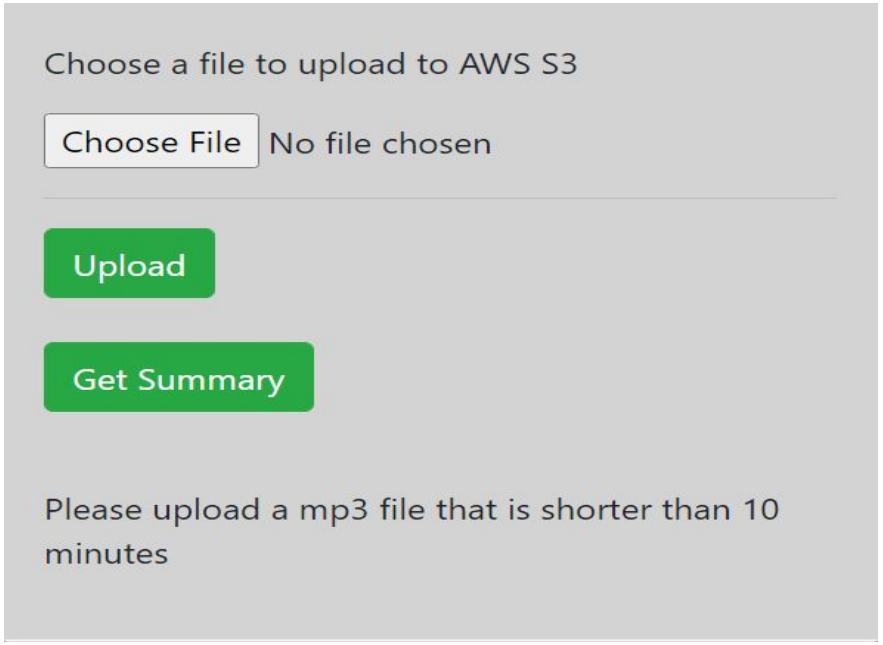
FRONTEND - FLASK APPLICATION

- Our Flask application runs within an EC2 instance
- Packages that we downloaded to create our shared AMI image - include Python3, pip3, Flask, gunicorn3, Boto3
- Our application uploads mp3 file to S3 and gets summarized text and sentiment from S3 bucket that stores the output file
- Handles routes such as upload podcast MP3 files and retrieve their summary/sentiment

FRONTEND - VALIDATION

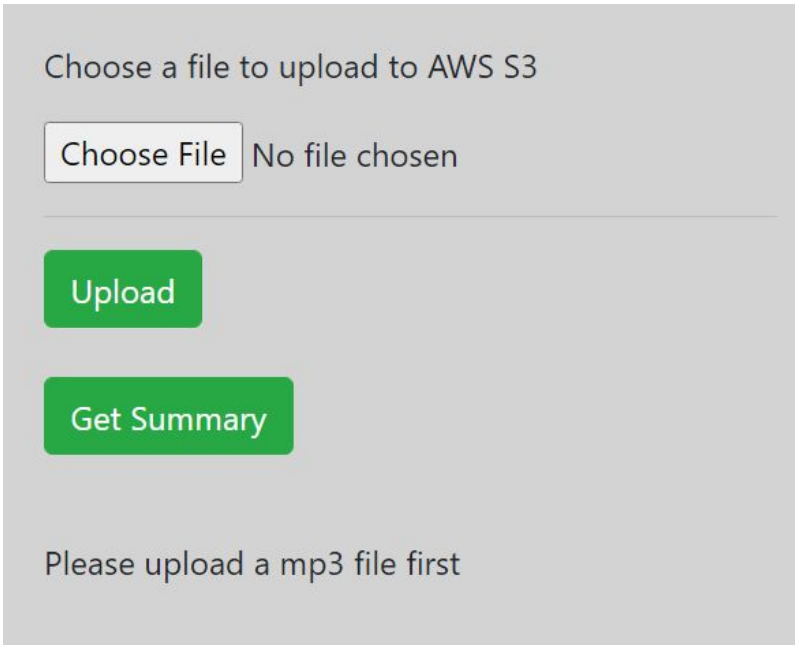


Incorrect file type

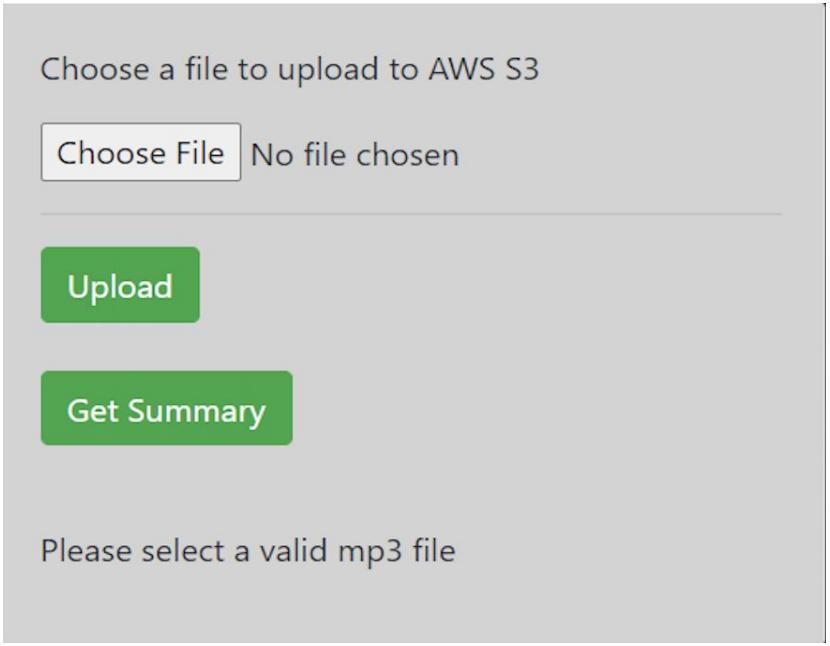


Uploaded MP3 longer than 10 mins

FRONTEND - VALIDATION

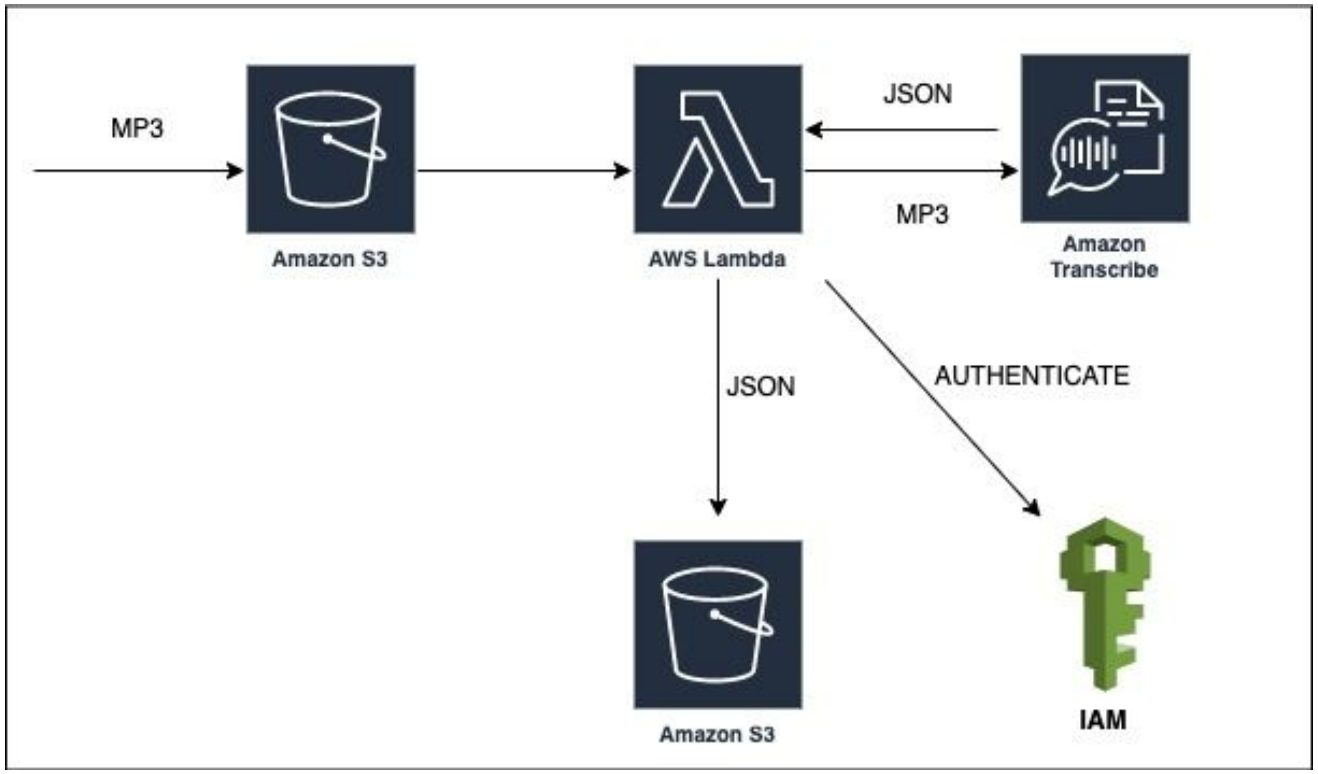


Clicking on Get Summary without uploading a file first



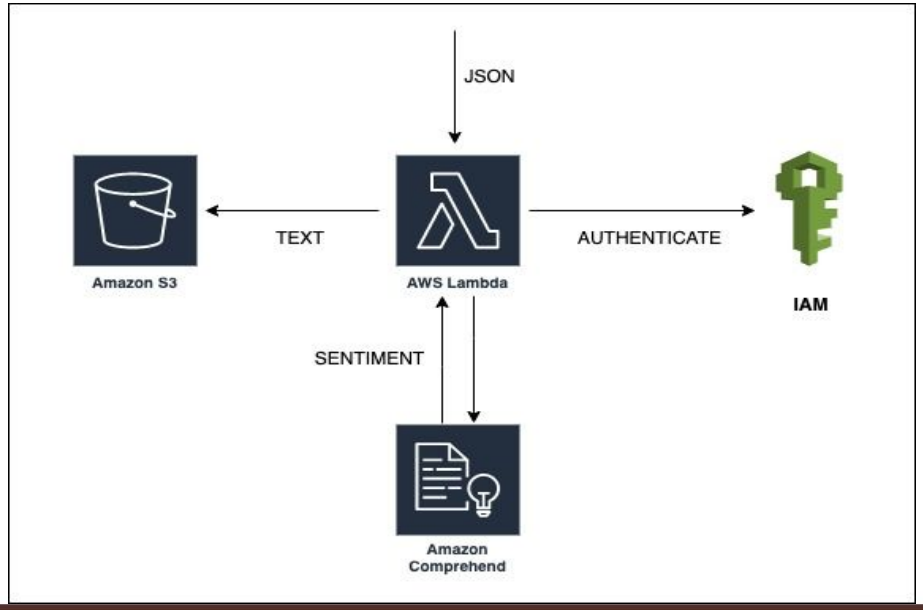
Clicking the Upload button without choosing a file

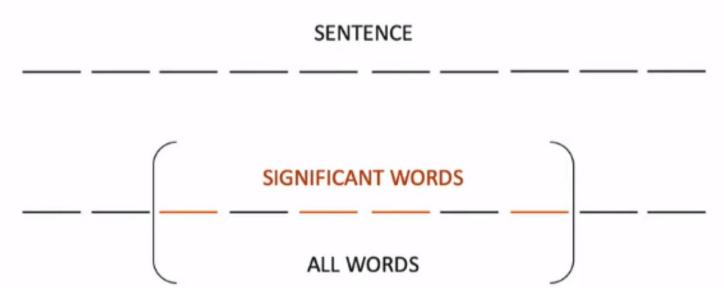
TRANSCRIBE LAMBDA



SUMMARY LAMBDA

- NLTK:
  - Tokenizing & stemming text
  - Get a list of stopwords to pass to Luhn Summarizer
- Luhn summarizer:
  - Get list of most significant words via word frequency
  - Sentence ranking
    - Score=(n^2) /m (n: number of significant words, m: max window span)
- AWS comprehend is called via boto3 to determine summary's sentiment





ESTIMATED MONTHLY COSTS

- **Assumptions:**
  - 10,000 users/month
  - 2 podcasts/user per day
  - 600,000 podcasts/month
  - Each podcast ~ 10mins
  - Each podcast ~1200-1500 words

Monthly cost

26,384.08 USD

Total 12 months cost

316,608.96 USD

Includes upfront cost

Service Name	Upfront cost	Monthly cost	Description
Amazon EC2	0.00 USD	64.54 USD	-
Amazon Simple Storage Service (S3)	0.00 USD	3.26 USD	input bucket
Amazon Comprehend	0.00 USD	900.00 USD	sentiment analysis
Amazon Simple Storage Service (S3)	0.00 USD	3.26 USD	transcribe-output
AWS Lambda	0.00 USD	0.00 USD	Transcribe
Amazon Transcribe	0.00 USD	25,410.00 USD	-
Amazon Simple Storage Service (S3)	0.00 USD	3.02 USD	summary bucket
AWS Lambda	0.00 USD	0.00 USD	Backend Model