



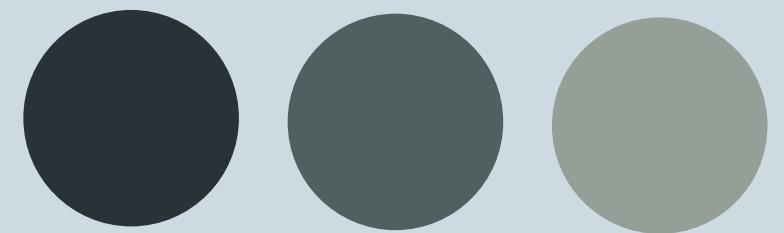
natural language
processing

Valiant Analysts

By Arnav Joshi and [redacted for privacy]

Contents

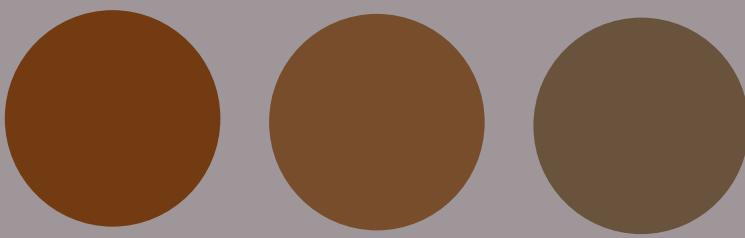
- Motivation
- Overview of the process
- Voice-to-text (whisper analysis)
- Question/answer analysis (BERT pre-trained model)
- Named entity recognition (SPACY pre-trained model)
- Sentiment analysis
- Main findings/results
- Future work



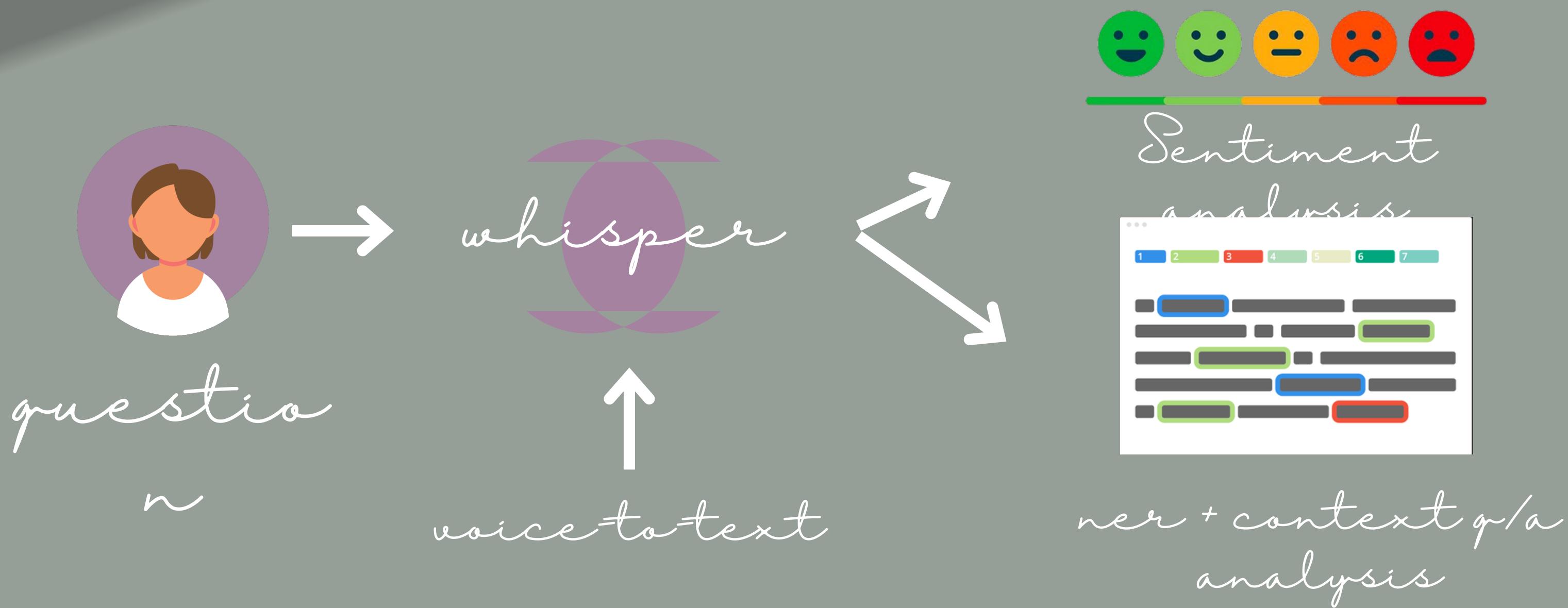
Have you asked a question in class?

Our model, helps understand the context for a particular question based on the information we currently have which can allow you to further ask questions with a strong foundation of the context.

analyse sentiment of how a student is feeling



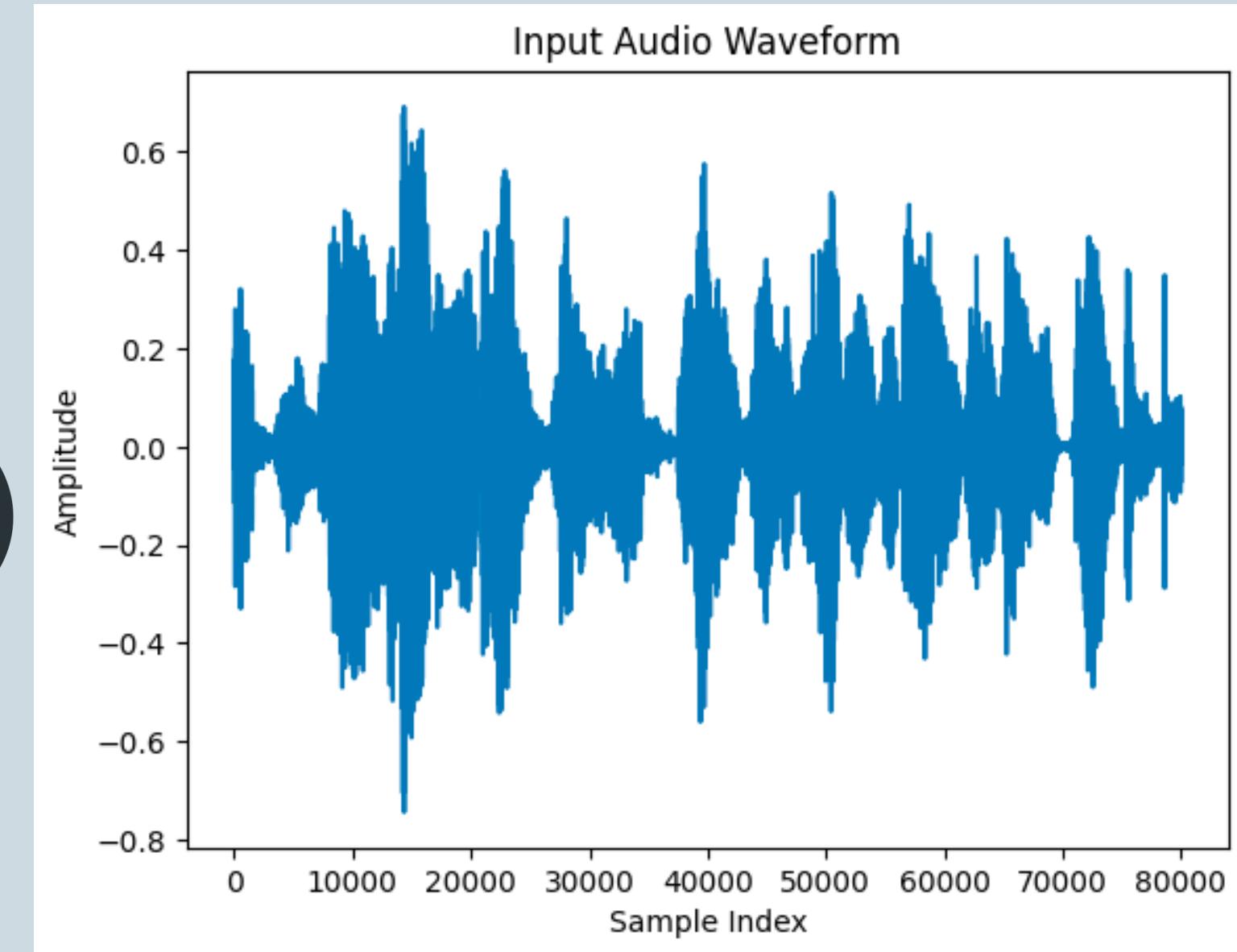
How it works



Voice-to-text

Predicted Transcription: AND RIT TO
DAY WAS THE REALLY INCREDIBLE

Actual Transcription: Alright, today was
a really incredible day



Q/A Analysis

Using BERT

Question: What is the capital of **France?**

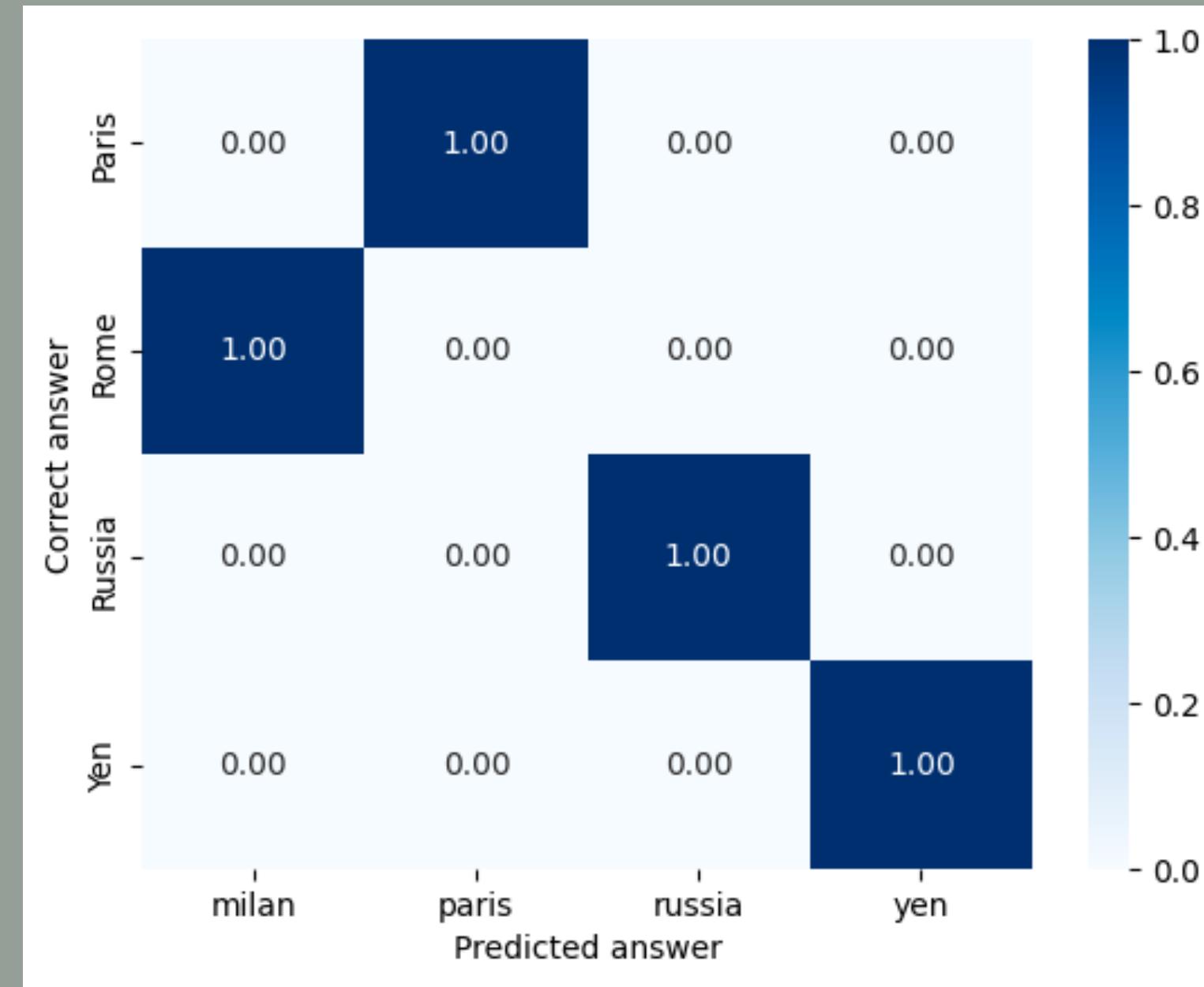
Context: **Paris** is the capital and most populous city of **France.**

Answer: **Paris**

Q.
A.

Q/A Analysis

Using BERT



Named Entity Recognition



— 99.35 - ORG —

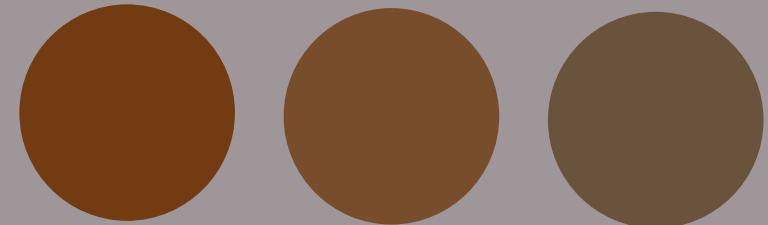
Hugging Face Inc. is a company based in **New York City**. Its

— 67.80 - ORG —

headquarters are in **DUMBO**, therefore very close to the

— 99.44 - LOC —

Manhattan Bridge which is visible from the window.

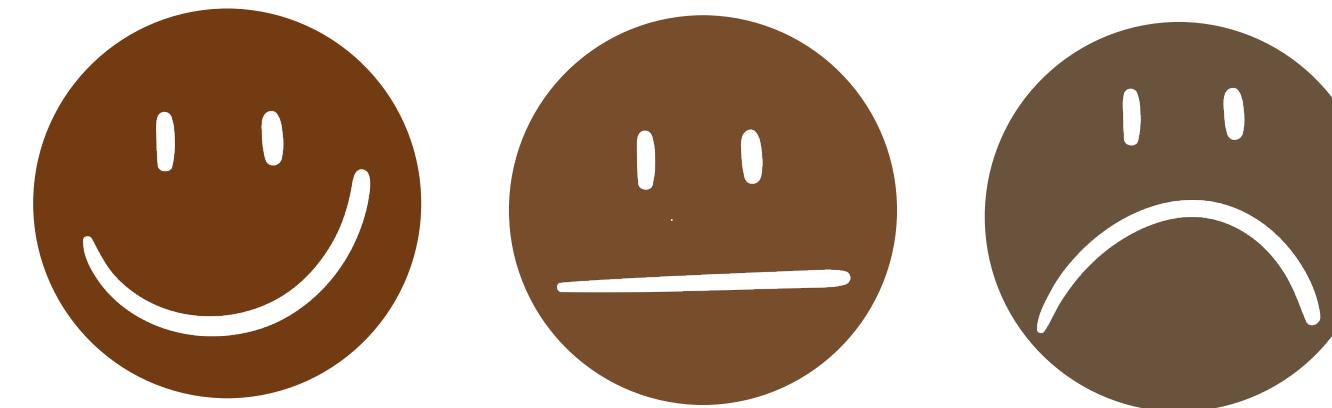


Sentiment Analysis

— positive: 99.98 — positive: 99.98 — positive: 99.97

I love natural language processing. This is so cool. The voice to text analysis
and recognition is extremely interesting to all of us. It is very confusing to me.

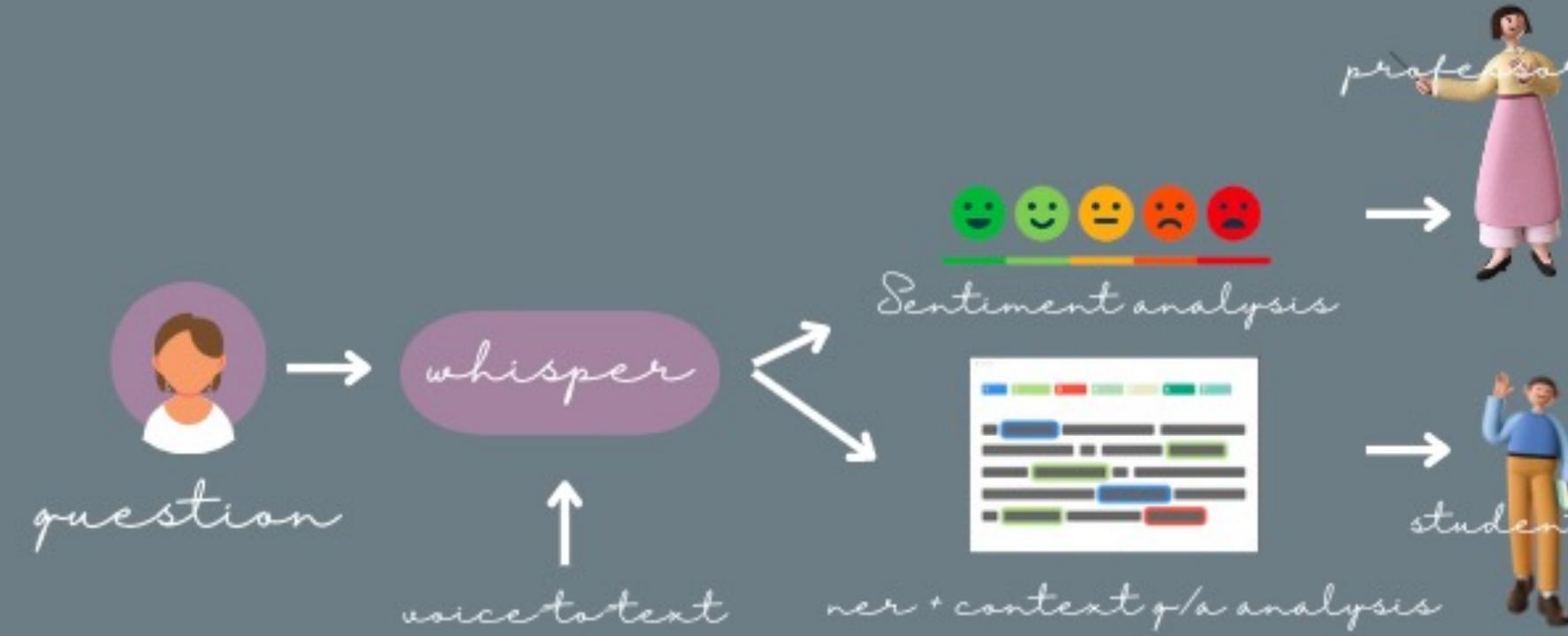
— positive: 74.81 —
I am learning it though.



Results/Main findings

We successfully created a pipeline that takes in the question as voice input and then analyses based on sentiment analysis and q/a with NER for either professor or student.

The models that we wrote ourselves got F1 scores of 87% and 73% (for NER and sentiment analysis respectively) and our pre-trained models got 91% and 91% (on glue).



Future work

- Using the data for the entire class and not just the questions and being able to figure out which parts of the recording were questions.
- Detect speaker changes.
- Analyse voice effects and incorporate it into the sentiment analysis.



"Let's take an idiom, such as "feeling under the weather", which is commonly used when someone is ill, to aid us in the explanation of RNNs. In order for the idiom to make sense, it needs to be expressed in that specific order."



"How do we take idioms into account from different cultures?"



"As a result, recurrent networks need to account for the position of each word in the idiom and they use that information to predict the next word in the sequence." [1]

Dem o!

Valiant Analysis

Please save one recording: audio.webm

Record Stop

Upload audio.webm here

Choose File No file chosen

Analyze

Waveform

Input Audio Waveform

Amplitude

Sample Index

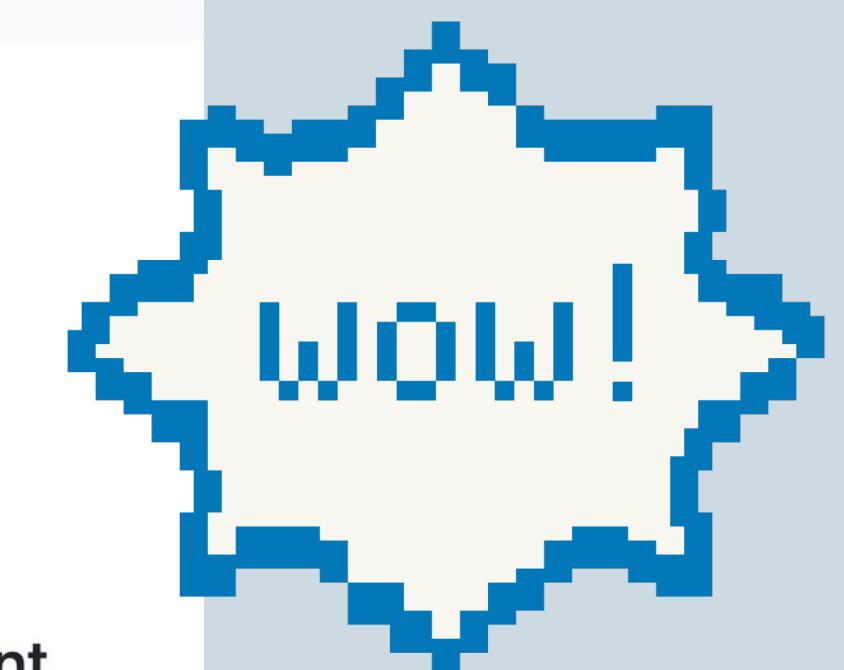
NER

I HATE CALIFORNIA GPE

Sentiment

NEGATIVE

0.9993259906768799



Valiant analysts

Thanks for listening!
ANY QUESTIONS?

