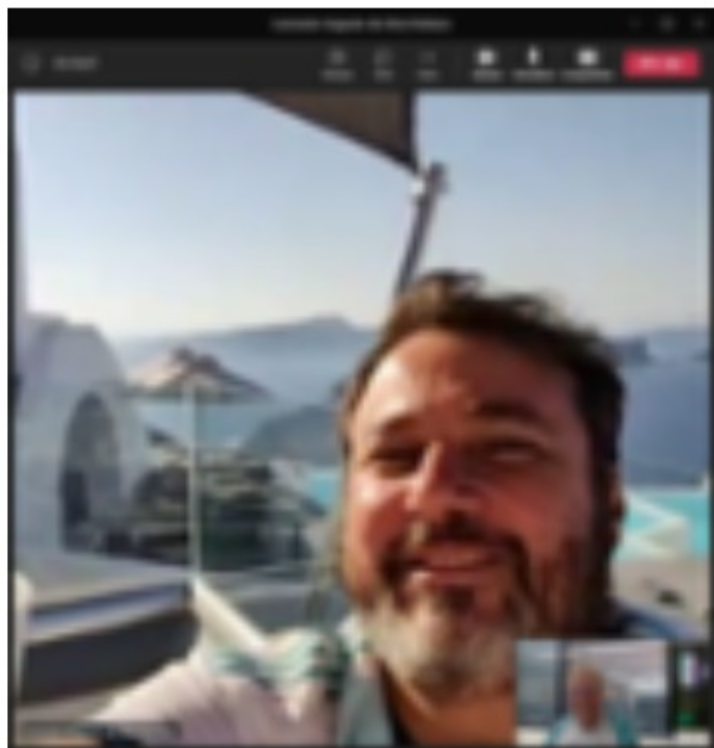


# Extractive Q&A

## Performance Comparison between Learning Methods Context Learning and Fine-Tuning

Leonardo Augusto da Silva Pacheco  
Marcus Vinícius Borela de Castro

## Leonardo&Guaíra: 2.0



(Arquipélago de Santorini – Grécia)

Extractive Q&A - Performance Comparison between  
Learning Methods:  
Context Learning and Fine-Tuning

Descrição

Dataset

Modelos

Métricas

Resultados Desejados

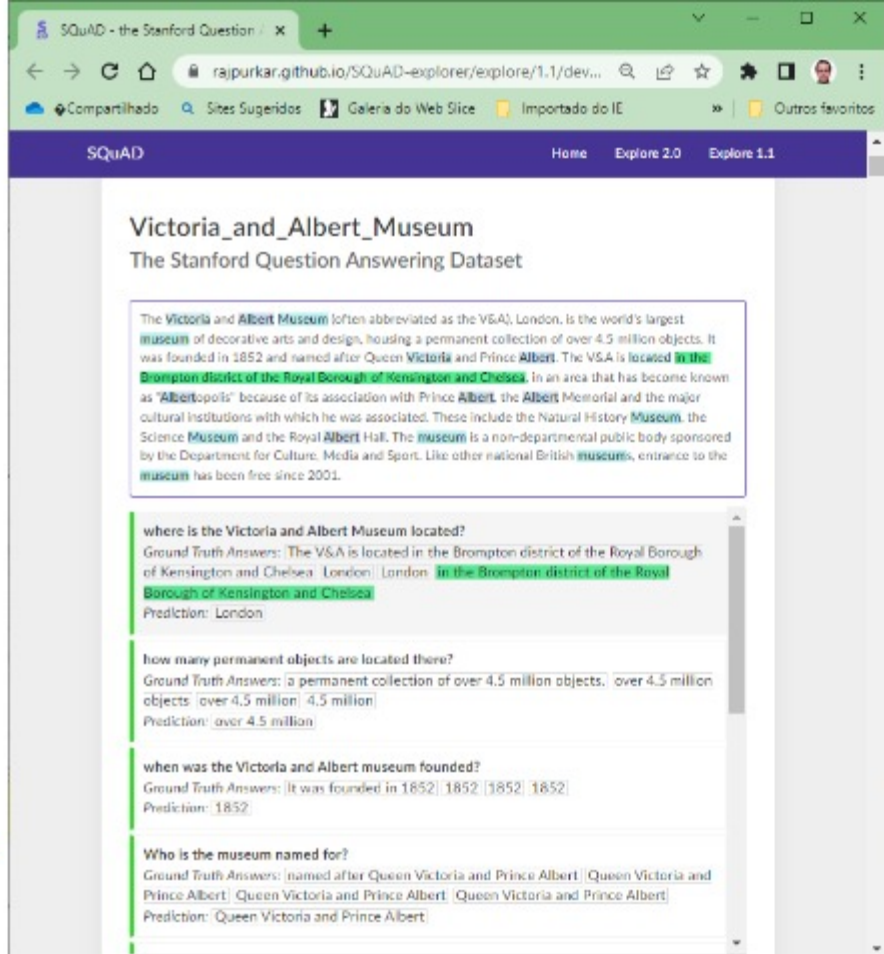
Cronograma

Github

Referências

# Descrição

## O que é Extractive Q&A?



The screenshot shows a web browser displaying the SQuAD (Stanford Question Answering Dataset) interface. The browser's address bar shows the URL `rajpurkar.github.io/SQuAD-explorer/explore/1.1/dev...`. The page title is "SQuAD - the Stanford Question Answering Dataset". The main content area displays a passage about the Victoria and Albert Museum, followed by several questions and their corresponding ground truth and predicted answers.

**Victoria\_and\_Albert\_Museum**  
The Stanford Question Answering Dataset

The **Victoria and Albert Museum** (often abbreviated as the V&A), London, is the world's largest **museum** of decorative arts and design, housing a permanent collection of over 4.5 million objects. It was founded in 1852 and named after Queen **Victoria** and Prince **Albert**. The V&A is located **in the Brompton district of the Royal Borough of Kensington and Chelsea**. In an area that has become known as "**Albertopolis**" because of its association with Prince **Albert**, the **Albert Memorial** and the major cultural institutions with which he was associated. These include the Natural History **Museum**, the Science **Museum** and the Royal **Albert Hall**. The **museum** is a non-departmental public body sponsored by the Department for Culture, Media and Sport. Like other national British **museums**, entrance to the **museum** has been free since 2001.

**where is the Victoria and Albert Museum located?**  
Ground Truth Answers: **The V&A is located in the Brompton district of the Royal Borough of Kensington and Chelsea** | **London** | **London** | **in the Brompton district of the Royal Borough of Kensington and Chelsea**  
Prediction: **London**

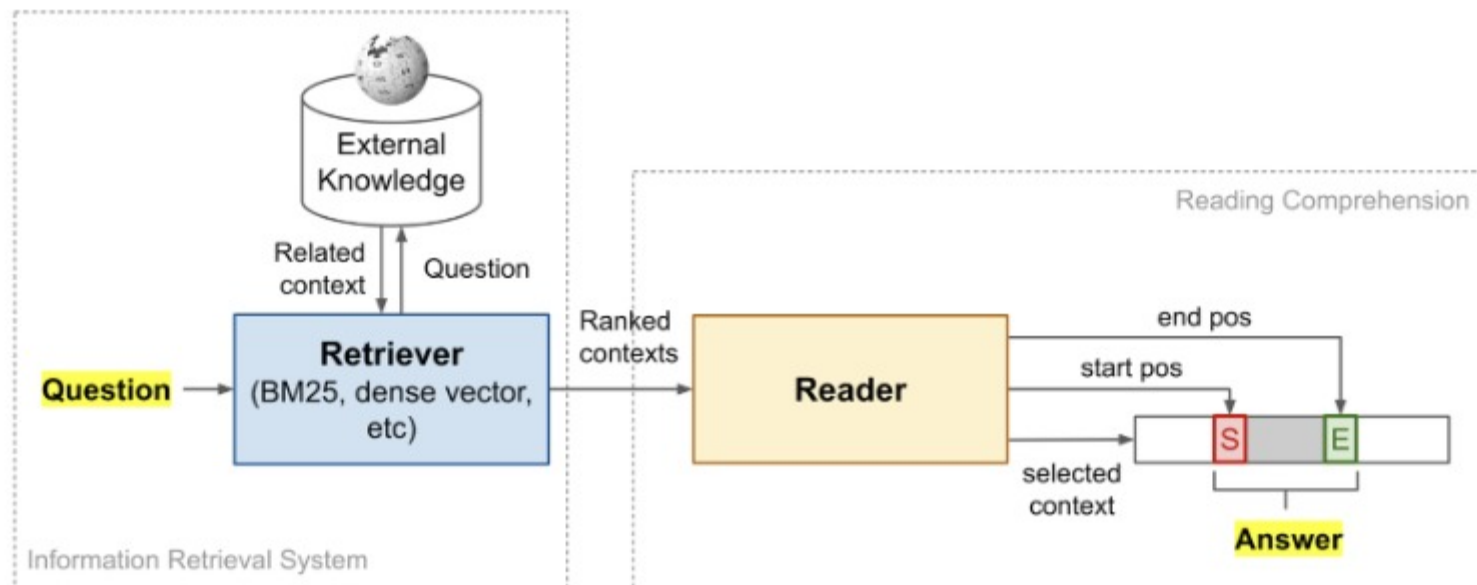
**how many permanent objects are located there?**  
Ground Truth Answers: **a permanent collection of over 4.5 million objects** | **over 4.5 million objects** | **over 4.5 million** | **4.5 million**  
Prediction: **over 4.5 million**

**when was the Victoria and Albert museum founded?**  
Ground Truth Answers: **It was founded in 1852** | **1852** | **1852** | **1852**  
Prediction: **1852**

**Who is the museum named for?**  
Ground Truth Answers: **named after Queen Victoria and Prince Albert** | **Queen Victoria and Prince Albert** | **Queen Victoria and Prince Albert** | **Queen Victoria and Prince Albert**  
Prediction: **Queen Victoria and Prince Albert**

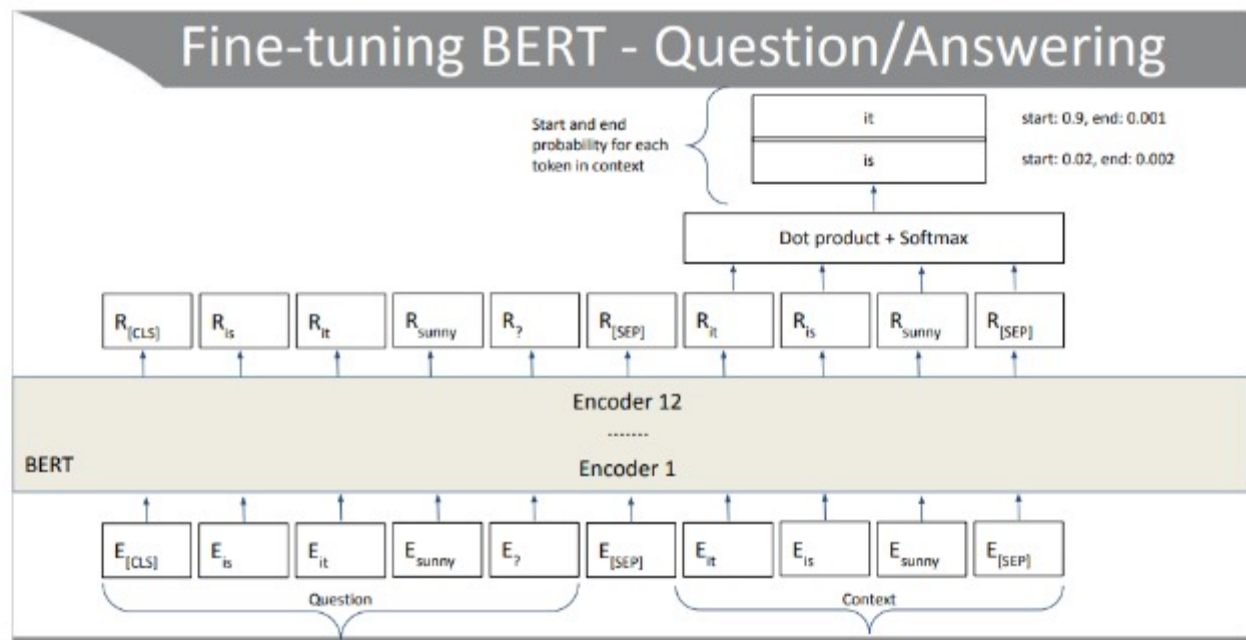
Exemplo: [Stanford Question Answering Dataset SQuAD](#)

# IR Extractive Q&A (over Information Retrieval)



Fonte: [How to Build an Open-Domain Question Answering System?](#)

# Extractive Q&A in Fine Tuning



# Q&A in Context Learning

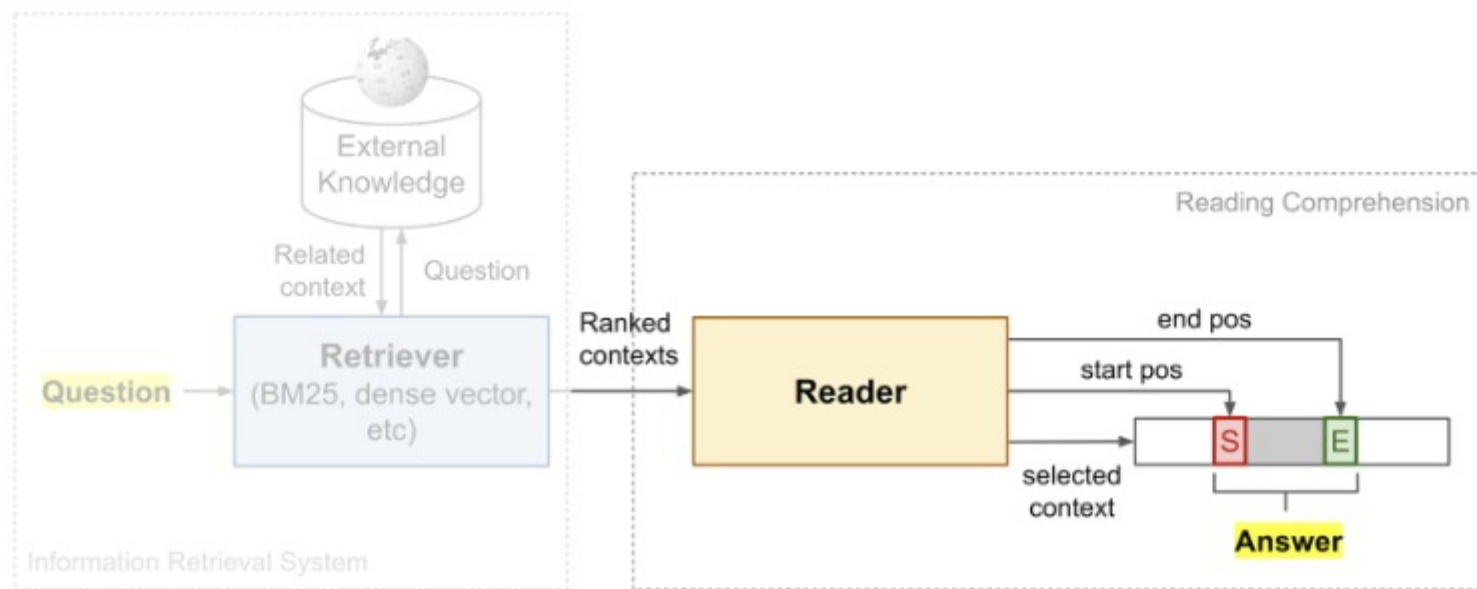
Contexto

Few Shot  
k=3

The screenshot shows the OpenAI Playground interface. At the top, the browser address bar shows the URL `beta.openai.com/playground/p/default-gpt-3?mode=e...`. The page has a navigation bar with links for Overview, Documentation, Examples, and Playground. The Playground section is active, showing a text input area with a dropdown menu set to 'GPT-3'. Below the input area, there are two columns of text. The left column contains a context paragraph and three question-answer pairs. The right column contains the same context paragraph and three question-answer pairs. The context paragraph is: "The Victoria and Albert Museum (often abbreviated as the V&A), London, is the world's largest museum of decorative arts and design, housing a permanent collection of over 4.5 million objects. It was founded in 1852 and named after Queen Victoria and Prince Albert. The V&A is located in the Brompton district of the Royal Borough of Kensington and Chelsea, in an area that has become known as "Albertopolis" because of its association with Prince Albert, the Albert Memorial and the major cultural institutions with which he was associated." The question-answer pairs are: "Q: How many permanent objects are located there? A: over 4.5 million", "Q: When was the Victoria and Albert museum founded? A: 1852", and "Q: Which party did he belong to? A: He belonged to the Republican Party." The right column contains the same question-answer pairs. The right column also has a 'Model' dropdown set to 'text-davinci-edit-001', a 'Temperature' slider set to 0, and a 'Top P' slider set to 1. At the bottom, there is an 'Instructions' section with the text 'Answer the question using context fragment' and a 'Submit' button. A notification banner at the bottom right says 'Editing is free while in beta. We'd love your feedback.'

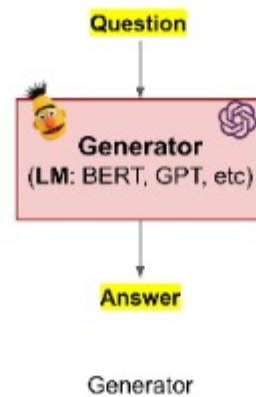
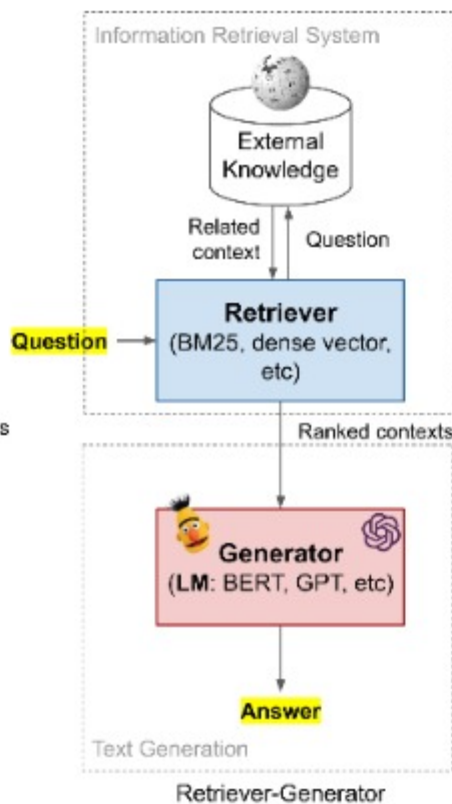
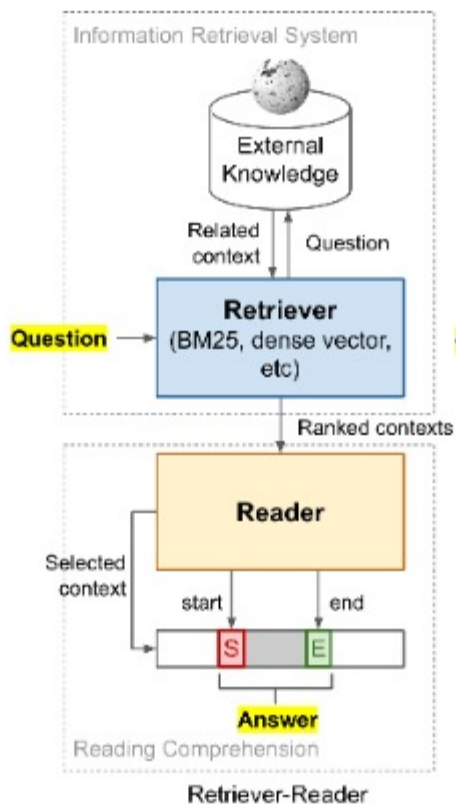
Exemplo: [GPT-3](#) x SQuAD

## Igualdade de condições: sem retrieval (sem limitador de performance)





# Não é contexto: abstractive Q&A



Exemplo

Inglês SQuAD 1.0

Português (SQuAD v1\_pt)

Dev (base de teste)

Stanford Question Answering Dataset

Dataset

[pierregruillou/bert-base-cased-squad-v1.1-portuguese](#)

[pierregruillou/bert-large-cased-squad-v1.1-portuguese](#)

Português (baseados no BERTimbau)

Fine Tuning

Modelos

t5

Inglês

bert

[GPT-neo\\_1.3B](#)

[GPT-j\\_6B](#)

[GPT-NEOx-20b](#)

Um desses: <https://huggingface.co/EleutherAI>

Context Learning

# Métricas

A binary metric that gives  $EM = 1$  if the characters in the predicted and ground truth answers match exactly, and  $EM = 0$  otherwise. If no answer is expected, the model gets  $EM = 0$  if it predicts any text at all.

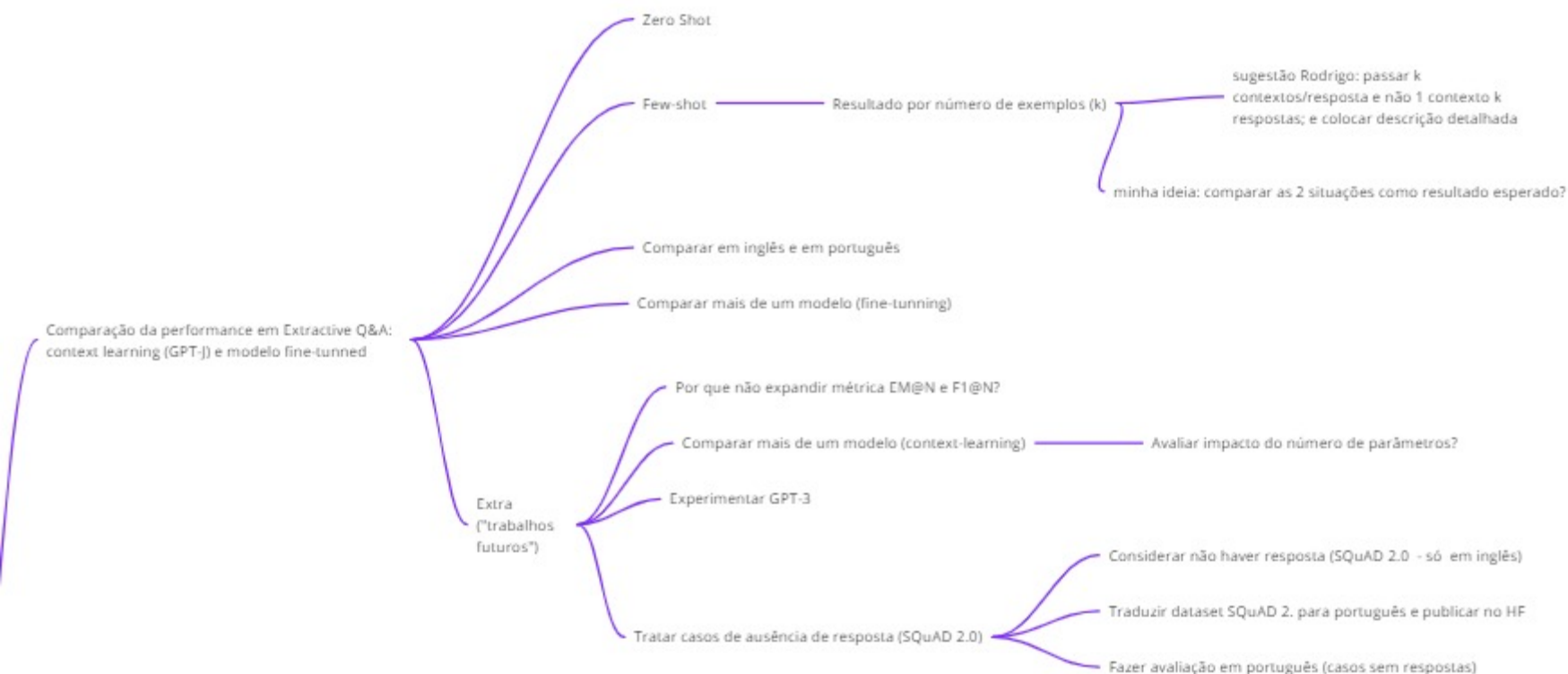
Exact Match (EM)

Measures the harmonic mean of the precision and recall. (considerar palavras coincidentes e diferentes)

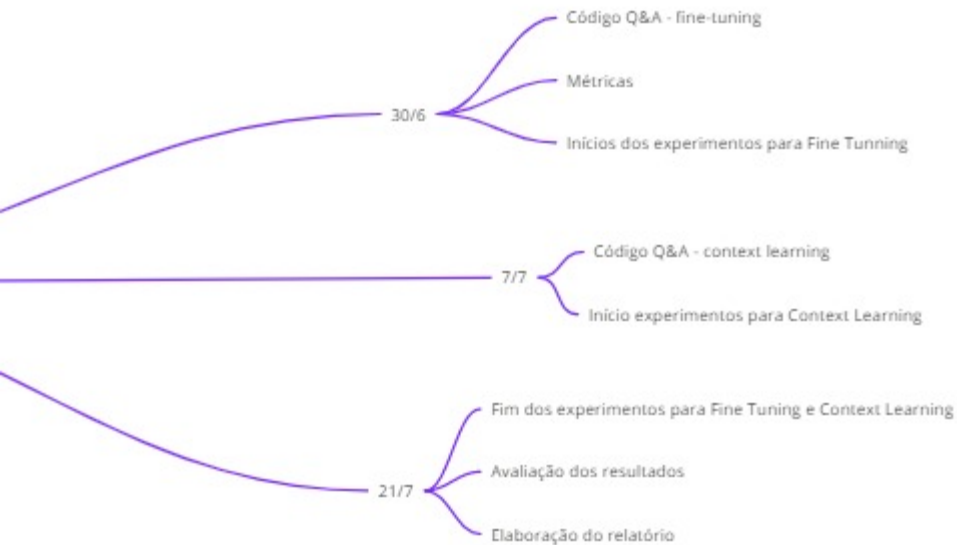
F1

Definição

# Resultados esperados



# Cronograma



# Referências

## Fine Tuning

[Natural Language Processing with Transformers - Chapter 7 - Question Answering](#)

[Hands on Transfer Learning with BERT](#)

[Cloudera Fast Forward: CFF builds a state-of-the-art QA application with the latest NLP techniques](#)

## Context Learning

[Exemplo de execução no colab do GPT-J](#)

[Site OpenAI - sobre uso da API do gpt3](#)

[Livro Machine Translation with the Transformer - The Rise of Suprahuman Transformers with GPT-3 Engines](#)

[Livro: Exploring GPT-3](#)

[cs224u: Few-shot OpenQA with ColBERT retrieval](#)

[Video](#)

[Caderno](#)

## Github do Projeto

