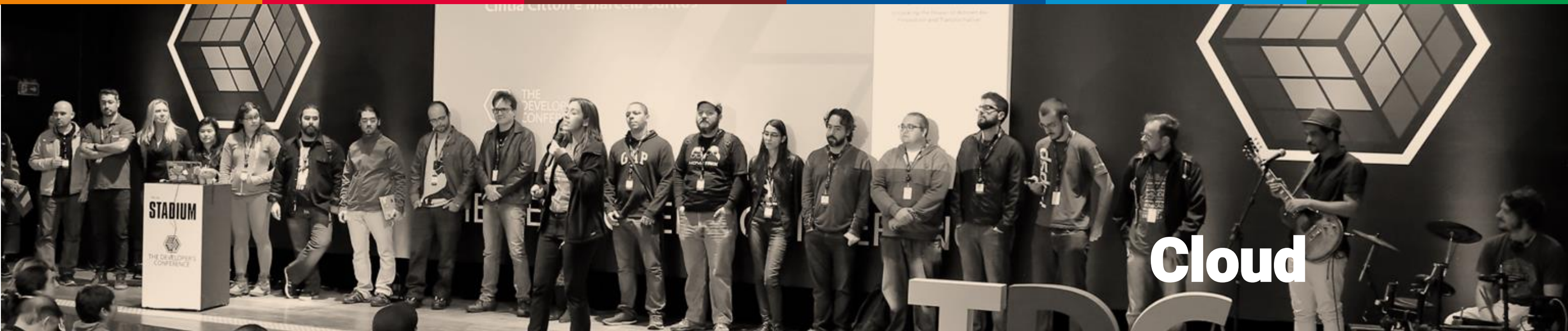




Leo Matayoshi
Especialista em Cloud



TRANSFORMATION
COMPETÊNCIAS PARA EVOLUÇÃO
DAS PESSOAS E NEGÓCIOS

**Criando uma aplicação web com recursos de
Inteligência Artificial de forma gratuita na nuvem**



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AGENDA

- ▶ **Apresentação**
Introdução
- ▶ **Visão geral**
Desenho da solução
- ▶ **Demonstração**
Exemplo prático
- ▶ **Considerações finais**
Dúvidas e sugestões



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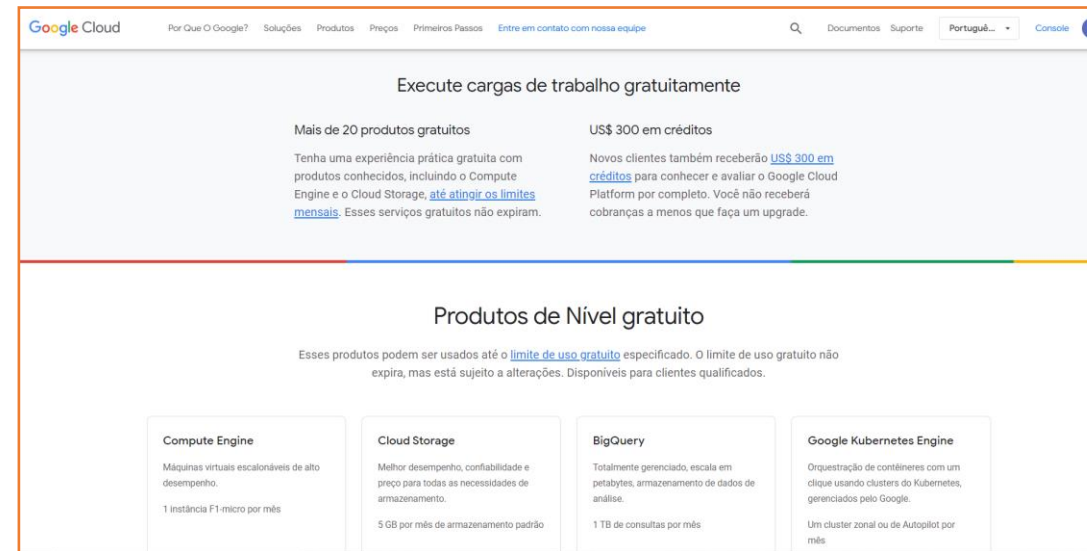
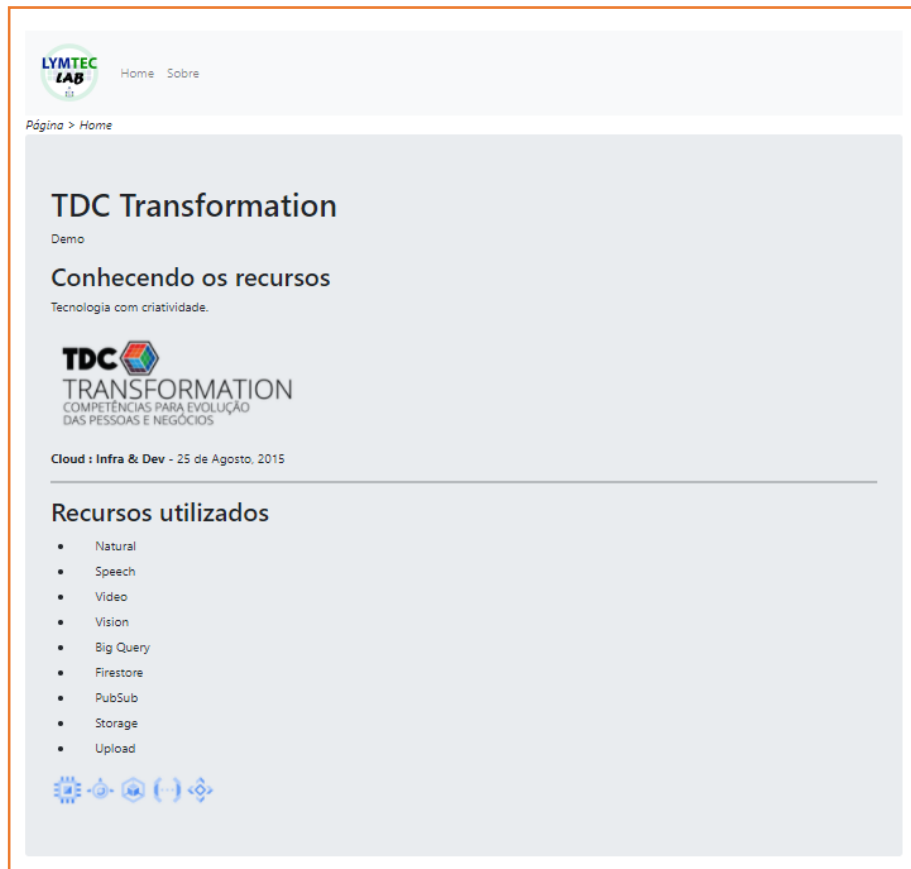
01

Apresentação

Motivador: Quero fazer um MVP

“Preciso subir um MVP na cloud!”

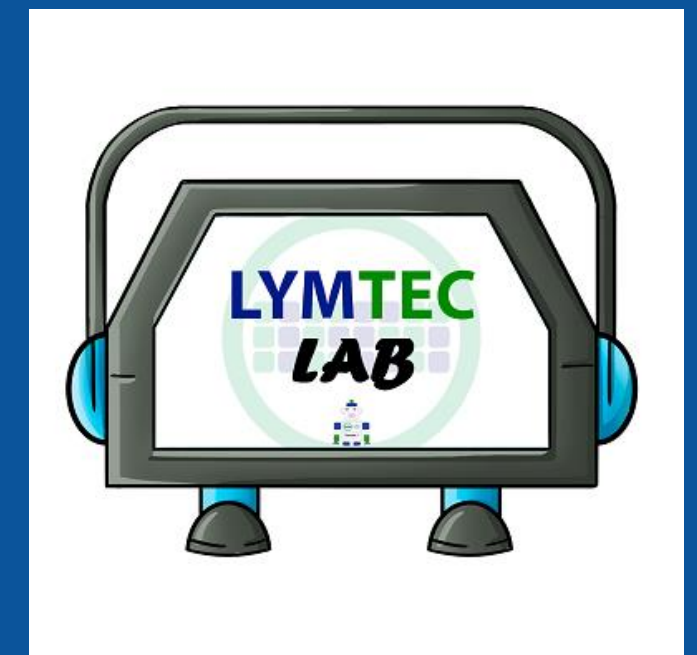
Use os recursos gratuitos da nuvem !!!



<https://cloud.google.com/free>



Tecnologia com criatividade



“Crie um aplicação funcional com os recursos gratuitos dos Provedores”

Tenha um site pronto em poucos dias

Motivador: Quero fazer um MVP

“Como fazer?”

Use os recursos gratuitos da nuvem !!!

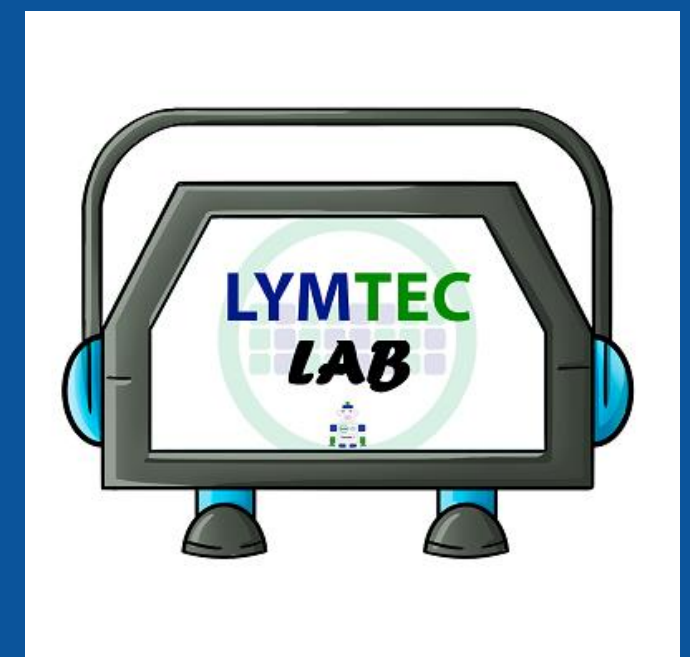


Tire sua ideia do papel



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Tecnologia com criatividade



02

Visão Geral

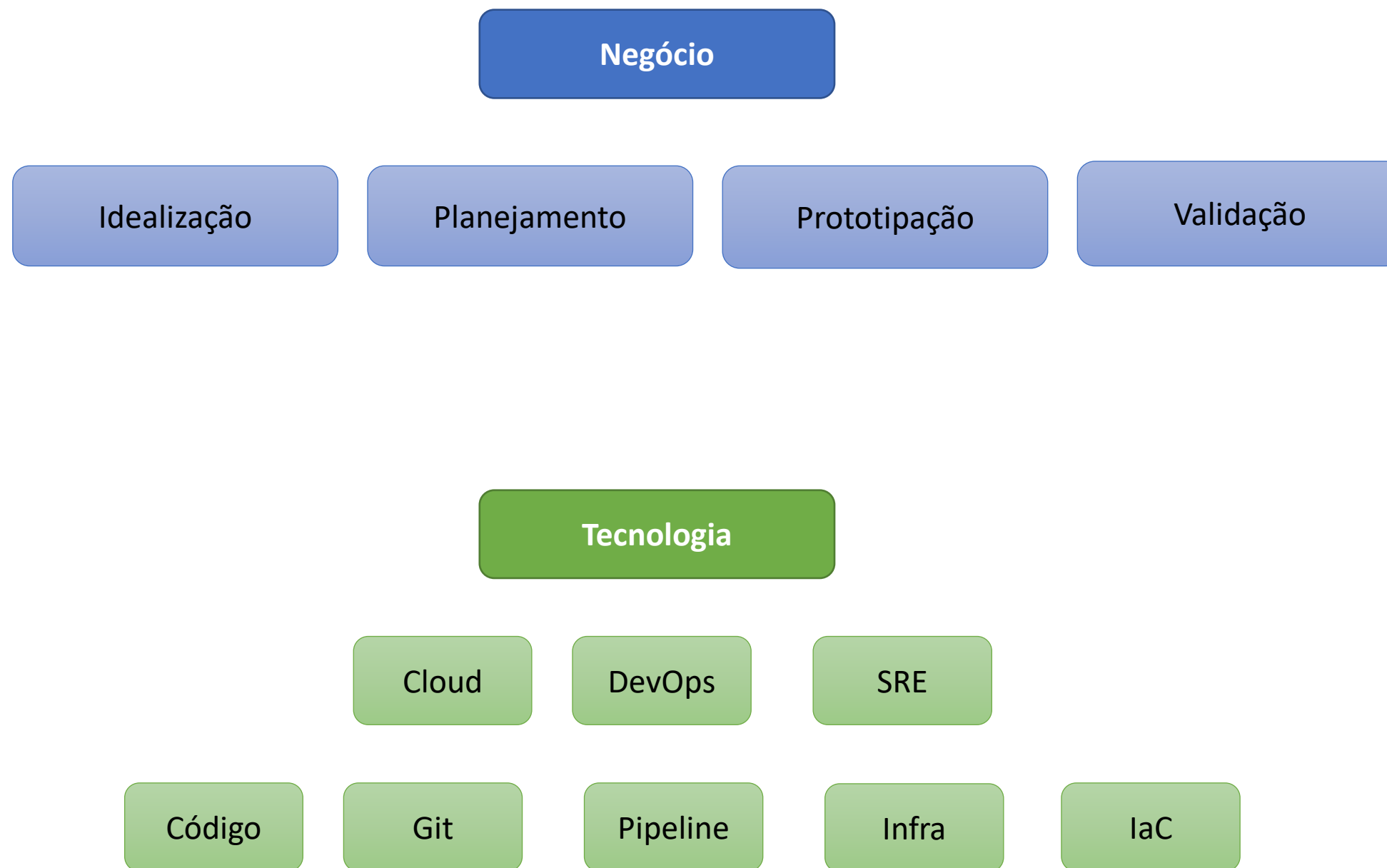
O objetivo desta apresentação é criar uma aplicação funcional de forma gratuita na nuvem. Utilizamos diversos recursos para criar uma aplicação bem interessante usando reconhecimento de imagens, conversão de áudio para texto e armazenamento de dados e arquivos. Após apresentar os conceitos, mostramos um exemplo prático legal.

Utilizamos a plataforma GCP e exploramos diversas funcionalidades com Inteligência Artificial, armazenamento de dados, fila de mensagens. Tudo isso hospedado em um servidor virtual rodando na nuvem.



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• Visão Geral - Tecnologia

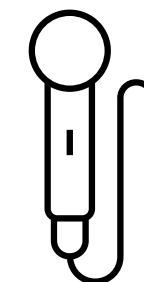
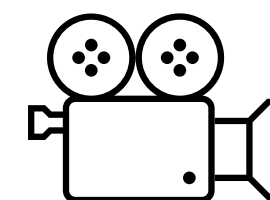
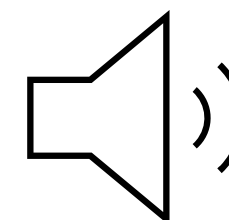
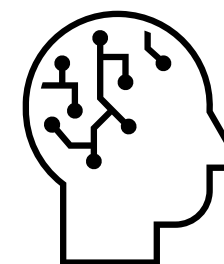
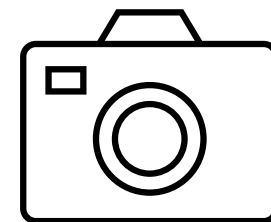




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Como utilizar TI para seu Business?

Vou apresentar a seguir 3 pontos importantes





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O que fazer?



Cloud Natural Language API



Video Intelligence API



Cloud Vision



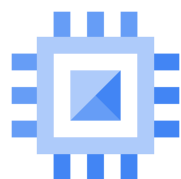
Speech-to-Text

- Inteligência Artificial



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Onde rodar?



GCE



Artifact



App Engine



Cloud Build



Functions



Container

- Processamento



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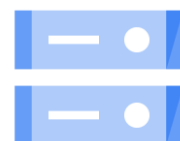
Onde gravar?



Big Query



Pub Sub



Storage



Firestore



- Armazenamento de dados



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• Benefícios

1) Dados na nuvem

Os componentes são acoplados e fáceis de integrar

2) Desenvolvimento

Podem ser usadas diversas linguagens de programação

3) Agilidade e escalabilidade

Criação do ambiente de forma rápida

4) Uso racional

Dispensa a compra de um hardware de alto custo

5) Flexibilidade

Dados e resultados gerados na plataforma

6) Inovação

Transformação digital

*** A nuvem disponibiliza várias facilidades, mas é recomendado usar com muito cuidado. Faça uso racional dos recursos.**



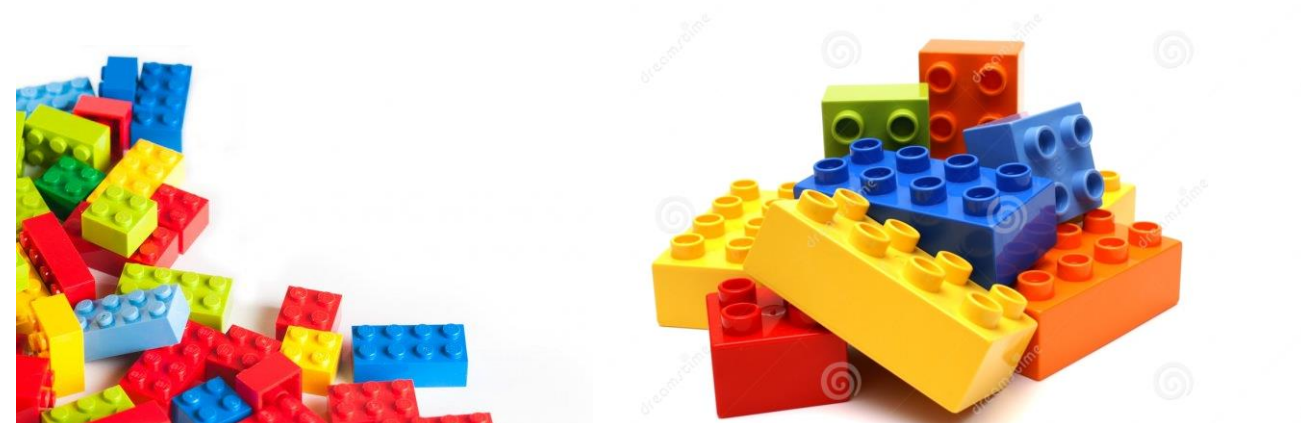
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O que pode ser feito !!!

Vou apresentar a seguir um sistema que usa IA para identificar os seguintes itens

- Um texto positivo ou negativo
- Analisar um vídeo e ver o seu conteúdo
- Identificar a imagem
- Transcrever um áudio para texto

Pra que isso serve ?



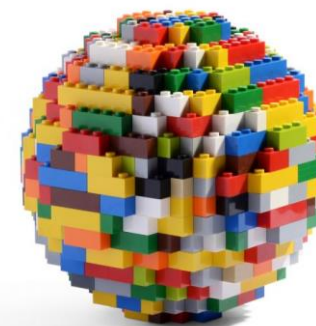


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Minhas ideias

- Um identificador de feedback para call center
- Validador de conteúdo
- Sistema de entrada
- Usabilidade na web

Você decide ...





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Como implantar o código

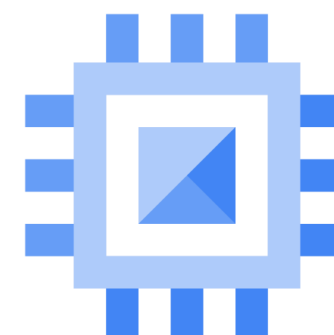
3 possíveis formas de implantar o mesmo código



Cloud Shell

Developer

* localhost



Instance

Máquina virtual

* IaaS



Image

Docker

* PaaS



Google Cloud



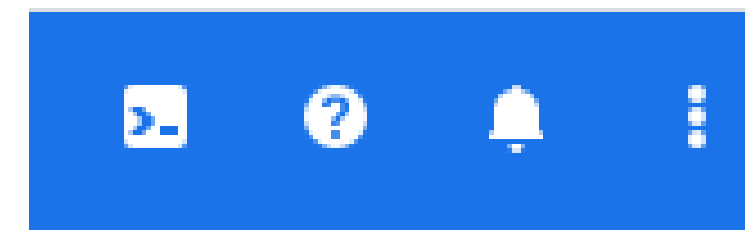
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Passo a passo do Projeto:

Rodando no Portal

- 1) Acessar o Cloud Shell
- 2) Cloud Source Repositories
- 3) Habilitar as API
- 4) Criar collection no Firestore
- 5) Criar o service Account e dar as permissões
- 6) Gerar o Json e baixar o arquivo
- 7) Clonar o Repositório e criar o código em NODEJS
- 8) Criar as funções
- 10) Rodar o código no Cloud Shell
- 11) Testar a aplicação





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Passo a passo do Projeto:

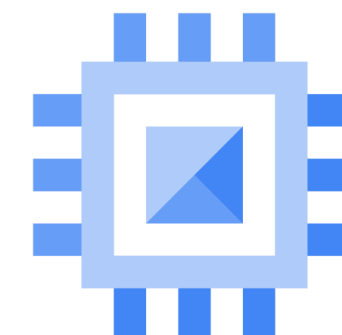
Rodando na VM

11) Criar um Instância no GCP

12) Logar no servidor

13) Clonar o Repositório

14) Rodar a aplicação



Rodando no Container

15) Gerar a imagem com Cloud Build

16) Rodar a imagem com Cloud Run

17) Rodar e testar a aplicação



Habilitando APIs



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Cloud Natural Language API

Google Enterprise API

Provides natural language understanding technologies, such as sentiment analysis, entity...

[MANAGE](#) [TRY THIS API](#) [API Enabled](#)

OVERVIEWDOCUMENTATION

Overview

Provides natural language understanding technologies, such as sentiment analysis, entity recognition, entity sentiment analysis, and other text annotations, to developers.

Additional details

Type: [SaaS & APIs](#)
Last updated: 7/22/21
Category: [Machine learning](#), [Google Enterprise APIs](#)
Service name: language.googleapis.com

Tutorials and documentation

[Learn more](#)

Terms of Service

By using this product you agree to the terms and conditions of the following license: [Google Cloud Platform](#)

Cloud Speech-to-Text API

Google Enterprise API

Speech recognition

[ENABLE](#) [TRY THIS API](#)

OVERVIEWPRICINGDOCUMENTATIONSUPPORT

Overview

Converts audio to text by applying powerful neural network models.

Additional details

Type: [SaaS & APIs](#)
Last updated: 7/22/21
Category: [Machine learning](#), [Google Enterprise APIs](#)
Service name: speech.googleapis.com

Pricing

	FREE	TIER 1
Cloud Speech-to-Text Audio Length Standard	BRL 0.00 /minute	BRL 0.127538128 /minute
Cloud Speech-to-Text Audio Length Standard (Logged)		
Cloud Speech-to-Text Audio Length Premium (Logged)	0 - 60 minute/month	60+ minute/month
Cloud Speech-to-Text Audio Length Premium (Logged)		

Cloud Video Intelligence API

Google Enterprise API

Detects objects, explicit content, and scene changes in videos. It also specifies the region for...

[ENABLE](#) [TRY THIS API](#)

OVERVIEWPRICINGDOCUMENTATION

Overview

Detects objects, explicit content, and scene changes in videos. It also specifies the region for annotation and transcribes speech to text. Supports both asynchronous API and streaming API.

Additional details

Type: [SaaS & APIs](#)
Last updated: 7/22/21
Category: [Machine learning](#), [Google Enterprise APIs](#)
Service name: videointelligence.googleapis.com

Pricing

	FREE	TIER 1
Celebrity Recognition	BRL 0.00 /minute	BRL 0.531408869 /minute
Label Detection	0 - 1,001K minute/month	1,001K+ minute/month
Logo Recognition		
Object Tracking		

Cloud Vision API

Google Enterprise API

Image Content Analysis

[ENABLE](#) [TRY THIS API](#)

OVERVIEWDOCUMENTATIONSUPPORT

Overview

Integrates Google Vision features, including image labeling, face, logo, and landmark detection, optical character recognition (OCR), and detection of explicit content, into applications.

Additional details

Type: [SaaS & APIs](#)
Last updated: 7/22/21
Category: [Machine learning](#), [Big data](#), [Google Enterprise APIs](#)
Service name: vision.googleapis.com

Tutorials and documentation

[Learn more](#)

Support

[Learn more](#)

Terms of Service

Cloud Natural Language API
Cloud Speech-to-Text API
Cloud Video Intelligence API
Cloud Vision API

IAM



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Edit permissions

Member	Project
prj-dumpi-lab@appspot.gserviceaccount.com	prj-dumpi-lab

Role

Editor

Condition

Add condition

Edit access to all resources.

Role

BigQuery Job User

Condition

Add condition

Access to run jobs

Role

Cloud Datastore User

Condition

Add condition

Provides read/write access to data in a Cloud Datastore database. Intended for application developers and service accounts.

+ ADD ANOTHER ROLE

SAVE

SIMULATE

?

CANCEL

Big Query



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Create dataset

Dataset ID *

Letters, numbers, and underscores allowed

Data location
Default

Default table expiration

☐ Enable table expiration

Default maximum table age Days

Encryption

- ☒ Google-managed encryption key
No configuration required
- ☐ Customer-managed encryption key (CMEK)
Manage via Google Cloud Key Management Service

CREATE DATASET

CANCEL

Edit Schema

Current schema

ADD POLICY TAG

Filter Enter property name or value

☐ Field name	Type	Mode	Policy Tags	Description
No results to display				

New fields

☐ Edit as text

Field name	Type	Mode	Description
device_id	STRING	NULLAB...	
data	STRING	NULLAB...	
date	TIMEST...	NULLAB...	
+ ADD FIELD			

Firestore



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Google Cloud Firestore API

Google Enterprise API

Easily store and sync app data at global scale

[ENABLE](#) [TRY THIS API](#)

Overview

Cloud Firestore is a NoSQL document database that simplifies syncing, and querying data for your mobile and web apps at global scale. Client libraries provide live synchronization and offline support, security features and integrations with the Firebase and Google Cloud platforms accelerate building truly serverless apps.

Tutorials and documentation

[Learn more](#)

Terms of Service

By using this product you agree to the terms and conditions of license: [Google Cloud Platform](#).

Firestore

Get started

1 Select a Cloud Firestore mode — 2 Choose where to store your data

Cloud Firestore is the next generation of Cloud Datastore. You can use Cloud Firestore in either Native mode or Datastore mode, each with distinct system behavior optimized for different types of projects. [Pricing](#) for both modes is based on location, stored data, operations, and network egress with a daily free quota for each. [Learn more about choosing a mode](#)

The mode you select here will be permanent for this project

Database

Data

Indexes

Import/Export

Security Rules

Insights

Usage

Native mode

Enable all of Cloud Firestore features, with offline support and time synchronization.

[SELECT NATIVE MODE](#)

API	Firestore
Scalability	Automatically scales to concurrent clients
App engine support	Not supported in the App Engine standard Python 2.7 and runtimes
Max writes per second	10,000
Real-time updates	✓
Mobile/web client libraries with offline data persistence	✓

[SHOW MORE](#)

Firestore

Get started

1 Select a Cloud Firestore mode — 2 Choose where to store your data

You selected Cloud Firestore in Native mode. Now choose a database location.

The location of your database affects its cost, availability, and durability. Choose a regional location (lower write latency, lower cost) or a multi-region location (higher availability, higher cost). [Learn more](#)

Choose carefully: your location selection is permanent and will also apply to this project's App Engine app

Select a location

us-east1 (South Carolina)

To improve performance, store your data close to the users and services that need it

[CREATE DATABASE](#) [BACK](#)

Firestore

Get started

Creating your database!

Initializing Cloud Firestore in Native mode services in us-east1 - this usually takes a few minutes. You'll be redirected to your database once it's ready.

Start a collection

A collection is a set of one or more documents that contain data. Start a collection at this path by adding its first document. [Learn more](#)

Give the collection an ID

Parent path

/

Collection ID *

Choose an ID that describes the documents you'll add to this collection.

Add its first document

Document ID

Assigned automatically. Customize if needed.

Field name	Field type	Field value
	string	

[+](#)

[SAVE](#) [SAVE & ADD ANOTHER](#) [CANCEL](#)

Pub Sub



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Create a topic

A topic forwards messages from publishers to subscribers.

Topic ID *

app_cadastro



Topic name: projects/prj-dumpi-lab/topics/app_cadastro

☒ Add a default subscription ?

☐ Use a schema ?

☐ Use a customer-managed encryption key (CMEK)

CANCEL

CREATE TOPIC

Bucket no Cloud Storage



Cloud Storage

Browser

Monitoring

Settings

Release Notes

← Create a bucket

- Name your bucket

Pick a globally unique, permanent name. [Naming guidelines](#)

Ex. 'example', 'example_bucket-1', or 'example.com'

Tip: Don't include any sensitive information

CONTINUE

Choose where to store your data

Choose a default storage class for your data

Choose how to control access to objects

Advanced settings (optional)

CREATE

CANCEL



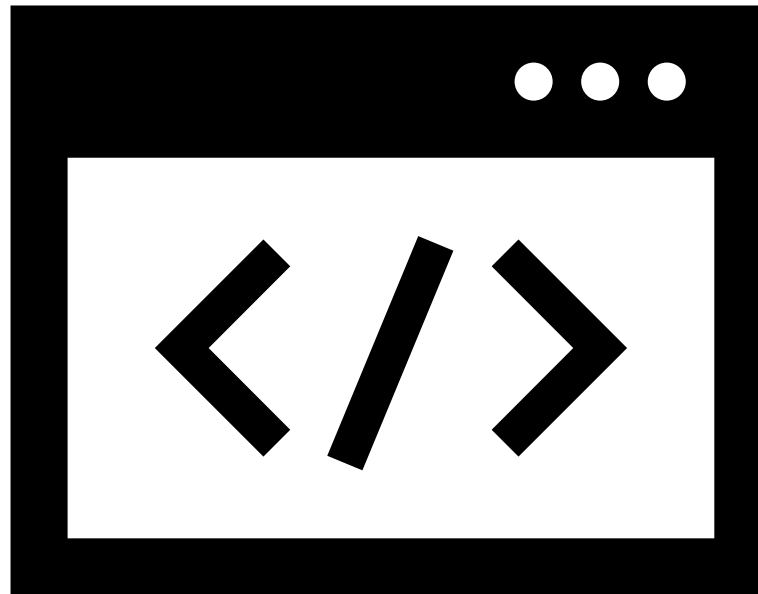
03

Demonstração

Apresentação do laboratório prático

Laboratório

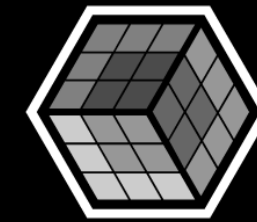
Projeto completo



Notas:

Este laboratório é um exemplo prático usado para fins didáticos, mas que utiliza os componentes que podem ser usados nos projetos reais.

Foram feitas as construções básicas, sendo possível realizar várias melhorias para integração de dados.



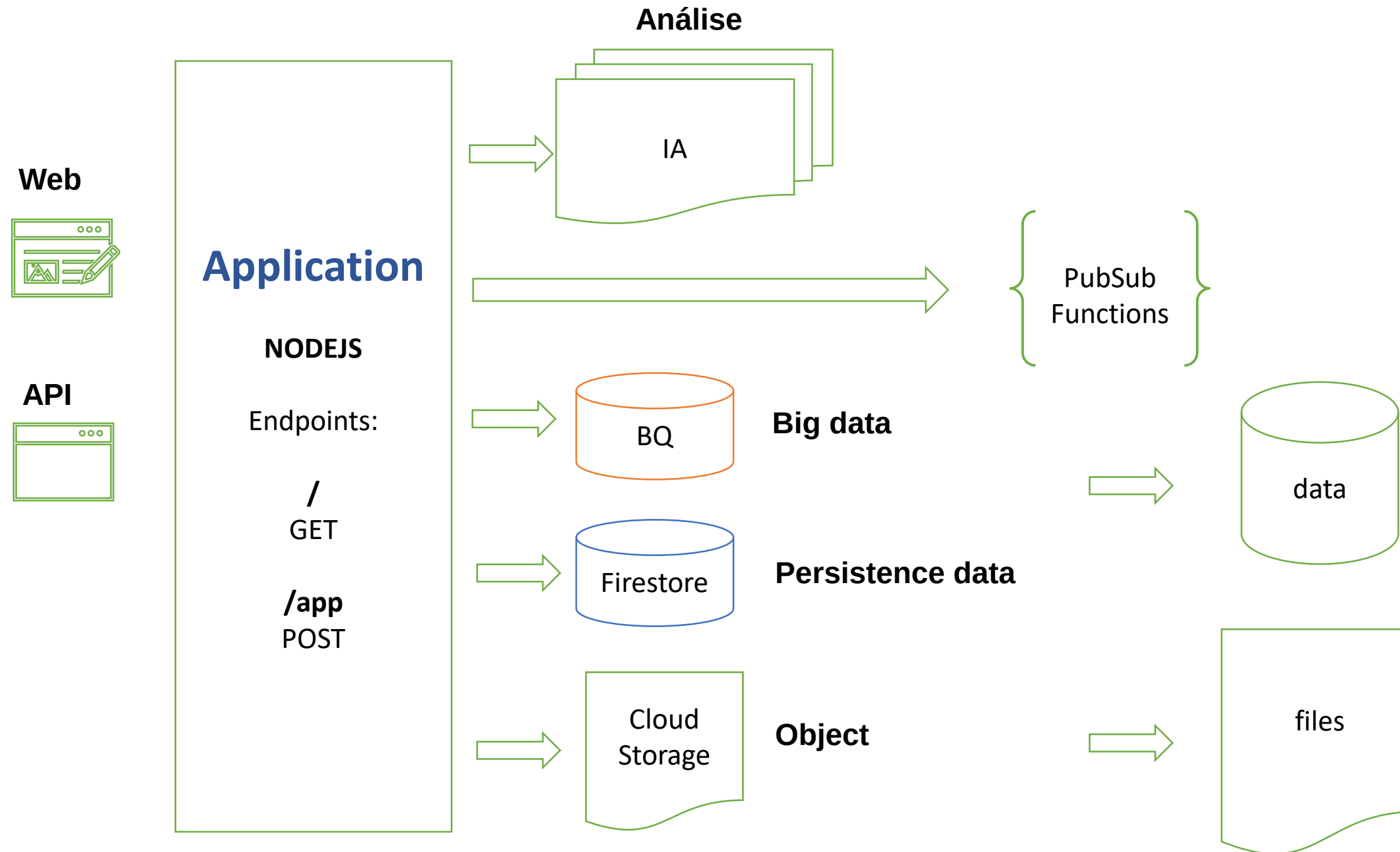
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GCP Lab

Explicando o código



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Node JS

Código Nodejs com Express

```
1 const express = require('express')
2 const app = express()
3 const port = 8080
4 var session = require('express-session');
5
6 var jwt = require('jsonwebtoken');
7 var cookie = require('cookie');
8 var Cookies = require('cookies')
9
10 const bodyParser = require('body-parser');
11 app.use(bodyParser.urlencoded({ extended: false }))
12 app.use(bodyParser.json())
13
14 app.use('/', express.static('public'))
15 app.use('/static', express.static('public'))
16
17 app.set('view engine', 'ejs');
18
19 var apis = require('./routes/apis')
20 app.use('/apis', apis)
21 var vision = require('./routes/vision')
22 app.use('/vision', vision)
23 var natural = require('./routes/natural')
24 app.use('/natural', natural)
25 var video = require('./routes/video')
26 app.use('/video', video)
27 var speech = require('./routes/speech')
28 app.use('/speech', speech)
29 var bigquery = require('./routes/bigquery')
30 app.use('/bigquery', bigquery)
31 var firestore = require('./routes/firestore')
32 app.use('/firestore', firestore)
33 var pubsub = require('./routes/pubsub')
34 app.use('/pubsub', pubsub)
```



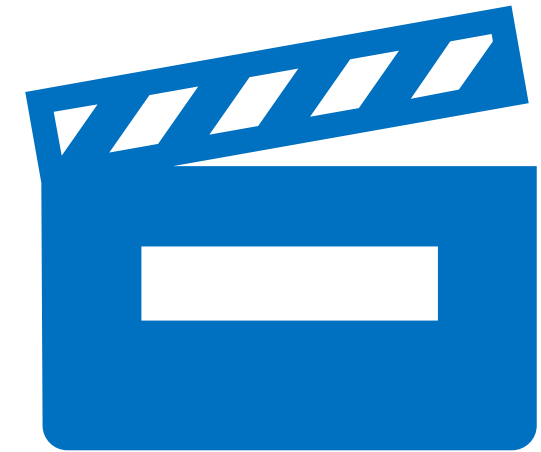
Módulos da Google

```
server.js  natural.js x
52  });
53
54  })
55
56  async function check(texto) {
57    // Imports the Google Cloud client library
58    const language = require('@google-cloud/language');
59
60    // Instantiates a client
61    const client = new language.LanguageServiceClient();
62
63    // The text to analyze
64    const text = texto;
65
66    const document = {
67      content: text,
68      type: 'PLAIN_TEXT',
69    };
70
71    // Detects the sentiment of the text
72    const [result] = await client.analyzeSentiment({document: document});
73    const sentiment = result.documentSentiment;
74
75    console.log(`Text: ${text}`);
76    console.log(`Sentiment score: ${sentiment.score}`);
77    console.log(`Sentiment magnitude: ${sentiment.magnitude}`);
78
79    return sentiment.score;
80  }
81
82  module.exports = router
```

Github

O conteúdo está no meu Repositório está em:

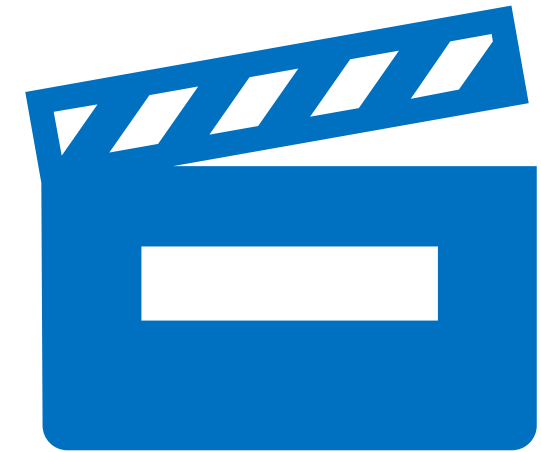
<https://github.com/leoym/gcp>



Vídeo do Demo

- **Projeto na GCP - Apresentação do Projeto Prático**

<https://www.youtube.com/watch?v=mtdHQN5qzAY>





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04

Considerações finais

Dúvidas e sugestões

Código no Github:

<https://github.com/leoym>

Currículo

Minha Carreira



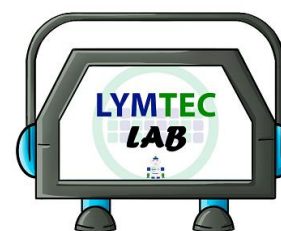
Trajectoria profissional

- Setor financeiro
- Infraestrutura
- DevOps
- Cloud



Empreendedor

- Fundador da LYMTEC
- Instrutor de Tecnologia
- Curioso e inventor
- Maker DIY



2005

2015

2018

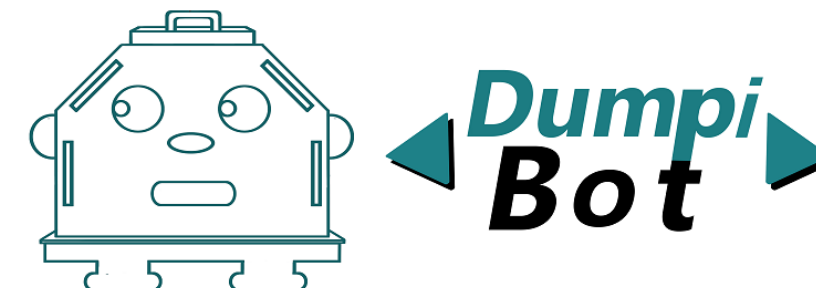
2019



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Tecnologia com criatividade



2021



Obrigado

Contatos

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@lymtec

