

Improving DevOps Workflows

with GenAI

JULIO ARRUDA



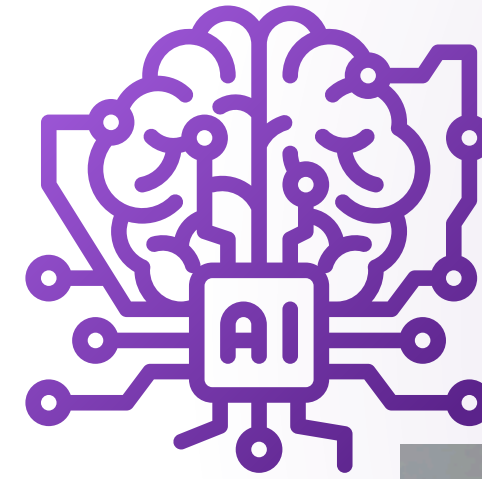
About me

- **AI Impact Lead at GFT Technologies**
- **8 years Microsoft MVP**
- **First Brazilian GitHub Star**
- **Docker Captain**
- **Speaker**
- **Youtuber**

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What is GenAI

- An Artificial Intelligence approach to generating new content, such as text, images, or music, based on patterns learned from data.



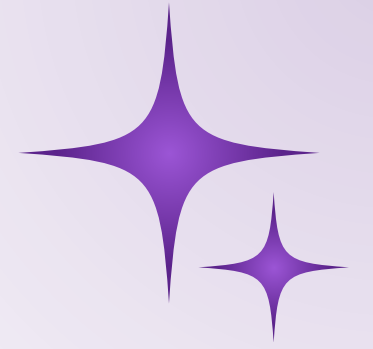


Prompt Engineering

THE ART OF CRAFTING EFFECTIVE INSTRUCTIONS TO GET THE BEST RESPONSES FROM AI MODELS.



Prompt Differences



Prompt: "i am building an application to display electric vehicle data. Give me some options for how to structure this app."

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GitHub Copilot
> Used 1 reference

Here are some options for structuring your electric vehicle data application:

Option 1: Single Page Application (SPA) with React

- 1. Frontend:** React
 - Components: Header, VehicleList, VehicleDetail, Footer
 - State Management: Redux or Context API
 - Routing: React Router
- 2. Backend:** Node.js with Express
 - REST API Endpoints: `/vehicles`, `/vehicles/:id`
 - Database: MongoDB or PostgreSQL
- 3. Deployment:** Vercel or Netlify for frontend, Heroku for backend

Prompt: "i am building an application to display electric vehicle data. I want to use express and typescript. Give me some options for how to structure this app. It's a large scale project, with more than 1000 users online. The authentication need to use a Keycloak Frontent will be created in Typescript and the application will be deployed on Azure Kubernetes Services"

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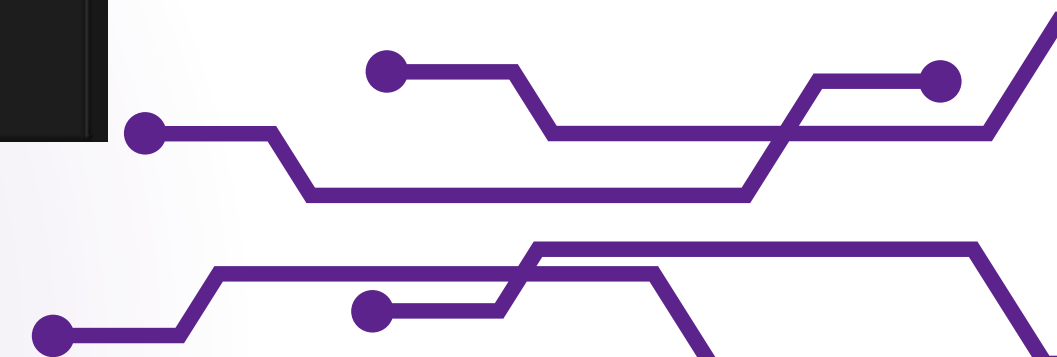
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Project Structure for Large Scale Application with Express, TypeScript, Keycloak, and Azure Kubernetes Services

Backend (Express + TypeScript)

1. Folder Structure

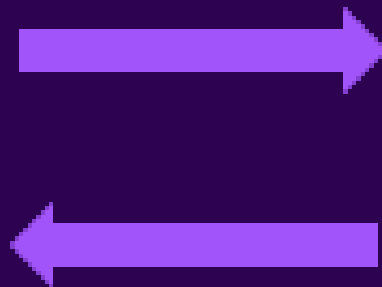
```
/backend
├── /src
│   ├── /controllers
│   ├── /middlewares
│   ├── /models
│   ├── /routes
│   ├── /services
│   ├── /utils
│   ├── app.ts
│   └── server.ts
├── /config
└── /tests
```



How prompting works on GitHub Copilot



"Create a
webserver in
TypeScript"



System: You are a friendly
coding assistant...
User: Create a webserver in
TypeScript"



```
```javascript  
import Express, { Request, Response }
from "express"
```
```

System: You are a friendly
coding assistant...
User: Create a webserver in
TypeScript"
Assistant: Sure! Here's a web..



Why use GenAI in SDLC

01

Enhanced Dev Experience

Developer Experience is an important part of software development, and by using GenAI tools, it's possible to improve this experience, making the developer's job easier.

02

Increased Productivity

GenAI tools enable developers to work smarter, using code suggestions from tools like GitHub Copilot, or automating tasks such as code documentation and other parts of the development process."

03

Increased Learning

Learning about a new project or understanding other parts of the current project can be an interesting application of GenAI tools in the development process.

04

Focus on the Business

By using GenAI tools to support common parts of software development, the team can focus on more important aspects, such as the business and other critical improvements



How can GenAI Tools improve DevOps Workflows ?



01

Code Creation

Use Generative AI Tools like GitHub Copilot to support developers with code suggestions, improving implementations, and other tasks.

02

Code Review

Code review is an important step to help the technical team understand the changes made by the development team and to support the approval or rejection of those changes.

03

Documentation

Documenting source code can be a tedious task, and in general, development teams do not do it properly. By using GenAI tools, it is possible to automate the generation of documentation.



How can GenAI Tools improve DevOps Workflows ?



04

Test Generation

By using GenAI tools, it is possible to automate the generation of unit tests based on company standards or automate functional tests using natural language.

05

Code Correction

By using GenAI tools, it is possible to suggest code corrections for vulnerabilities, issues, code smells, bugs, and more.

06

and much more..

Other steps in DevOps workflows can be improved with GenAI tools, greatly increasing productivity.



Tools that I`m using



GitHub Copilot

GitHub Copilot supports the Development teams in many different tasks, like code suggestion, explain code, test creation, and other tasks



GFT AI Impact

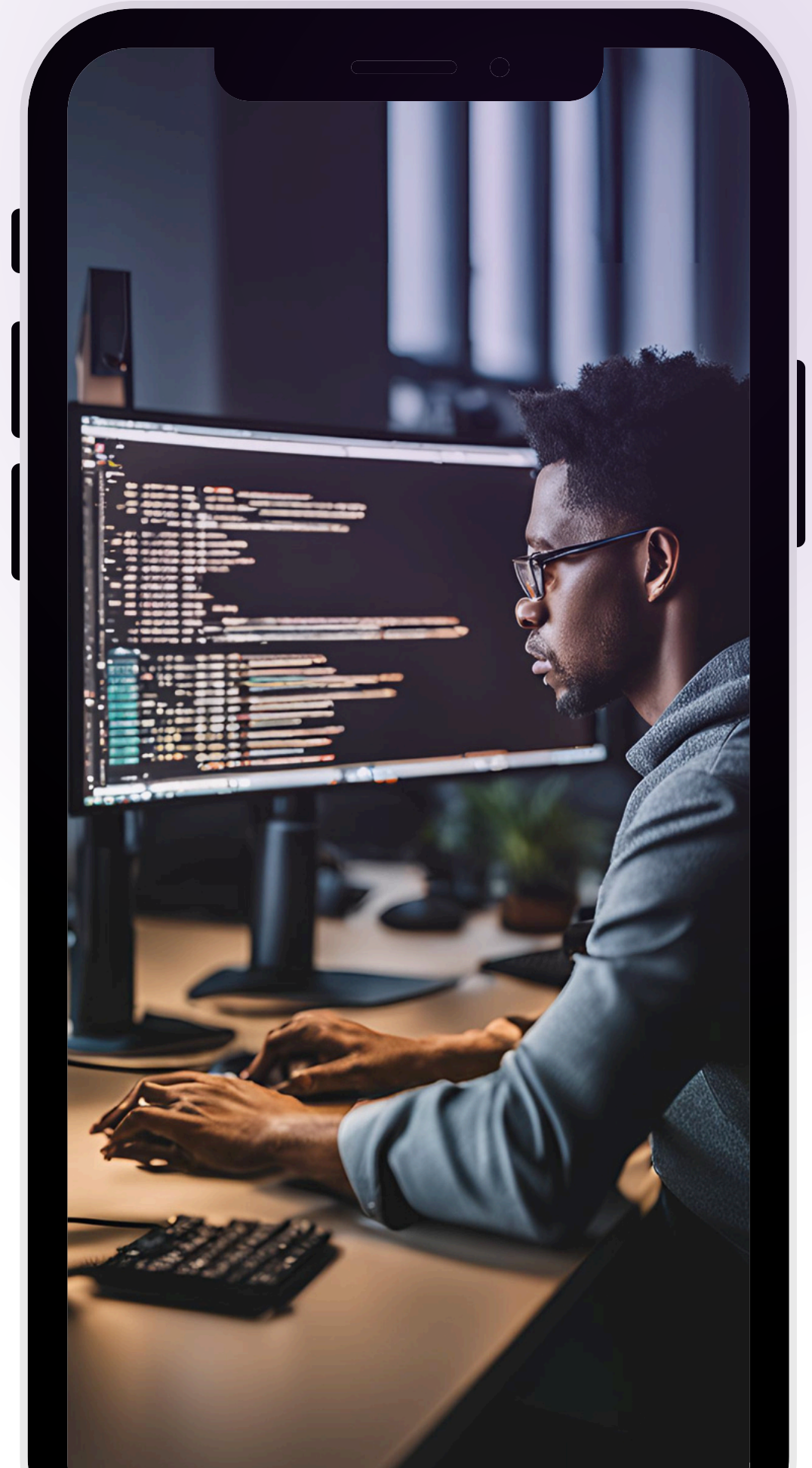
GFT AI Impact is a tool to support the entire SDLC with GenAI, focused on productivity gain, with features like story creation, documentation, code reviewer, code correction and testing.





Demo # 1

Update Source Code → **Document Code** → **Create Unit Tests**

Scenario: You are working in a new project that you have no much information. You need to solve a vulnerability issue reported by SAST tool, document the code and create unit tests.



Demo # 1

```
src/main/java/com/scalesec/vulnado/User.java  See all issues in this file 
```

... Show 33 more lines

```
34 152617...     e.printStackTrace();
35               throw new Unauthorized(e.getMessage());
36           }
37       }
38
39       public static User 5 fetch(String un) {
40           Statement stmt = null;
41           User user = null;
42           Connection cxn = null; // Incluido por GFT AI Impact Bot
43           try {
44               cxn = Postgres.connection(); // Alterado por GFT AI Impact Bot
45               stmt = cxn.createStatement();
46               System.out.println("Opened database successfully");
47
48               7 String query = 6 "select * from users where username = '" + un + "' limit 1";
49               System.out.println(query);
50               ResultSet rs = 8 stmt.executeQuery(query);

```

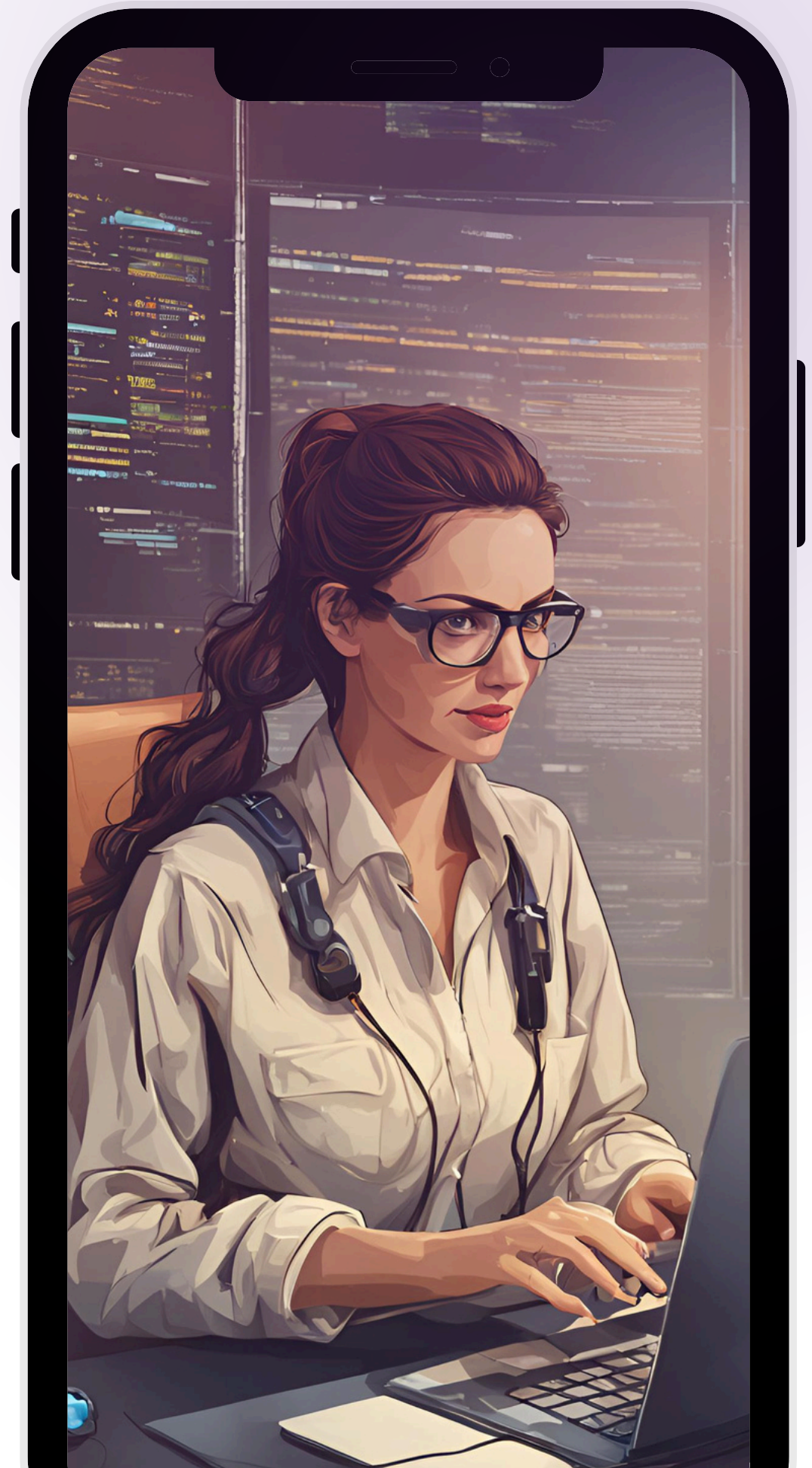
Change this code to not construct SQL queries directly from user-controlled data.

```
51           if (rs.next()) {
52               String user_id = rs.getString("user_id");
```

Demo # 2

Update Code → **Create PR** → **Document** → **Unit Tests** → **Review PR**

Scenario: You are working in a new project that you need to solve a vulnerability issue reported by SAST tool, document the code and create unit tests integrated in pipeline and review the pull request



Get in touch



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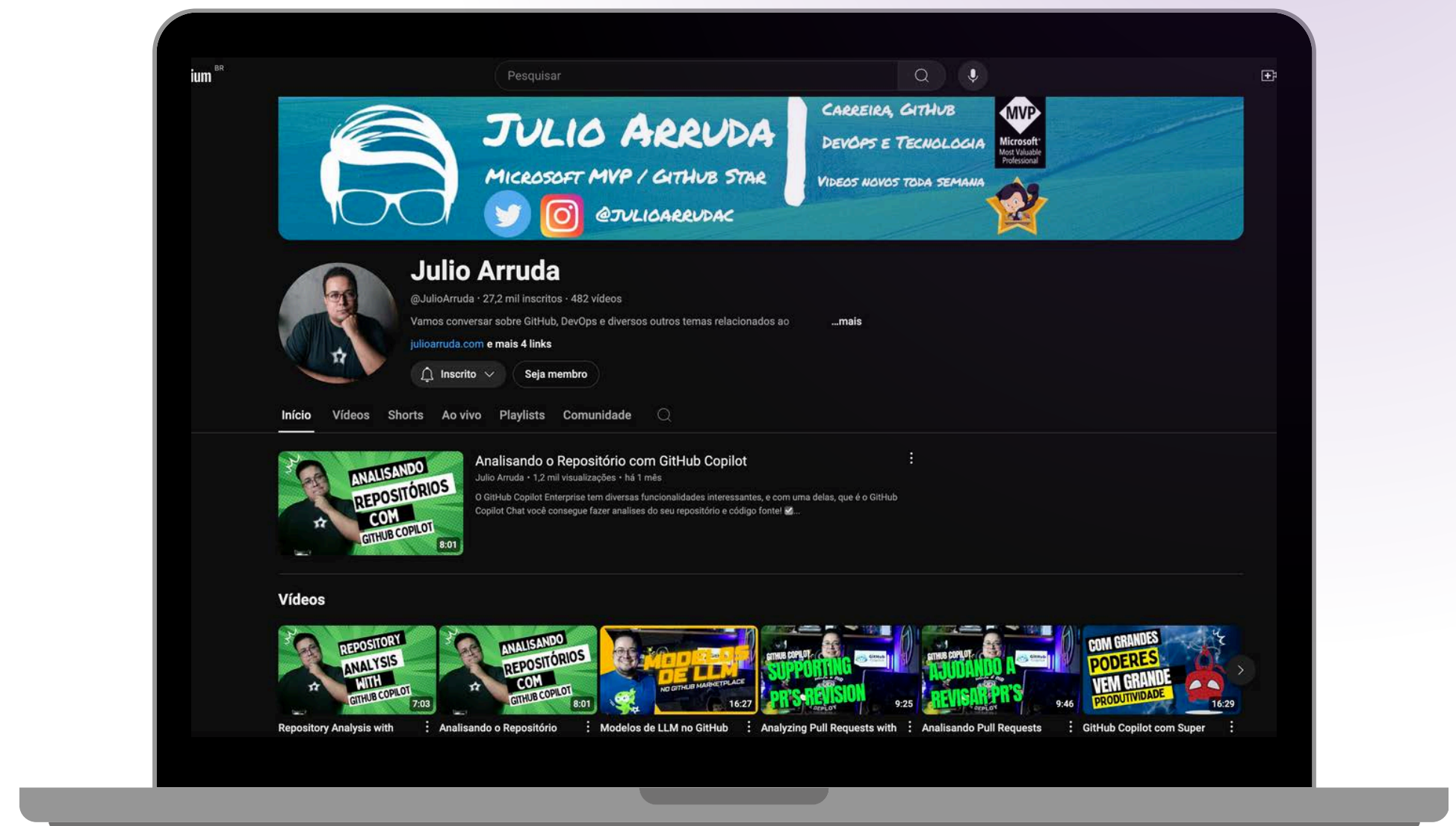
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THANK YOU

Julio Arruda

