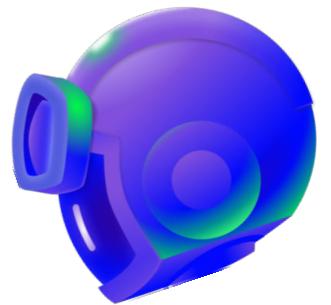


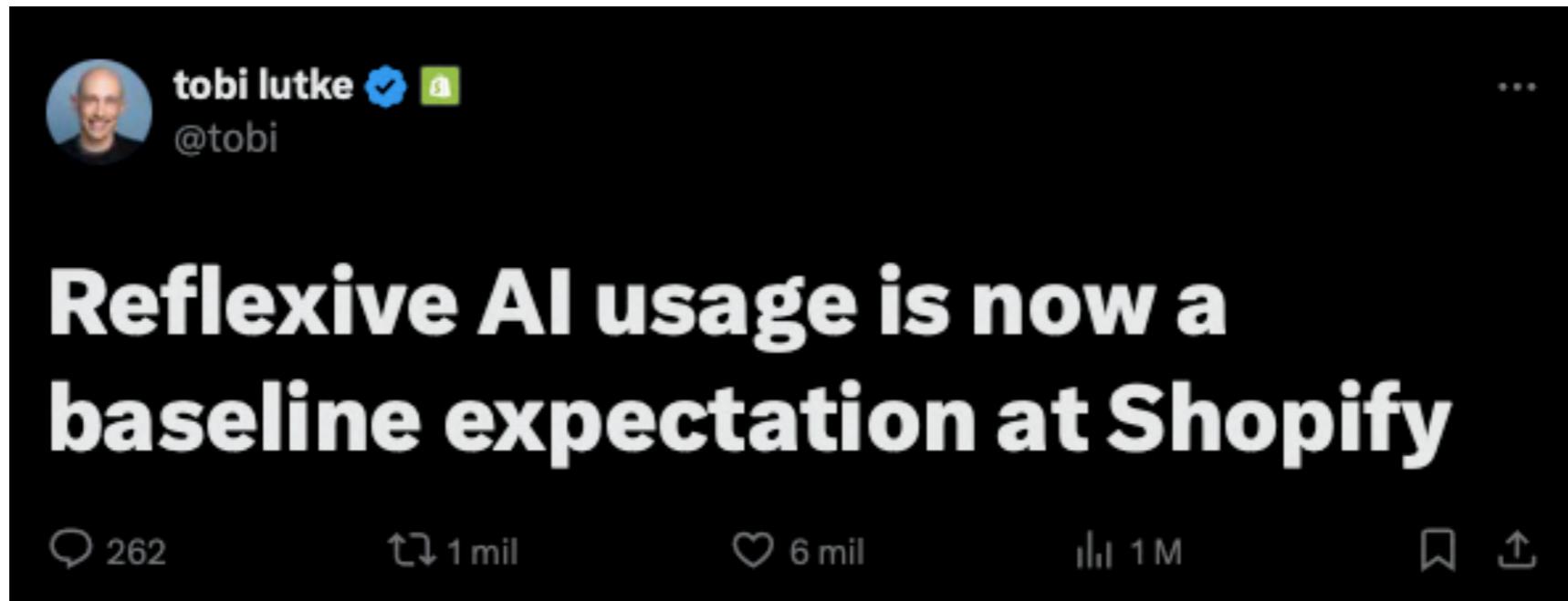
# IA para desarrolladores

Copilot, Modelos locales, IDEs,  
MCP y MLOps



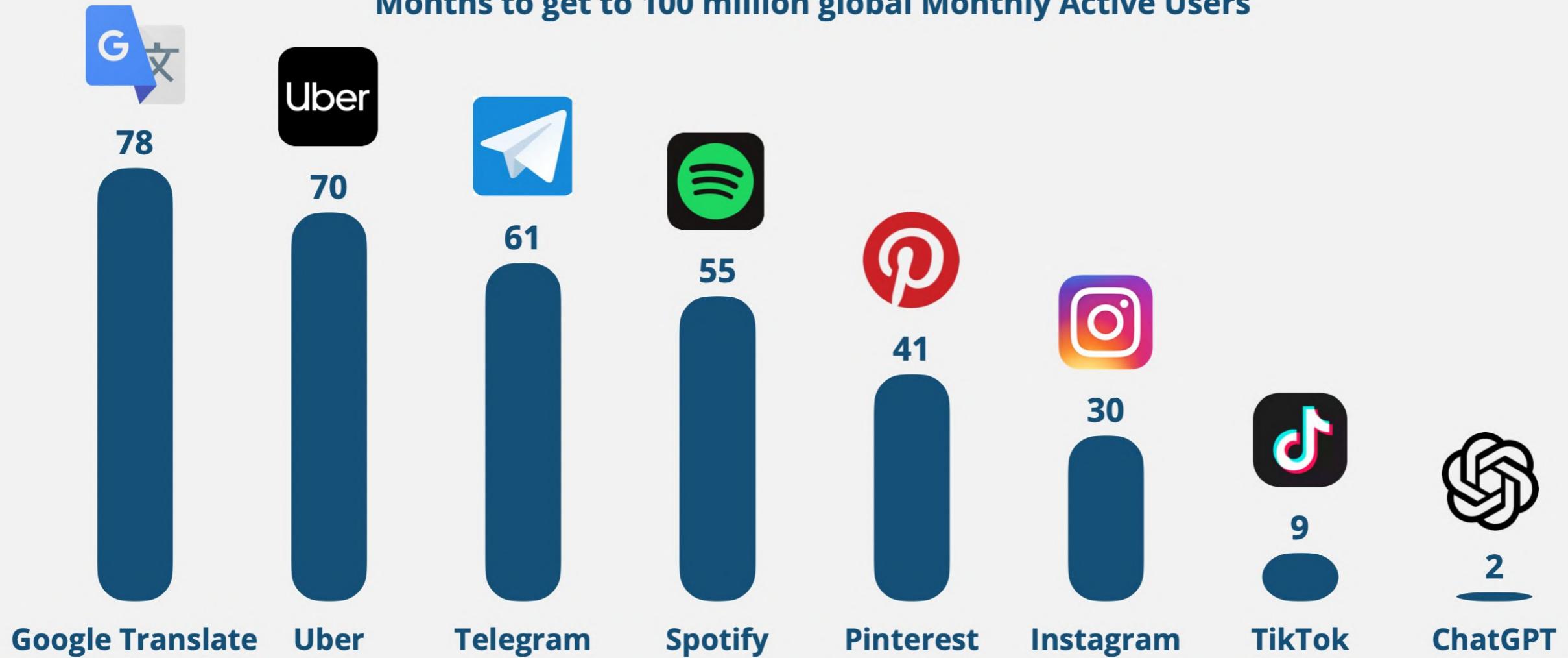
Álvaro García Pizarro

**"Using AI effectively is now a fundamental expectation of everyone at Shopify"**



# Time to Reach 100M Users

Months to get to 100 million global Monthly Active Users



# ANTES



# DESPUÉS



# Aprender VS Delegar



Desarrolla  
con IA



# IDEs



# Opciones





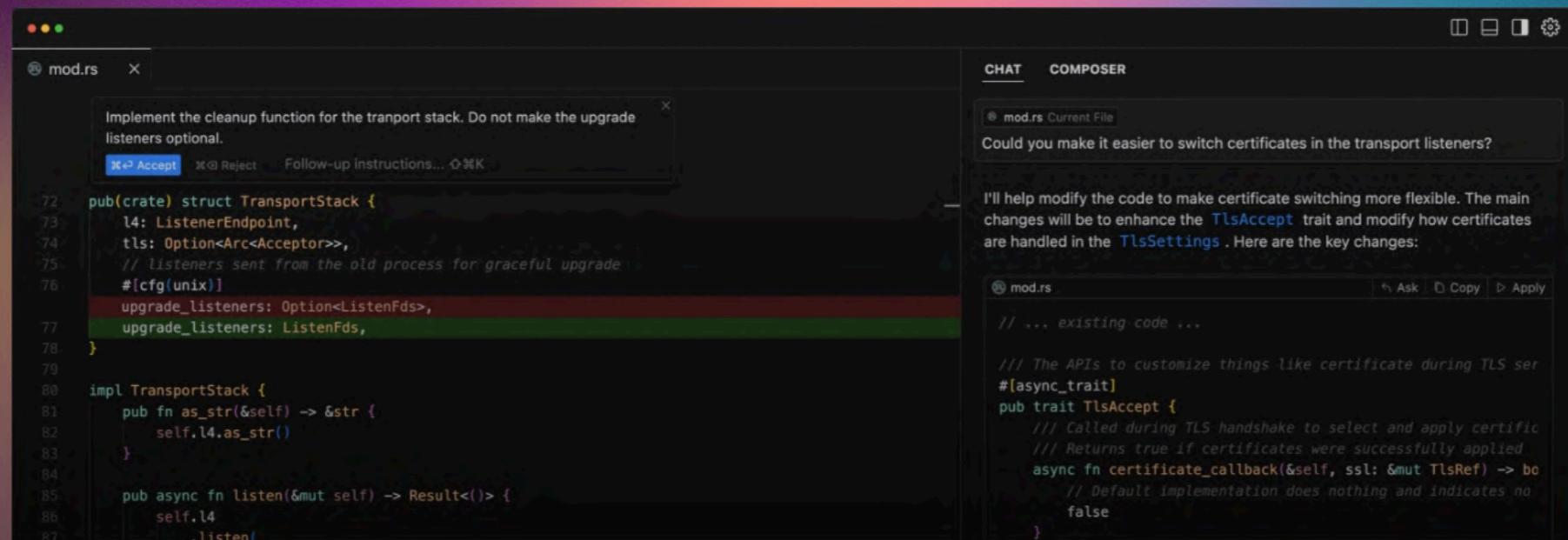
# Cursor AI

# The AI Code Editor

Built to make you extraordinarily productive, Cursor is the best way to code with AI.

DOWNLOAD FOR MACOS

ALL DOWNLOADS





# Cursor AI

The screenshot shows a dark-themed user interface. At the top, there's a search bar with the placeholder "Ask me anything". Below it is a message input field with the placeholder "Type your message here". A sidebar on the left contains a list of recent files: "Screenshot 2024-10-10 at 2.38.23 AM", "Screenshot 2024-10-10 at 2.37.30 AM" (which is highlighted with a cursor), "Screen Recording 2024-10-10 at 2.35.2", and "Screen Recording 2024-10-10 at 2.35.2". At the bottom of the sidebar, there's a section titled "Recent Images" with a list of images. In the main area, there's a message from "gpt-4" with the text "How do I implement a similar UI for this?". Below the message is a button labeled "Image".

## Use Images

Hit the image button under chat or drag an image into the input box to include visual context into chat.

The screenshot shows a dark-themed user interface. At the top, there's a search bar with the placeholder "Ask me anything". Below it is a message input field with the placeholder "Type your message here". A sidebar on the left contains a list of recent files: "Screenshot 2024-10-10 at 2.38.23 AM", "Screenshot 2024-10-10 at 2.37.30 AM" (which is highlighted with a cursor), "Screen Recording 2024-10-10 at 2.35.2", and "Screen Recording 2024-10-10 at 2.35.2". At the bottom of the sidebar, there's a section titled "Recent Images" with a list of images. In the main area, there's a message from "gpt-4" with the text "How do I implement a similar UI for this?". Below the message is a button labeled "Image".

## Use Documentation

Reference popular libraries using @LibraryName, or add your own using @Docs → Add new doc.



# Trae

The screenshot shows the Trae IDE interface. On the left is a file explorer with a dark theme, displaying a project structure for 'myproject'. The 'react-todolist' folder contains several files: node\_modules, public, src (with assets and components), styles (TodoList.css), App.css, App.jsx, index.css, main.jsx, .gitignore, eslint.config.js, index.html, package-lock.json, package.json, README.md, and vite.config.js. The 'TodoList.jsx' file is selected and highlighted in the list.

The central area is a code editor window titled 'TodoList.jsx'. It displays the following code:

```
1 import { useState, useEffect } from 'react';
2 import './styles/TodoList.css';
3
4 const TodoList = () => {
5   const [todos, setTodos] = useState(() => {
6     const savedTodos = localStorage.getItem('todos');
7     return savedTodos ? JSON.parse(savedTodos) : [];
8   });
9   const [inputValue, setInputValue] = useState('');
10
11  useEffect(() => {
12    localStorage.setItem('todos', JSON.stringify(todos));
13  }, [todos]);
14
15  const handleSubmit = (e) => {
16    e.preventDefault();
17    if (!inputValue.trim()) return;
18
19    const newTodo = {
20      id: Date.now(),
21      text: inputValue,
22      completed: false
23    };
24
25    setTodos([...todos, newTodo]);
26    setInputValue('');
27  };
28
29  const toggleTodo = (id) => {
30    setTodos(todos.map(todo =>
31      todo.id === id ? { ...todo, completed: !todo.completed } : todo
32    ));
33  };
34
35  const deleteTodo = (id) => {
36    setTodos(todos.filter(todo => todo.id !== id));
37  };
38
39  return (
40    <div className="todo-container">
41      <h1>Todo List</h1>
42      <form onSubmit={handleSubmit} className="todo-form">
43        <input type="text" value={inputValue} onChange={e => setInputValue(e.target.value)} />
44        <button type="submit" value="Add Todo" />
45      </form>
46      <ul className="list-group">
47        {todos.map(todo => (
48          <li key={todo.id}>
49            {todo.text}
50            <span><span style="font-size: small;">X(Completed: {todo.completed})

The right side of the interface features a 'Builder' tab, a 'Chat' tab, and various status indicators. A prominent section titled 'Trae-Builder Mode' explains that it allows building projects from scratch and saving changes automatically. A 'Did You Know?' callout provides a tip about uploading design drafts or reference images. At the bottom, there's a note about navigating input history and inserting new lines, along with buttons for '#Context' and 'Image', and a mention of 'Claude 3.5-Sonnet'.

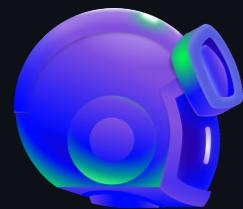

```



# Windsurf

The screenshot shows a VS Code window with the following details:

- Explorer View:** Shows the project structure under "web-app". The "components" and "style" directories are expanded, showing files like "Button.tsx", "Card.tsx", "Header.tsx", "Button.css", "Card.css", and "Header.css".
- Editor View:** Displays the content of "Button.css". The code defines a ".button" class and two variants: ".button.primary" and ".button.secondary", each with hover states.
- Code Review Panel:** A sidebar on the right contains a message from a user asking about moving components and CSS files. A response from the AI suggests organizing the codebase by moving components to a "components" directory and CSS files to a "style" directory. It lists the files to be moved:
  - Component files (.tsx): `Button.tsx`, `Card.tsx`, and `Header.tsx`
  - .CSS files (.css): `Button.css`, `Card.css`, and `Header.css`
- Terminal Panel:** Shows the command `mv Button.tsx Card.tsx Header.tsx components/` being run in the terminal.
- Confirmation Dialog:** A modal dialog asks if the user is sure they want to run the terminal command. Buttons for "Accept" and "Reject" are visible.
- Status Bar:** At the bottom, it says "Waiting on response...".



# Copilot

## Free

A fast way to get started with GitHub Copilot.

\$0 USD

[Get started](#)

[Open in VS Code](#)

### What's included

- ✓ 50 agent mode or chat requests per month
- ✓ 2,000 completions per month
- ✓ Access to Claude 3.5  
Sonnet, GPT-4o, and more

Most popular

## Pro

Unlimited completions and chats  
with access to more models.

\$19 ~~\$10~~ USD

per month or \$100 per year

[Try for 30 days free](#)

### What's included

- Everything in Free and:**
- ✓ **Unlimited** agent mode and chats with GPT-4o
  - ✓ **Unlimited** code completions
  - ✓ Access to code review, Claude 3.7 Sonnet, o1, and more
  - ✓ 6x more premium requests to use latest models than Free, with the option to buy more<sup>1</sup>

Free for verified students, teachers, and maintainers of popular open source projects. [Learn more](#)

## Pro+

Maximum flexibility and model choice.

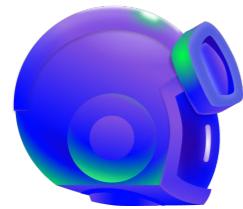
\$39 USD

per month or \$390 per year

[Get started](#)

### What's included

- Everything in Pro and:**
- ✓ Access to all models, including GPT-4.5
  - ✓ 30x more premium requests to use latest models than Free, with the option to buy more<sup>1</sup>



# Copilot

 GitHub Education

Students ▾

Teachers ▾

Schools

Events

Sign in

## GitHub Student Developer Pack

**Learn to ship software like a pro.** There's no substitute for hands-on experience. But for most students, real world tools can be cost-prohibitive. That's why we created the GitHub Student Developer Pack with some of our partners and friends.

[Sign up for Student Developer Pack](#)

Love the pack? Spread the word

 Post

### Experiences

Discover the best ways to use pack offers with Experiences. Experiences are curated bundles of pack partner products, GitHub tools, and other resources that are designed for you learn new skills and make the most out of the Student Developer Pack and your journey in GitHub Education.



LaunchPad



LaunchPad

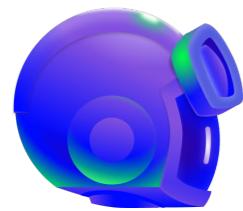


LaunchPad

Precio	20€	15€	0€	0€/10€
Agente				
Imagen				
Modelos	Claude Gemini DeepSeek 4o, o3 Grok	Claude DeepSeek 4o, o3	Claude DeepSeek 4o	Claude Gemini 4o, o3, o1...

# Uso de Copilot





# Ask Mode

The screenshot shows a dark-themed code editor window with a sidebar containing icons for files, search, and other tools. The main area displays the file `App.jsx` with the following code:

```
src > App.jsx > App
1 import './App.css';
2
3 function App() {
4   return (
5     <div className="landing-page">
6       <header className="header">
7         <h1>Descubre Nuestra Pala de Pádel</h1>
8         <p>La mejor pala para llevar tu juego a
9           
14           <button className="cta-button">Más Info
15         </header>
16         <section className="features">
17           <h2>Características</h2>
18           <ul>
19             <li>Material de alta calidad para máx
20             <li>Diseño ergonómico para un mejor c
21             <li>Ligera y potente para un rendimie
22           </ul>
23         </section>
24         <footer className="footer">
25           <p>&copy; 2025 Nuestra Marca de Pádel.

```

A tooltip from GitHub Copilot is displayed over the code, explaining the purpose of the selected fragment:

alvarogarciapiz  
Explicame el funcionamiento de este fragmento de código  
App.jsx:1-24

GitHub Copilot  
Used 2 references  
Este fragmento de código es un componente funcional de React llamado App. A continuación, te explico su funcionamiento:

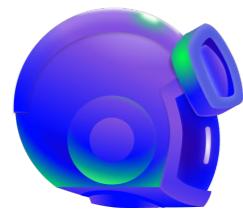
1. Importación de Estilos

```
import './App.css';
```

El archivo App.css se importa para aplicar estilos al componente. Esto permite que los elementos del componente tengan un diseño visual específico.

Add Context... App.jsx Current file Ask Copilot Ask GPT-4o

Ln 16, Col 37 Spaces: 2 UTF-8 LF {} JavaScript JSX Prettier

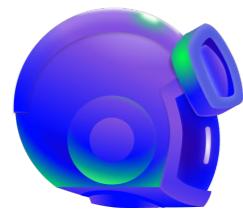


# Edit Mode

The screenshot shows the GitHub Copilot interface in 'Edit Mode'. The main area displays the `App.jsx` file content:

```
src > App.jsx > App
1 import './App.css';
2
3 function App() {
4   return (
5     <div className="landing-page">
6       <header className="header">
7         <h1>Descubre Nuestra Pala de Pádel</h1>
8         <p>La mejor pala para llevar tu juego al siguiente nivel.</p>
9         
14         <button className="cta-button">Más Información</button>
15       </header>
16       <section className="features">
17         <h2>Características</h2>
18         <ul>
19           <li>Material de alta calidad para máxima durabilidad</li>
20           <li>Diseño ergonómico para un mejor control</li>
21           <li>Ligera y potente para un rendimiento óptimo</li>
22         </ul>
23       </section>
24       <section className="technical-info">
25         <h2>Información Técnica</h2>
26         <ul>
27           <li>Peso: 360-375 gramos</li>
28           <li>Dimensiones: 45.5 cm x 26 cm x 3.8 cm</li>
29         </ul>
30       </section>
31       <footer className="footer">
32         <p>© 2025 Nuestra Marca de Pádel. Todos los derechos reservados.</p>
33       </footer>
34     </div>
35   );
}
```

The interface includes a sidebar with file navigation, a top bar with tabs for `copilot-instructions.md`, `App.jsx`, and `README.md`, and a right-hand panel for the `CHAT`. A message from `alvarogarciapiz` suggests adding a new section for product technical information. The GitHub Copilot sidebar indicates it has used one reference. The bottom right corner features a red circle around the 'Edit' button in the workspace toolbar.

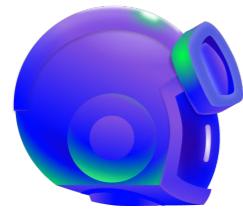


# Agent Mode

The screenshot shows the GitHub Copilot interface in Agent Mode. The top bar displays the title "demo". The left sidebar includes icons for file operations, search, and settings. The main workspace contains three tabs: "copilot-instructions.md", "App.jsx", and "README.md". The "App.jsx" tab is active, showing the following code:

```
src > App.jsx > App
1 import './App.css';
2
3 function App() {
4   return (
5     <div className="landing-page">
6       <header className="header">
7         <h1>Descubre Nuestra Pala de Pádel</h1>
8         <p>La mejor pala para llevar tu juego al siguiente nivel.</p>
9         
14         <button className="cta-button">Más Información</button>
15       </header>
16       <section className="features">
```

The right side features a "CHAT" section with a message from GitHub Copilot: "Añade una nueva sección con información técnica del producto como peso y dimensión y luego corre la aplicación". Below this is a "Copilot" card showing "Used 1 reference" and a command history entry for "App.jsx +7 -0" and "npm run dev". A message from GitHub Copilot states: "It seems there was an issue starting the Vite development server. Let me try running the command again to ensure the application starts properly." A modal window titled "Run command in background terminal" contains the command "npm run dev" and buttons for "Continue" and "Cancel". At the bottom, a status bar indicates "1 file changed" in "App.jsx src", and a footer shows "Agent" and "GPT-4o" with a red circle around the "Agent" label.



# Contexto

A screenshot of the Visual Studio Code (VS Code) interface demonstrating the Copilot extension. The interface includes:

- Left Sidebar:** Shows icons for file operations (New, Open, Save, Find, Connect, Split, Close), a terminal, and user profile.
- Central Area:** A code editor with a dark theme, currently displaying a `package.json` file. The file content includes:

```
1  {
2    "name": "demo",
3    "private": true,
4    "version": "0.0.0",
5    "type": "module",
6    "scripts": {
7      "dev": "vite",
8      "build": "vite build"
9    }
10 }
```
- Terminal:** A terminal window showing a Mac terminal session with the following history:

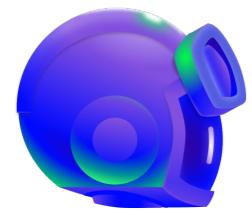
```
alvaro@Mac-mini-d
e-A
alvaro@Mac-mini-d
e
alvaro@Mac-mini-d
e-Alvaro demo % n
pm run dev
```
- Top Bar:** Includes standard VS Code icons for file operations, search, and extensions.
- Bottom Status Bar:** Displays file information (Ln 1, Col 1), encoding (UTF-8 LF), and tools (JSON, Prettier).
- Copilot Overlay:** A semi-transparent overlay from the Copilot extension. It features:
  - A search bar at the top labeled "Search for files and context to add to your request".
  - A list of context options:
    - Prompt...
    - Related Files
    - Screenshot Window
    - Symbol...
    - Terminal Last Command
    - Terminal Selection
    - Test Failure
    - package.json
    - { } App.css src
    - { } App.jsx src
  - Instructions: "@ to chat with extensions" and "Type / to use commands".
  - An "Add Context..." button, which is highlighted with a red circle.
  - The bottom of the overlay shows the current context files: package.json (Current file), index.css, .gitignore, and main.jsx.



**/Comandos Slash**

**@Participantes de Chat**

**#Variables**

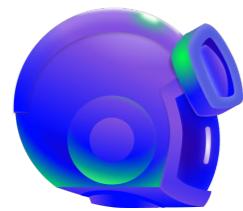


# /Comandos Slash

A screenshot of the Visual Studio Code interface demonstrating the Copilot slash command feature. The code editor shows an HTML file named 'index.html'. A context menu is open over the code, listing various slash commands. The menu items are:

- /search @vscode
- /startDebugging @vscode
- /explain @workspace
- /fix @workspace
- /new @workspace
- /newNotebook @workspace
- /setupTests @workspace
- /tests @workspace
- /explain @terminal
- /help
- /clear

The status bar at the bottom indicates the file is an HTML document with Prettier enabled.



/clear

The screenshot shows a code editor window with a dark theme. The left sidebar contains icons for file operations, search, and user settings. The main area displays the following HTML code:

```
</> index.html < />
</> index.html > ...
1  <!doctype html>
2   <html lang="en">
3     <head>
4       <meta charset="UTF-8" />
5       <link rel="icon" type="image/x-icon" href="favicon.ico" />
6       <meta name="viewport" content="width=device-width, initial-scale=1.0" />
7       <title>Vite + React</title>
8     </head>
9     <body>
10      <div id="root"></div>
11      <script type="module" src="/src/main.js" />
12    </body>
13  </html>
```

To the right of the code, there is a "CHAT" interface with the following text:

mistakes are possible. Review output carefully before use.

Unresolved references:

- or type # to attach context
- @ to chat with extensions

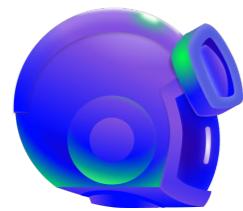
Input field:

Add Context...  
index.html Current file

/clear  
Ask Ask o3-mini >

Bottom status bar:

< > x ⌂ 0 ⌁ 0 Ln 1, Col 1 Spaces: 2 UTF-8 LF {} HTML ✅ Prettier

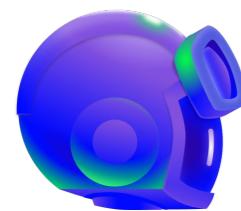


# @Participantes de Chat

The screenshot shows a dark-themed instance of VS Code. A code editor window is open with a file named `index.html`. The code contains basic HTML structure including a head section with meta tags and a body section with a root div. A context menu is open over the head section, titled "ASK COPILOT". The menu lists several suggestions:

- @github
- @remote-ssh
- @terminal
- @vscode
- @workspace
- @terminal /explain
- @vscode /search
- @vscode /startDebugging
- @workspace /explain
- @workspace /fix
- @workspace /new
- @workspace /newNotebook

At the bottom of the menu, there are two input fields: one containing "@" and another containing "@ ⌂". The status bar at the bottom of the screen displays "Ln 1, Col 1" and "Spaces: 2".



# @terminal

The screenshot shows a dark-themed code editor interface. On the left, there's a sidebar with icons for file operations like copy, paste, search, and refresh. The main area has a file named "index.html" open, displaying its HTML code. Below it is a "TERMINAL" section showing a zsh shell with the command: "alvaro@Mac-mini-de-Alvaro demo % alvaro@Mac-mini-de-Alvaro demo % mkdir tests && mv test\_user.js tests/". In the top right, there's a search bar with the text "demo" and a "CHAT" section. A message from " @terminal" is highlighted with a red oval, suggesting the command "mkdir tests && mv test\_user.js tests/". The bottom right contains a "Copilot" interface with fields for "Add Context...", "Ask Copilot", and "Ask". The status bar at the bottom shows "Ln 1, Col 1" and various file format indicators.

```
</> index.html < />
</> index.html > ...
1  <!doctype html>
2  <html lang="en">
3  <head>
4    <meta charset="UTF-8" />

TERMINAL
> < /> TERMINAL zsh + < /> < /> < /> < /> < />
alvaro@Mac-mini-de-Alvaro demo %
alvaro@Mac-mini-de-Alvaro demo % mkdir tests && mv test_user.js tests/
```

CHAT

@terminal crea un nuevo directorio para tests y mueve el fichero test\_user.js a ese directorio

index.html:1-14

Terminal

Used 2 references

mkdir tests && mv test\_user.js tests/

How do I run the tests?

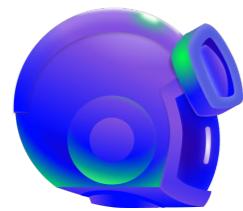
Explain the suggested command

Add Context... index.html Current file

Ask Copilot

Ask o3-mini

Ln 1, Col 1 Spaces: 2 UTF-8 LF {} HTML Prettier



# #Variables

A screenshot of a code editor interface, likely VS Code, showing an HTML file named `index.html`. The code includes a `<head>` section with meta tags and a `<body>` section with a `<div id="root"></div>` element. A `<script type="module" src="/s` line is partially visible. On the right side of the screen, there is a "Ask Copilot" panel. This panel has a title "Ask Copilot" and a subtitle "Copilot is powered by AI, so mistakes are possible." Below these are several suggestions listed as variables, starting with `#file`, followed by `#findTestFiles`, `#folder`, `#get_candlesticks`, `#get_price`, `#greet`, `#searchResults`, `#sym`, `#terminalLastCommand` (which is circled in red), `#terminalSelection`, `#testFailure`, and `#usages`. At the bottom of the panel is a prompt area with a placeholder "@", a search icon, and a "Ask" button. The status bar at the bottom of the editor shows "Ln 1, Col 1" and other settings like "Spaces: 2", "UTF-8", "LF", "HTML", and "Prettier".

```
<!doctype html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <link rel="icon" type="image/>
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <title>Vite + React</title>
  </head>
  <body>
    <div id="root"></div>
    <script type="module" src="/s
  </body>
</html>
```

Ask Copilot

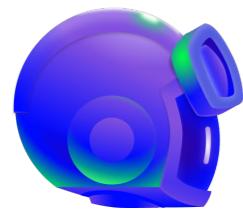
Copilot is powered by AI, so mistakes are possible.

- #file
- #findTestFiles
- #folder
- #get\_candlesticks
- #get\_price
- #greet
- #searchResults
- #sym
- #terminalLastCommand
- #terminalSelection
- #testFailure
- #usages

@

Ask o3-mini ▶

Ln 1, Col 1 Spaces: 2 UTF-8 LF {} HTML Prettier



# #MCP

A screenshot of a code editor interface, likely VS Code, showing an HTML file named `index.html`. The code includes a `<head>` section with meta tags and a title. A context menu is open over the `</head>` tag, listing various AI-related commands. The command `#get_candlesticks` is highlighted with a red oval.

```
</> index.html <...>
</> index.html > ...
1  <!doctype html>
2  <html lang="en">
3    <head>
4      <meta charset="UTF-8" />
5      <link rel="icon" type="image/>
6      <meta name="viewport" content="width=device-width, initial-scale=1.0" />
7      <title>Vite + React</title>
8    </head>
9    <body>
10   <div id="root"></div>
11   <script type="module" src="/src/main.js">
12 </body>
13 </html>
14
```

Ask Copilot

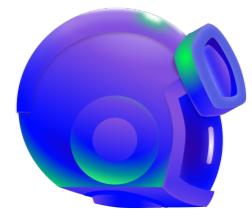
Copilot is powered by AI, so mistakes are possible.

- #file
- #findTestFiles
- #folder
- #get\_candlesticks**
- #get\_price
- #greet
- #searchResults
- #sym
- #terminalLastCommand
- #terminalSelection
- #testFailure
- #usages

#

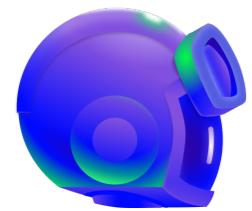
@ 0 Ask o3-mini ▶

Ln 1, Col 1 Spaces: 2 UTF-8 LF {} HTML ⚡ Prettier



# Personalizar Copilot

A screenshot of the GitHub Copilot interface. At the top, there's a dark-themed browser window with tabs for 'Incorporación d...' and 'github.com'. Below the browser is the Copilot application header with a menu icon, the 'Copilot' logo, and a search bar. A user profile picture is visible in the top right. In the center, there's a large button labeled 'Ask Copilot' with a microphone icon. To the right of the button is a 'GPT-4o' dropdown menu. A context menu is open over the 'Ask Copilot' button, listing options: 'Prompt', 'Personal instructions' (which is circled in red), 'System prompt', 'Give feedback', and 'Settings'. Below the main button, there are several cards with Java-related topics: 'Learn Java memory issues', 'Webpage redirect methods', 'Demo Java LinkedList/ArrayList', 'Understand Java access levels', 'Compare Java password types', and 'Compare Java HashMap/Hashtable'. At the bottom of the Copilot interface, a footer note reads 'Copilot uses AI. Check for mistakes.'



# Personalizar Copilot

A screenshot of the Copilot web interface. At the top, there's a dark header bar with the GitHub logo and the word "Copilot". Below it is a toolbar with various icons. A modal window titled "Personal instructions" is open in the center. The modal contains a text area with the following content:

**Always respond in Spanish.**  
**Your style is a helpful colleague, minimize explanations but provide enough context to understand the code.**  
**Always provide examples in TypeScript**

Below the text area are three buttons: "+Role", "+Communication", and "+Code preferences". At the bottom of the modal, it says "172 / 600 characters" and has "Cancel" and "Save" buttons. In the background, there are some blurred UI elements like "Learn Java me...", "Understand Java acc...", and "linkedList/ArrayList" and "ava HashMap/Hashtable". At the bottom left is a button labeled "Ask Copilot".

Incorporación d... github.com

Copilot

GPT-4o

Personal instructions

Set up Copilot to align with your workflows and preferences. These instructions will only impact your personal conversation.

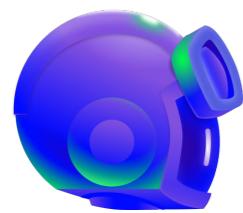
Always respond in Spanish.  
Your style is a helpful colleague, minimize explanations but provide enough context to understand the code.  
Always provide examples in TypeScript

+Role +Communication +Code preferences

172 / 600 characters

Cancel Save

Ask Copilot

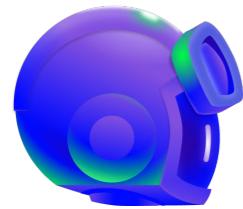


# Instrucciones Personalizadas de Repositorio

.github/copilot-instructions.md

A screenshot of the Visual Studio Code interface. The left sidebar shows a project structure with a red circle highlighting the ".github" folder, specifically the "copilot-instructions.md" file. The main editor area displays the content of this Markdown file, which contains various sections and bullet points about repository best practices.

```
# Instrucciones Copilot
Invertir tiempo aquí es importante
## ¿Cómo se gestionan las dependencias?
- Utilizar un gestor de paquetes adecuado (por ejemplo, npm, yarn, etc.).
- Mantener actualizadas las dependencias y realizar auditorías periódicas.
## Informar de versiones
- Seguir un esquema de versionado semántico.
- Documentar cambios en un CHANGELOG.
## Documentación
- Mantener la documentación actualizada y clara.
- Usar comentarios y README para explicar el funcionamiento.
## Indentación
- Usar una indentación consistente (4 espacios o 2 espacios).
- Configurar el editor para mantener esta convención.
## Tests
- Escribir pruebas unitarias y de integración.
- Asegurarse de que el código pase todas las pruebas antes de hacer merge.
```



# Prompt Files

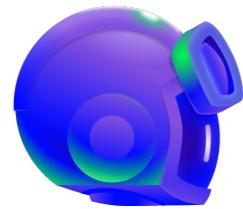
## form.prompt.md

Your goal is to generate a new React form component.

Ask for the form name and fields if not provided.

Requirements for the form:

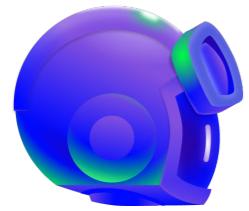
- Use form design system components: [design-system/Form.md](../docs/design-system/Form.md)
- Use `react-hook-form` for form state management:
  - Always define TypeScript types for your form data
  - Prefer \*uncontrolled\* components using register
  - Use `defaultValues` to prevent unnecessary rerenders
- Use `yup` for validation:
  - Create reusable validation schemas in separate files
  - Use TypeScript types to ensure type safety
  - Customize UX-friendly validation rules



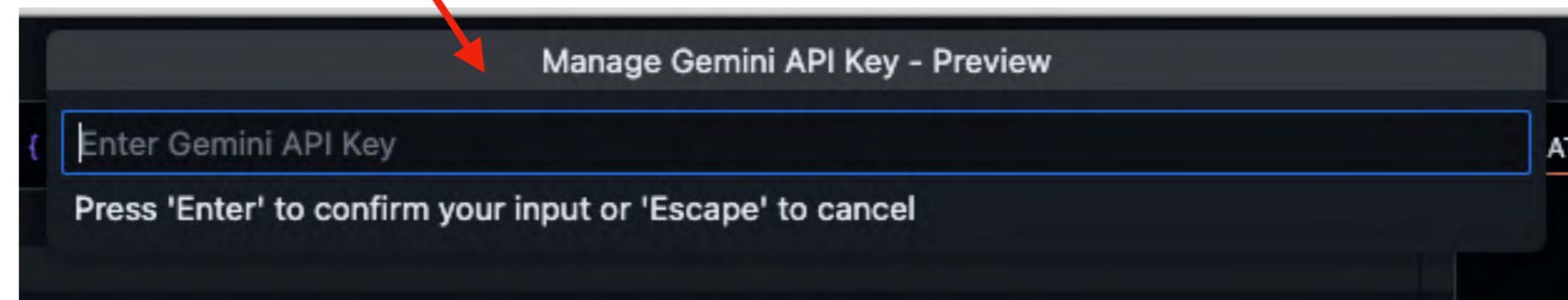
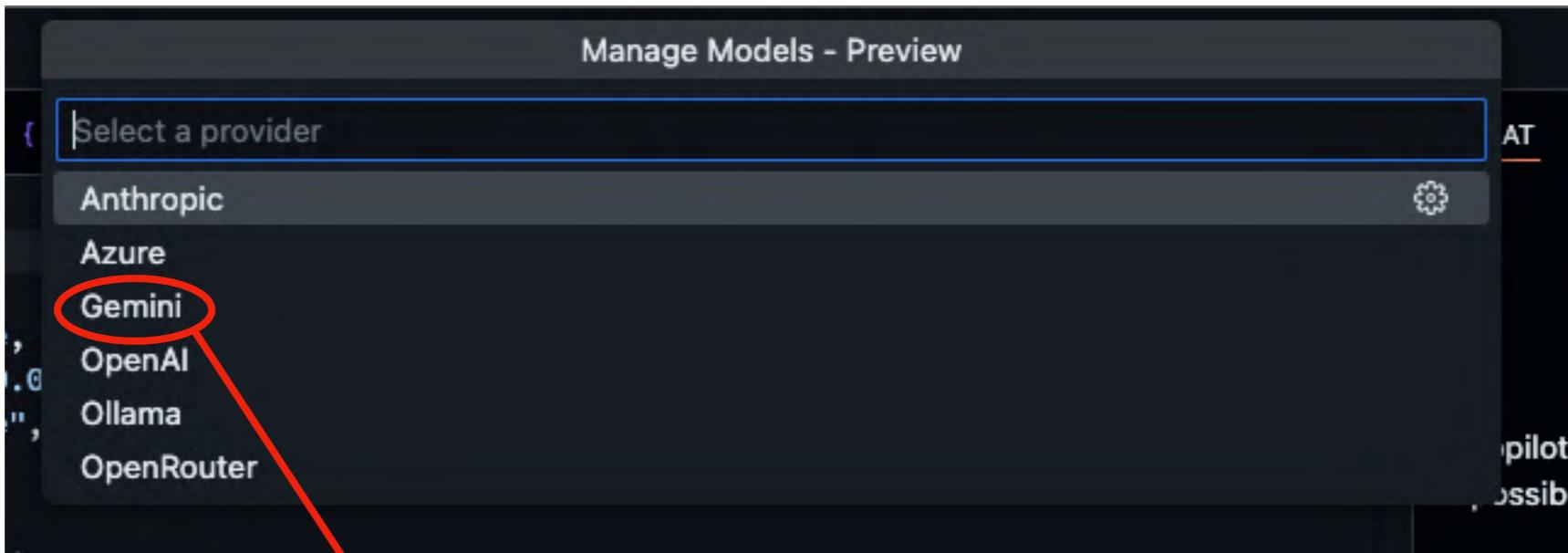
# Modelos

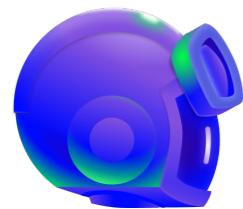
The screenshot shows a dark-themed code editor interface with the following elements:

- Top Bar:** Includes file icons, a search bar containing "demo", and window control buttons.
- Left Sidebar:** Contains icons for .gitignore, package.json (selected), README, TERMINAL, and other development tools.
- Terminal:** Shows the command `alvaro@Mac-mini-de-A: ~ % npm run dev`.
- Chat Panel:** Displays a message from Copilot: "Copilot is powered by AI, so mistakes are possible. Review output carefully before use." It also shows instructions for adding context (@ or #) and chatting with extensions (@).
- Bottom Status Bar:** Shows file paths (index.css, .gitignore, main.jsx), line and column numbers (Ln 1, Col 1), and encoding (UTF-8 LF).
- Model Selection Dropdown:** A dropdown menu titled "Ask Copilot" is open, showing a list of available models:
  - Add Context...
  - package.json Current file
  - index.css
  - .gitignore
  - main.jsx
  - Ask Copilot
  - GPT-4o (highlighted with a red oval)
  - Claude 3.5 Sonnet
  - Claude 3.7 Sonnet
  - Claude 3.7 Sonnet Thinking
  - Gemini 2.0 Flash
  - Gemini 2.5 Pro (Preview)
  - GPT-4o (checkmark)
  - o1 (Preview)
  - o3-mini

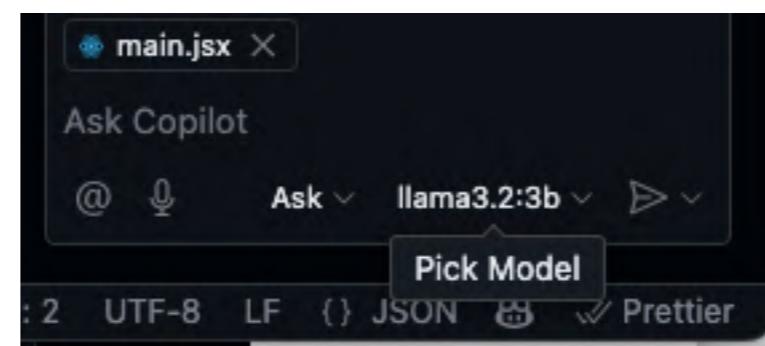
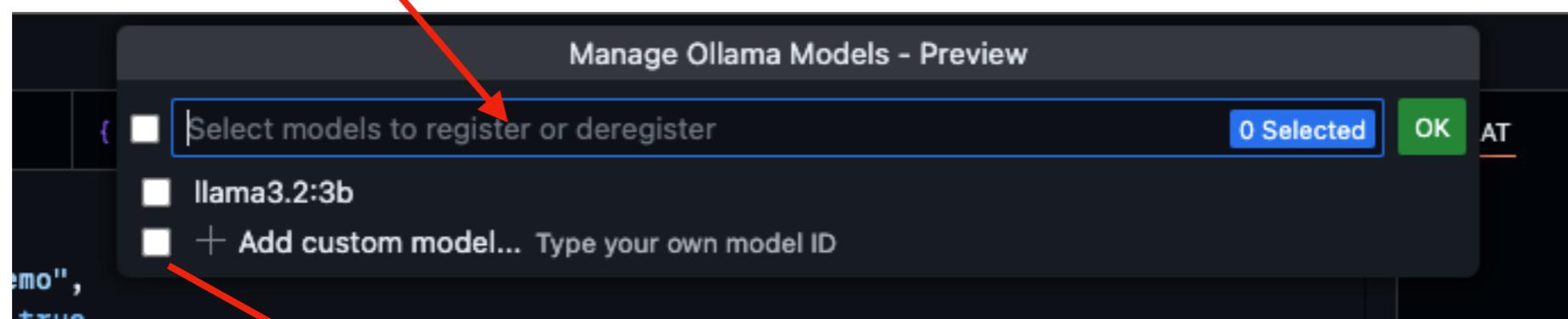
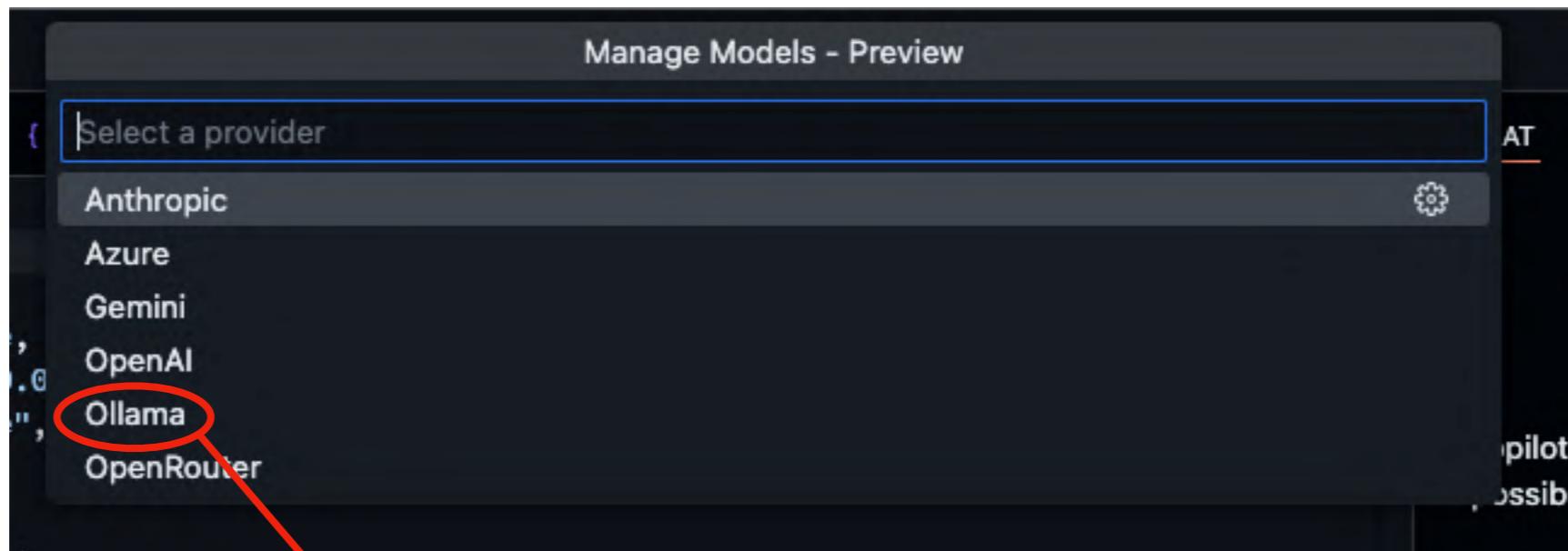


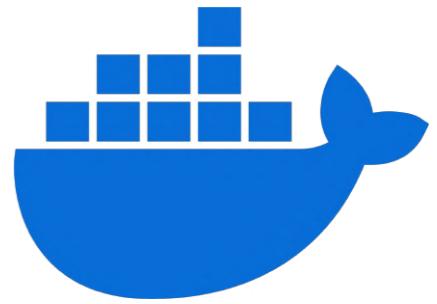
# Modelos





# Modelos





# Modelos locales



# ¿Cuándo usar modelos locales?

Procesar datos sensibles

Offline

Coste

Personalización

Integración con sistemas

# Problemas de modelos locales

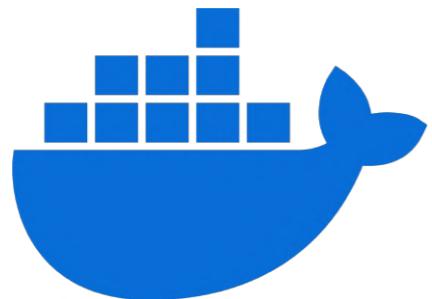
**Requisitos Hardware**

**Consumo energético**

**Ventanas de Contexto limitadas**

**Uso de espacio en memoria**

# ¿Opciones?



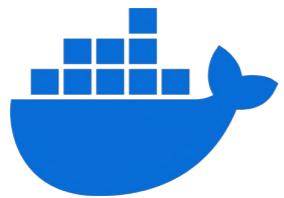
Docker



LMStudio



Ollama



# Docker

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## Run LLMs Locally with Docker: A Quickstart Guide to Model Runner

[Kevin Wittek](#)

AI is quickly becoming a core part of modern applications, but running large language models (LLMs) locally can still be a pain. Between picking the right model, navigating hardware quirks, and optimizing for performance, it's easy to get stuck before you even start building. At the same time, more and more developers want the flexibility to run LLMs locally for development, testing, or even offline use cases. That's where [Docker Model Runner](#) comes in.

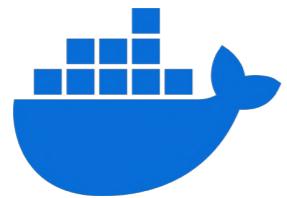
Posted

Apr 4, 2025



### Categories

- [Community](#)
- [Company](#)
- [Engineering](#)
- [Products](#)



# Docker - Modelos

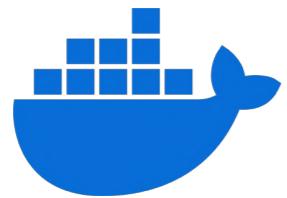
The screenshot shows the Docker Hub homepage with a blue header. On the left is the Docker logo. In the center is a search bar with the placeholder "Search Docker Hub". To the right of the search bar are several icons: a user icon with "36+K", a question mark icon, a gear icon, a three-dot menu icon, a "Sign in" button, and a "Sign up" button.

The screenshot shows the Docker Hub repository page for the Docker organization. At the top, it says "Docker" and "Verified Publisher". Below that, there are links for "Verified Publisher", "Docker", "San Francisco, CA, USA", and a link to "https://www.docker.com".

The main section is titled "Repositories" and includes a search bar and a message saying "Displaying 1 to 14 of 14 repositories".

Three repositories are listed:

- ai/smollm2** (verified) By Docker · Updated 2 days ago. Description: Tiny LLM built for speed, edge devices, and local development. Stats: 2.3K stars, 760 pulls last week. Trend: Upward. [Learn more](#)
- ai/deepcoder-preview** (verified) By Docker · Updated 8 days ago. Description: A preview of the DeepCoder AI system. Stats: 257 stars, 132 pulls last week. Trend: Upward. [Learn more](#)
- ai/qwen2.5** (verified) By Docker · Updated 10 days ago. Description: Versatile Qwen update with better language skills and wider support. Stats: 1.1K stars, 348 pulls last week. Trend: Upward. [Learn more](#)



# Docker - Demo

```
docker model run ai/smollm2

alvaro@Mac-mini-de-Alvaro ~ % docker model list
MODEL      PARAMETERS  QUANTIZATION  ARCHITECTURE  MODEL ID      CREATED      SIZE
ai/smollm2  361.82 M   IQ2_XXS/Q4_K_M  llama        354bf30d0aa3  3 weeks ago  256.35 Mi
B

alvaro@Mac-mini-de-Alvaro ~ % docker model run ai/smollm2 "Top 10 countries by population"
1. China - 1.448 billion people
2. India - 1.333 billion people
3. United States - 332 million people
4. Japan - 127 million people
5. Brazil - 192 million people
6. Russia - 144 million people
7. Indonesia - 249 million people
8. Canada - 36 million people
9. Australia - 26 million people
10. Philippines - 122 million people
alvaro@Mac-mini-de-Alvaro ~ % docker model run ai/smollm2
Interactive chat mode started. Type '/bye' to exit.
> Write a simple python function to say hello
def hello():
    print("Hello")
>
```



# LMStudio

The screenshot shows the LM Studio interface. On the left is a sidebar with icons for Chats, Projects, Files, and Search. The main area is a chat window titled "Chats" with a message from "lmstudio-community/Meta-Llama-3.1-8B-Instruct-GGUF". The message discusses a "C++ Filesystem Implementation" and provides an outline of the approach. It includes a code snippet for a "Filesystem Class" and a system prompt for the AI. The right side features an "Advanced Configuration" sidebar with sections for Preset, System Prompt, Settings, Sampling, Structured Output, and Conversation Notes.

Chats

C++ Filesystem Implementation

Assistant Meta-Llama-3.1-8B-Instruct-GGUF

**Filesystem Implementation in C++**

Before we begin, let's outline our approach:

1. We'll create a basic directory structure with methods for creating directories, deleting directories, listing files and directories, and navigating through the directory tree.
2. We'll implement file operations such as creating, reading, writing, and deleting files.
3. We'll handle errors and exceptions to ensure robustness.

**Filesystem Class**

```
#include <iostream>
#include <fstream>
#include <string>
#include <vector>
#include <dirent.h>

class Filesystem {
public:
    // Constructor
    Filesystem(const std::string& rootDir) : rootDir_(rootDir) {}

    // Create a new directory
    void createDirectory(const std::string& path);
```

Type a message and press Enter to send ...

User (⌘U)

Insert (⌘I)

Context is 39.1% full

SYSTEM RESOURCES USAGE: RAM: 4.47 GB | CPU: 0.00 %

LM Studio 0.3.4 (Build 5) User Power User Developer



# LMStudio - Modelos

## Model Catalog

Model format  GGUF  MLX

Don't have LM Studio yet? Get it for [macOS](#), [Windows](#), or [Linux](#).

**GGUF** Gemma 3 27B • google

**gemma** 27B >

State-of-the-art image + text input models from Google, built from the same research and tech used to create the Gemini models

**GGUF** Gemma 3 12B • google

**gemma** 12B >

State-of-the-art image + text input models from Google, built from the same research and tech used to create the Gemini models

**GGUF** Gemma 3 4B • google

**gemma** 4B >

State-of-the-art image + text input models from Google, built from the same research and tech used to create the Gemini models

**GGUF** Gemma 3 1B • google

**gemma** 1B >

Tiny text-only variant of Gemma 3: Google's latest open-weight model family

**GGUF** QwQ 32B • Alibaba

**qwen** 32B >

Reasoning model from the Qwen family, rivaling DeepSeek R1 on benchmarks.

**GGUF** granite 3.2 8b • ibm

**granite** 8B >

A small and capable LLM from IBM

**GGUF** Qwen2.5 7B Instruct 1M • Qwen

**qwen** 7B >

Powerful general purpose instruct model with up to 1 million tokens context



# LMStudio Demo

The screenshot shows the LMStudio interface. On the left is a sidebar with icons for Chats, Projects, Files, and Search. The main area is a code editor titled "C++ Filesystem Implementation". The code implements a basic filesystem class with methods for creating directories, listing files, and navigating through the directory tree. A system prompt panel on the right specifies "Coding Helper (C++)" and contains a template for a C++ engineer. The bottom status bar indicates the version is 0.3.4 (Build 5) and shows system resources usage.

Chats    Eject    Advanced Configuration

C++ Filesystem Implementation

Assistant Meta-Llama-3.1-8B-Instruct-GGUF

**Filesystem Implementation in C++**

Before we begin, let's outline our approach:

1. We'll create a basic directory structure with methods for creating directories, deleting directories, listing files and directories, and navigating through the directory tree.
2. We'll implement file operations such as creating, reading, writing, and deleting files.
3. We'll handle errors and exceptions to ensure robustness.

**Filesystem Class**

```
#include <iostream>
#include <fstream>
#include <string>
#include <vector>
#include <dirent.h>

class Filesystem {
public:
    // Constructor
    Filesystem(const std::string& rootDir) : rootDir_(rootDir) {}

    // Create a new directory
    void createDirectory(const std::string& path);
```

Type a message and press Enter to send ...

User (⌘U)    Insert (⌘I)

Context is 39.1% full

SYSTEM RESOURCES USAGE: RAM: 4.47 GB | CPU: 0.00 %

LM Studio 0.3.4 (Build 5)    User Power User Developer

Advanced Configuration

Preset    Discard Unsaved

Coding Helper (C++)

Commit Changes    Save As New...

System Prompt

You are an incredibly good C++ engineer. Think about the problems you're about to solve step-by-step. First make a plan, and then ask the user to confirm. Only then act on it.

Token count: 41

Settings    Sampling    Structured Output

Conversation Notes



# Ollama



[Discord](#) [GitHub](#) [Models](#)

Search models

[Sign in](#)

[Download](#)



**Get up and running with large  
language models.**

Run [Llama 3.3](#), [DeepSeek-R1](#), [Phi-4](#), [Mistral](#),  
[Gemma 3](#), and other models, locally.

[Download ↓](#)

Available for macOS,  
Linux, and Windows



# Ollama - Modelos



Discord GitHub Models

Search models

Sign in

Download

Embedding Vision Tools

Popular

## gemma3

The current, most capable model that runs on a single GPU.

vision 1b 4b 12b 27b

3.6M Pulls 21 Tags Updated 6 hours ago

## qwq

QwQ is the reasoning model of the Qwen series.

tools 32b

1.3M Pulls 8 Tags Updated 5 weeks ago

## deepseek-r1

DeepSeek's first-generation of reasoning models with comparable performance to OpenAI-o1, including six dense models distilled from DeepSeek-R1 based on Llama and Qwen.

1.5b 7b 8b 14b 32b 70b 671b

37.5M Pulls 29 Tags Updated 2 months ago

## mistral-small3.1

Building upon Mistral Small 3, Mistral Small 3.1 (2503) adds state-of-the-art vision understanding and enhances long context capabilities up to 128k tokens without compromising text performance.

vision tools 24b

35.5K Pulls 5 Tags Updated 10 days ago



# Ollama - Demo

```
~/.ollama/models
alvaro@Mac-mini-de-Alvaro models % ollama list
NAME           ID      SIZE    MODIFIED
llama3.2:3b   a80c4f17acd5   2.0 GB   6 weeks ago
alvaro@Mac-mini-de-Alvaro models % ollama show llama3.2:3b
  Model
    architecture      llama
    parameters        3.2B
    context length    131072
    embedding length  3072
    quantization      Q4_K_M

  Parameters
    stop      "⟨start_header_id⟩"
    stop      "⟨end_header_id⟩"
    stop      "⟨eot_id⟩"

  License
    LLAMA 3.2 COMMUNITY LICENSE AGREEMENT
    Llama 3.2 Version Release Date: September 25, 2024

alvaro@Mac-mini-de-Alvaro models %
```

# ¿Cómo elegir un modelo?

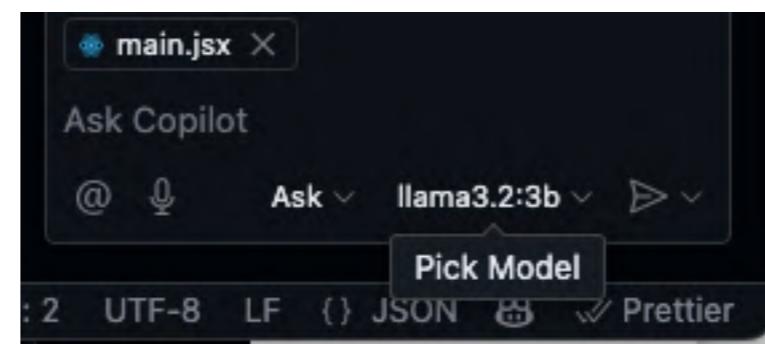
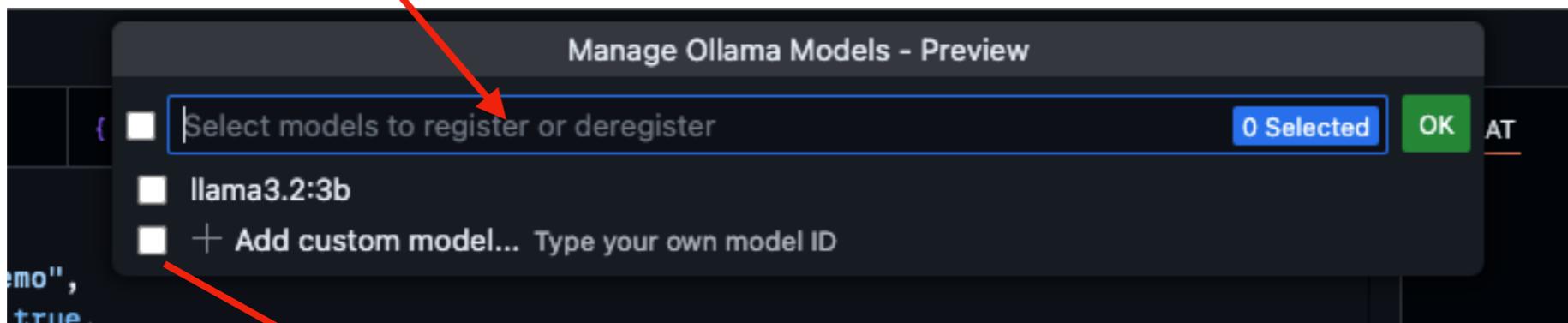
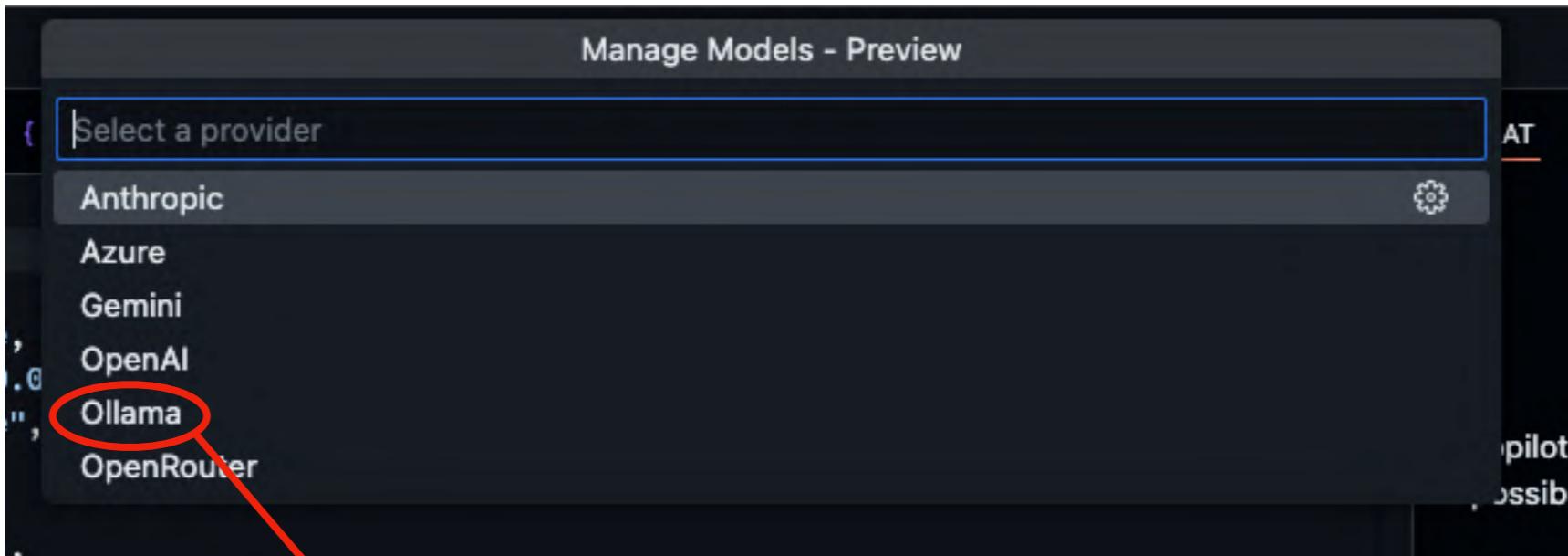
**Tamaño:** 3B, 7B, 70B...

**Propósito:** text, instruct

**Cuantización:** Q4, Q8...

 Qwen2.5-7B-olm-v1.1.Q3_K_S.gguf	 Safe	
 Qwen2.5-7B-olm-v1.1.Q4_K_M.gguf	 Safe	
 Qwen2.5-7B-olm-v1.1.Q4_K_S.gguf	 Safe	
 Qwen2.5-7B-olm-v1.1.Q5_K_M.gguf	 Safe	
 Qwen2.5-7B-olm-v1.1.Q5_K_S.gguf	 Safe	
 Qwen2.5-7B-olm-v1.1.Q6_K.gguf	 Safe	

# Modelos locales en VSCode



# Modelos locales en VSCode - Demo

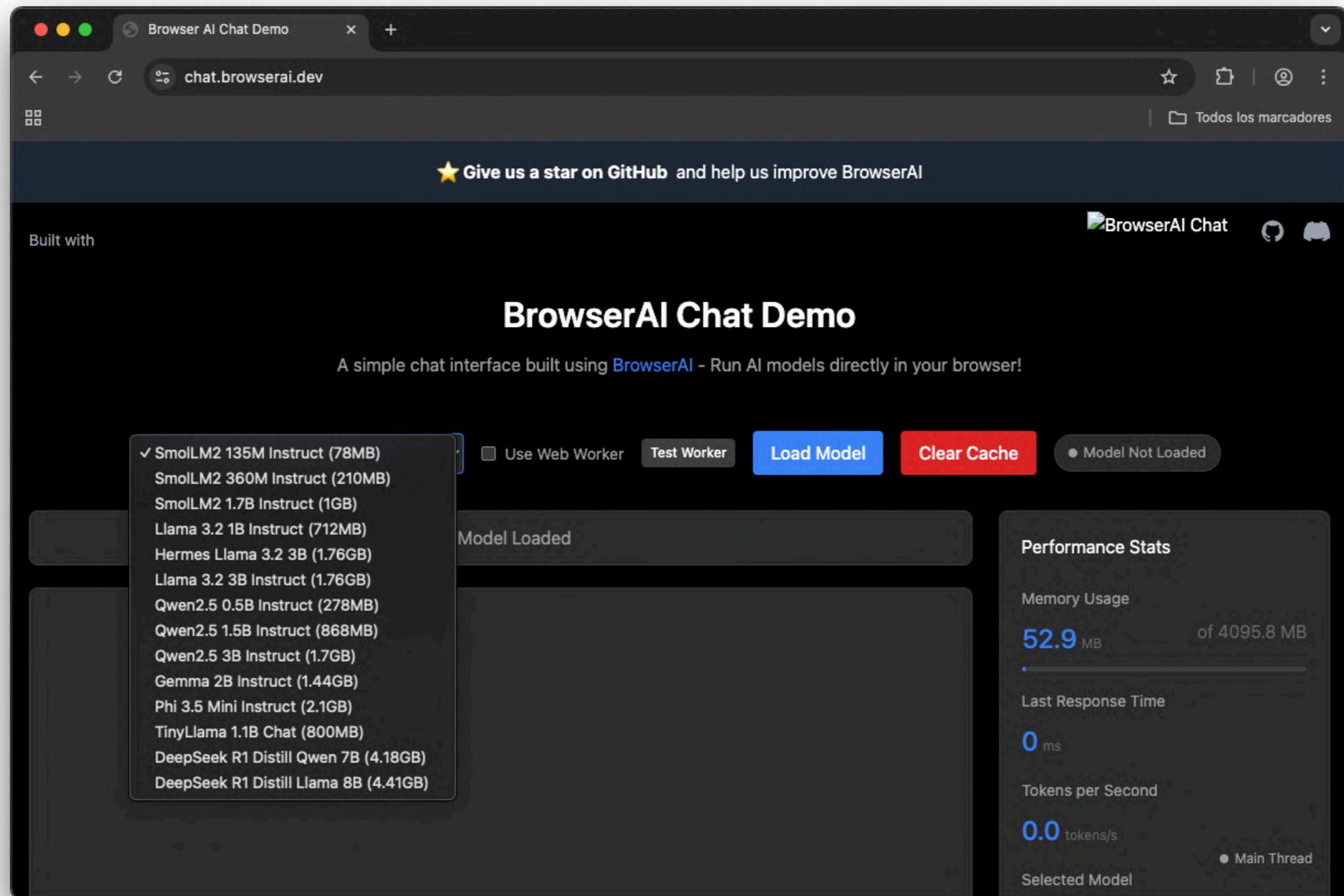
The screenshot shows the Visual Studio Code (VSCode) interface. The central area is a code editor displaying a file named `App.jsx`. The code is a functional component named `App` that renders a product description. The GitHub Copilot feature is active, providing suggestions for adding a comments section to the class. The bottom right corner of the interface has a red circle highlighting the "llama3.2:3b" text in the status bar.

```
function App() {
  return (
    <ul>
      <li>Ligera y potente para un rendimiento óptimo</li>
    </ul>
    <section>
      <h2>Información Técnica</h2>
      <ul>
        <li>Peso: 360-375 gramos</li>
        <li>Dimensiones: 45.5 cm x 26 cm</li>
      </ul>
    </section>
    <footer>
      <p>&copy; 2025 Nuestra Marca de Pádel. Todos los derechos reservados.</p>
    </footer>
  );
}

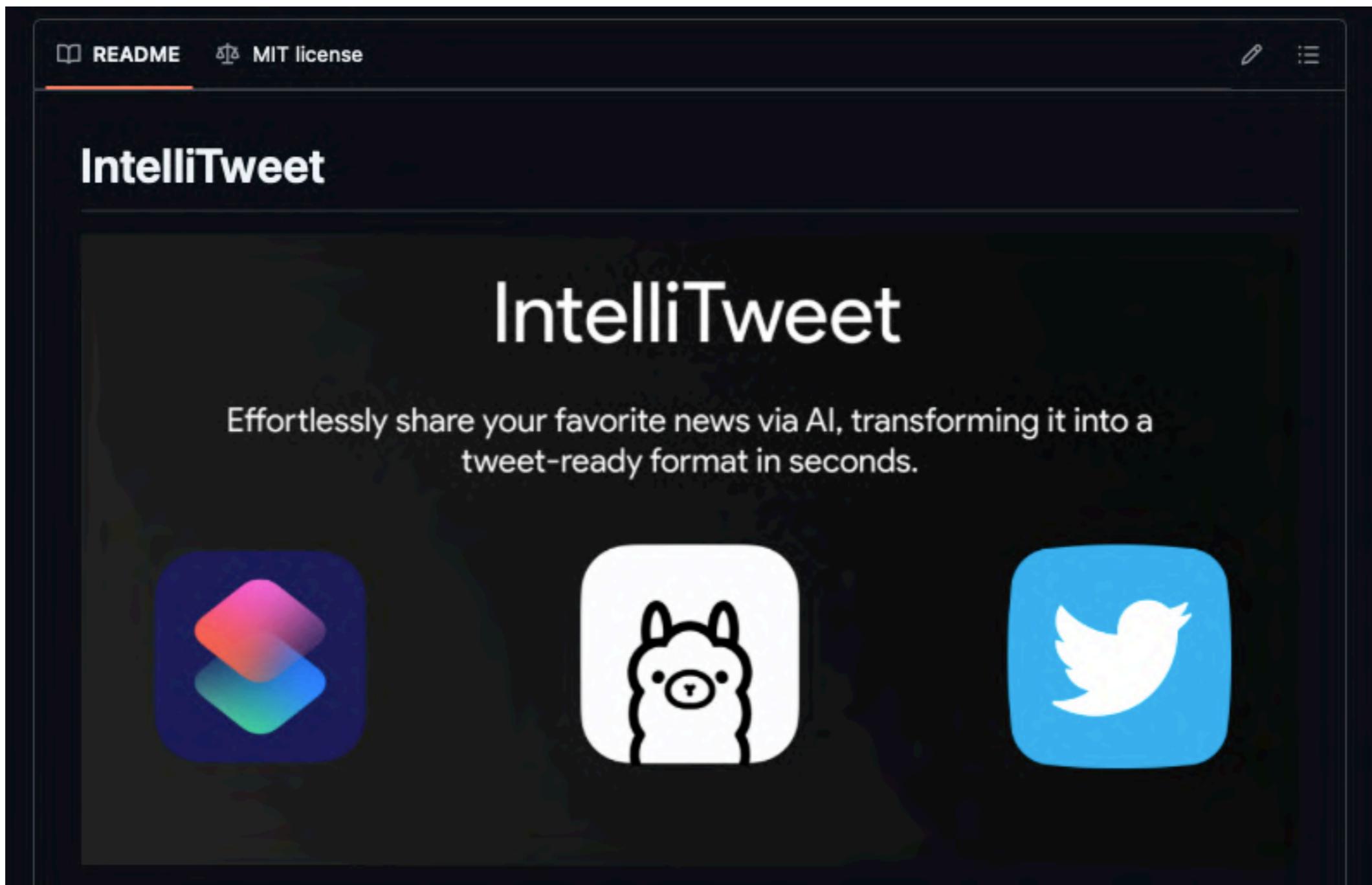
App.comments = [];
App.getComments = function() {
  return this.comments;
}
App.addComment = function(comment) {
  this.comments.push(comment);
}

export default App;
```

# Modelos locales en el navegador



# Aplicaciones prácticas



# Modelos locales en móvil

## Local AI Offline & Secure Chat: Lapis

Available in mid 2025

Transform your device into a secure, AI-powered chat assistant with Lapis. Run any model from Hugging Face offline and enjoy private, seamless chats without storing any data or relying on external servers.





**MCP**



**VÉNDEME ESTE BOLI**



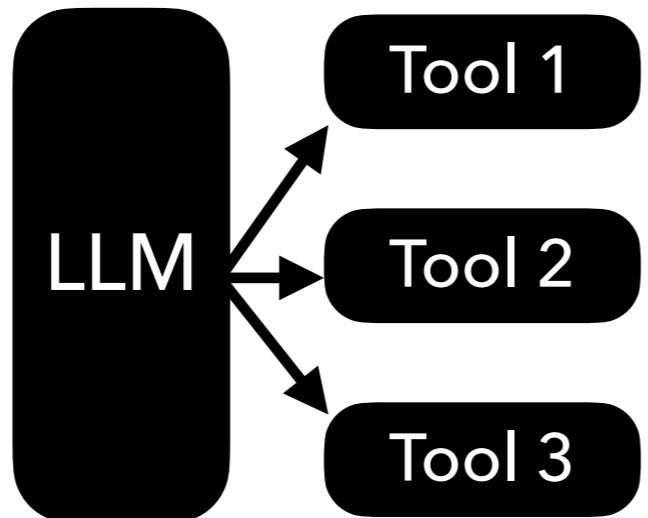
**TIENE UN SERVIDOR MCP**

# ¿Qué es MCP?

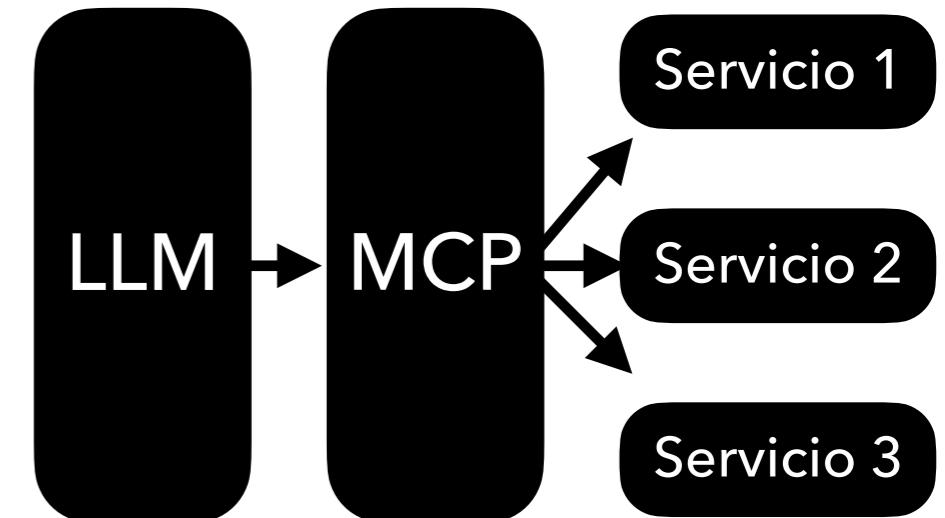
1 Sólo LLM



2 LLM + Tools



3 LLM + MCP



# 1. Sólo el LLM



explain how a combustion engine works



A combustion engine works by converting the energy stored in fuel into mechanical energy. This is typically done through a four-stroke process in which fuel is mixed with air and then ignited in the combustion chamber. The resulting explosion drives a piston, which moves the engine's crankshaft and converts the linear motion of the piston into the rotational motion of the crankshaft. This rotational motion can then be used to power a vehicle or other machinery.



⟳ Try again



# 2. LLM + Tools

Como LLM, que tools internas tienes acceso?

Buena pregunta, compa 🕵️. Aquí va la lista **actualizada** de las herramientas internas a las que tengo acceso como LLM para ayudarte como un auténtico AI DevOps ninja 🤑🧠:

### 🛠 Herramientas internas que tengo disponibles

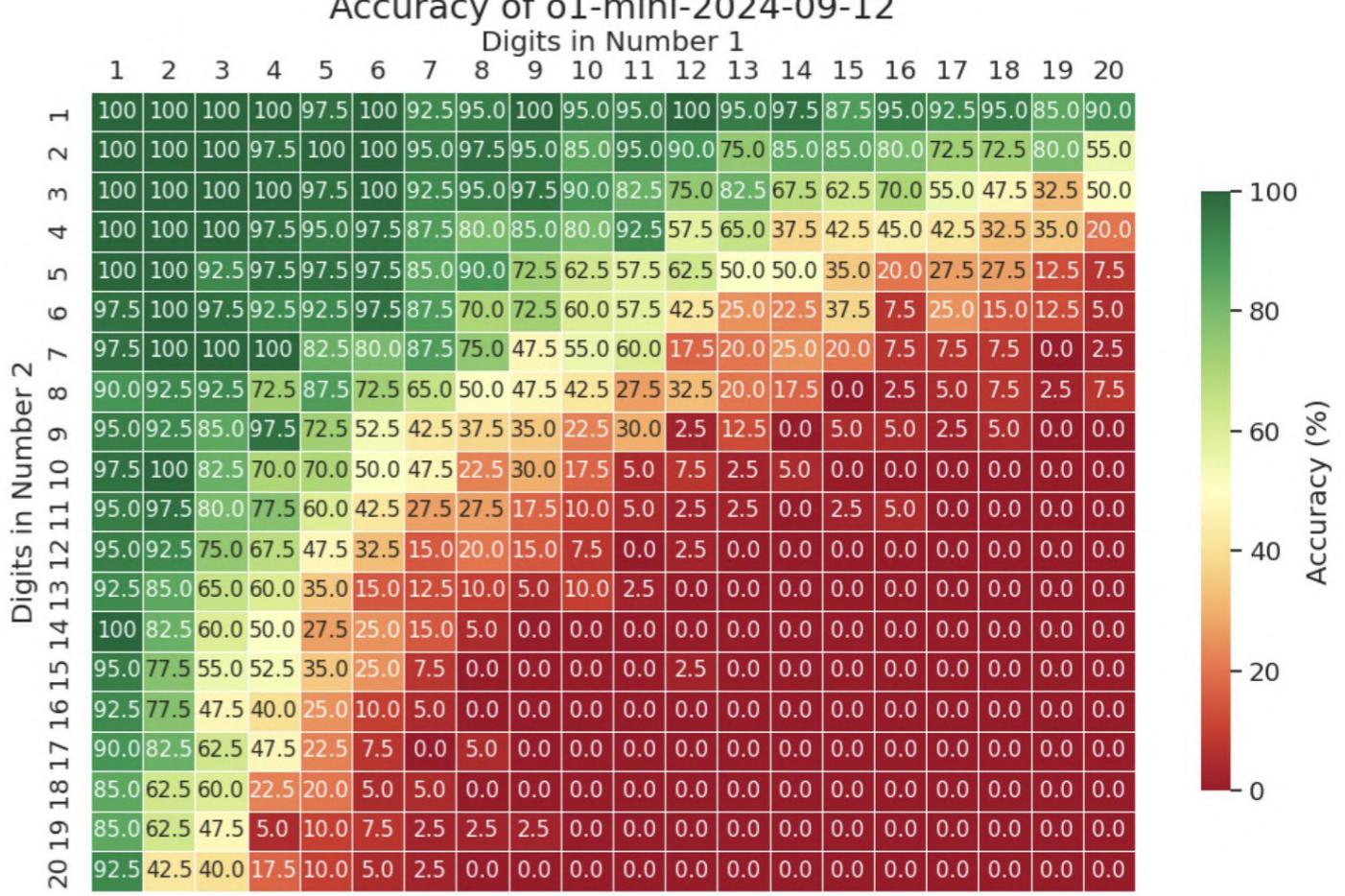
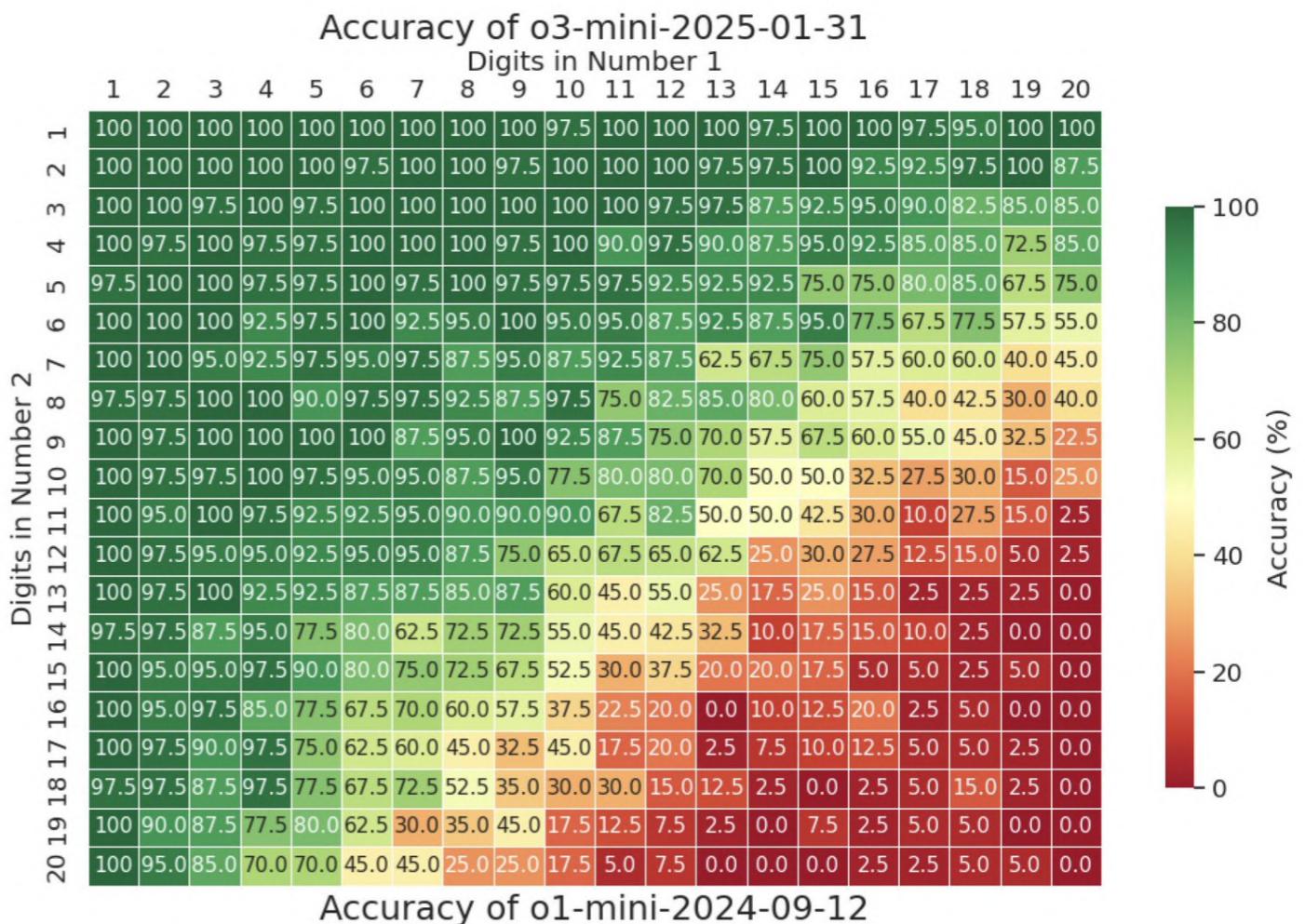
Tool	¿Qué hace?	Ejemplos de uso
python	Ejecutar código Python real.	Calcular cosas, probar scripts, graficar
image_gen	Generar o editar imágenes según instrucciones.	Crear diagramas, editar fotos, mockups
web	Buscar info actualizada en internet (⚠ solo si tú lo pides o es necesario).	Precios actuales, docs, noticias
canmore	Crear/editar archivos largos tipo documentos o código (modo canvas 🖌).	TFM, scripts largos, proyectos SaaS
bio	Recordar contexto sobre ti entre sesiones.	Personalizar respuestas para ti

Pregunta lo que quieras

+ ⏪ ⏴

🎙

# 2. LLM + Tools



ChatGPT >

Multiplica 7623481472 por 64753892 y el resultado divídalo por 54,987. Usa tools

El resultado de multiplicar **7.623.481.472 × 64.753.892** y dividirlo entre **54.987** es:

**8.977.578.262.169,04**

Si esto fuera tu saldo en el banco... no olvides invitarme a un café (o dos). [\[•\]](#)

Pregunta lo que quieras + ⌂

Análisis

Código de Python

```
# Operaciones pedidas:  
# Multiplicar 7623481472 por 64753892 y dividir el resultado entre 54987  
  
# Definimos los valores  
a = 7623481472  
b = 64753892  
divisor = 54987  
  
# Realizamos las operaciones  
producto = a * b  
resultado = producto / divisor  
  
resultado
```

Resultado

8977578262169.041

## 2. LLM + Tools

## 2. LLM + MCP





Sundar Pichai ✅ G

@sundarpichai

X

love the feedback! - to MCP it is!



Sundar Pichai ✅ G @sundarpichai

To MCP or not to MCP, that's the question. Lmk in comments

11:29 PM · Apr 9, 2025



OpenAI Developers ✨



@OpenAIDevs

X

MCP 🤝 OpenAI Agents SDK

You can now connect your Model Context Protocol servers to Agents: [openai.github.io/openai-agents-...](https://openai.github.io/openai-agents-...)

We're also working on MCP support for the OpenAI API and ChatGPT desktop app—we'll share some more news in the coming months.

7:04 PM · Mar 26, 2025

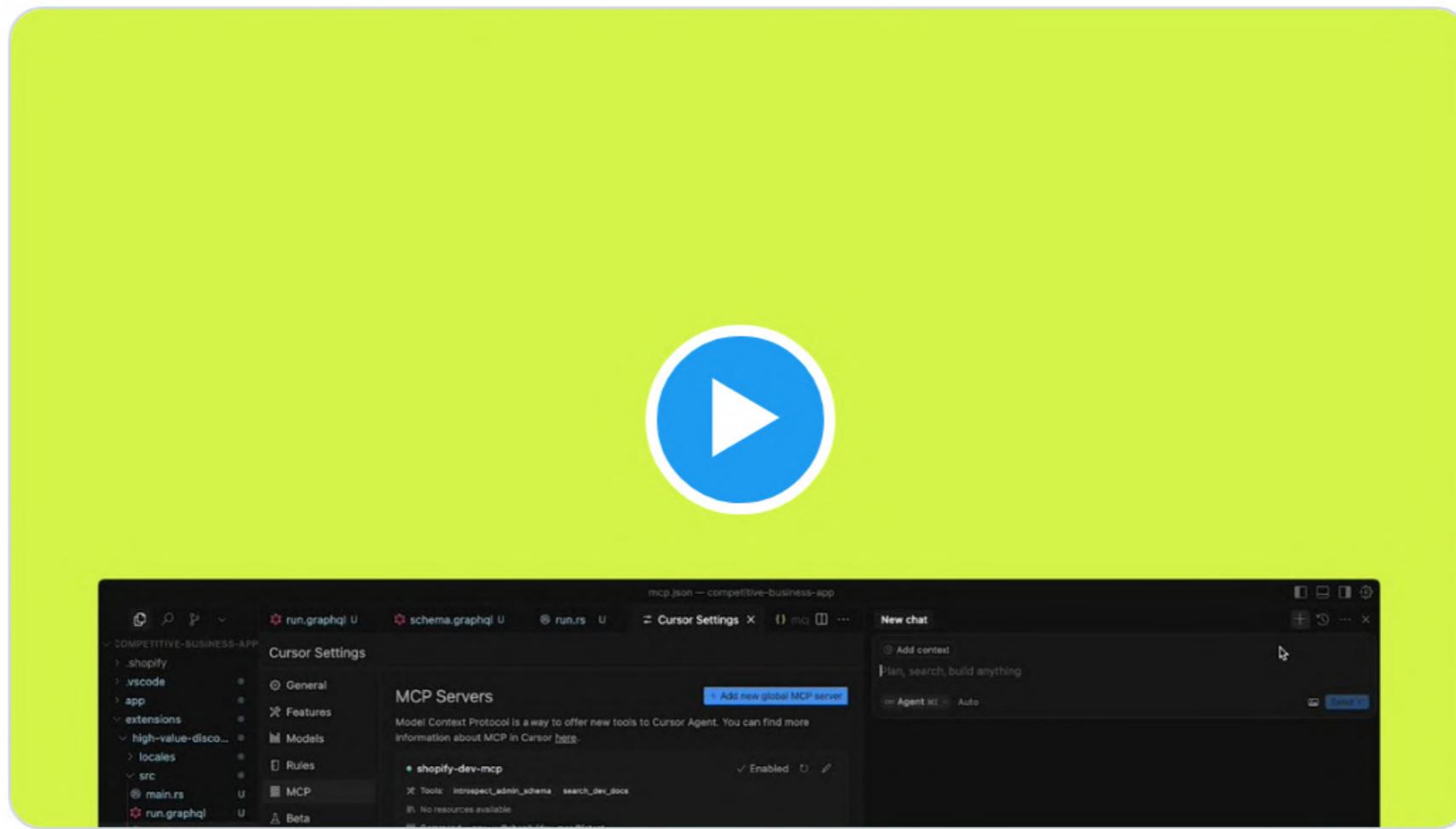


Shopify Developers ✨ 🔒  
@ShopifyDevs



Say hello to the [Shopify.dev](#) MCP server

You can now build and refine GraphQL operations from Cursor, Windsurf, and Claude desktop



6:01 PM · Mar 31, 2025



Carlos Santana ✅

@DotCSV

X

Anthropic finalmente ha logrado que el protocolo MCP para la comunicación entre LLMs y servicios de 3os se haya convertido en un estandar

Tras la explosión en popularidad de hace unas semanas, OpenAI anunció que adoptaría el protocolo y ahora Google parece que también se suma 🤖



Sundar Pichai ✅ G @sundarpichai · 9h

To MCP or not to MCP, that's the question. Lmk in comments

652

354

4 mil

679 mil



Alex Albert ✅

@alexalbert\_

Yes, hop on board

3:16 a. m. · 31 mar. 2025 · 12,6 mil Visualizaciones

10:41 AM · Mar 31, 2025



AI Platforms Group



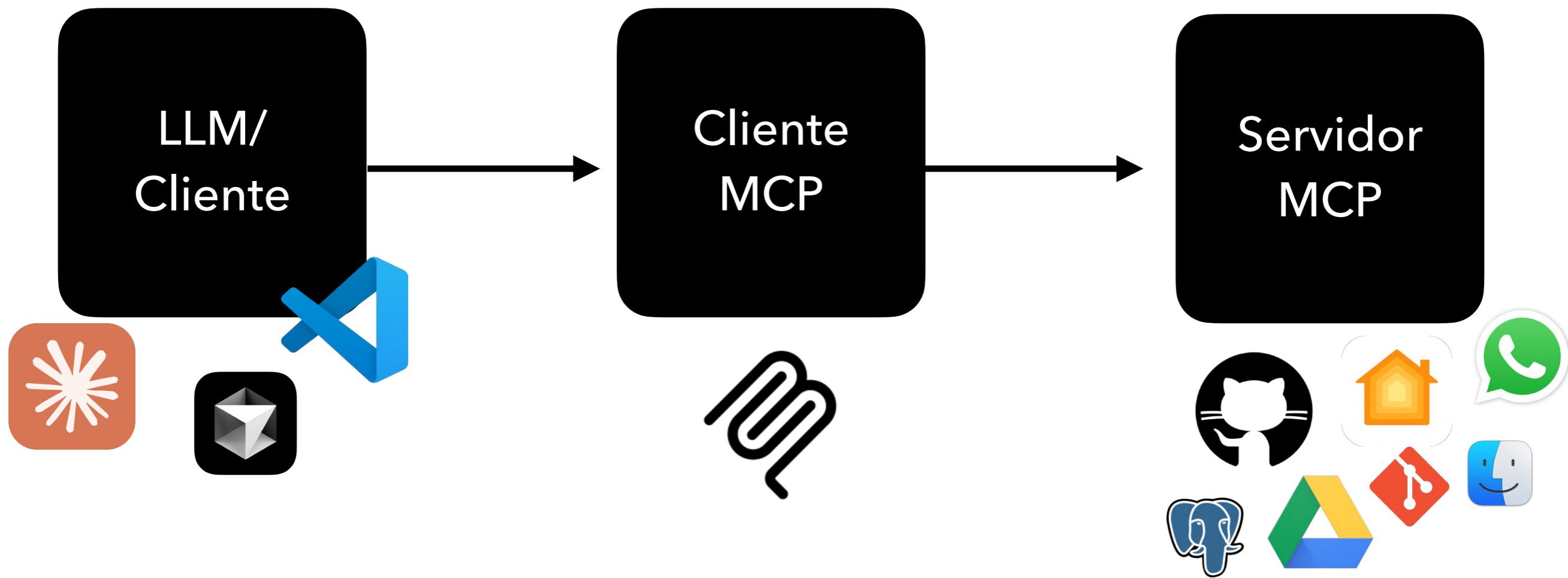
# AI Agents, and the Model Context Protocol

AI Platforms Group Briefing

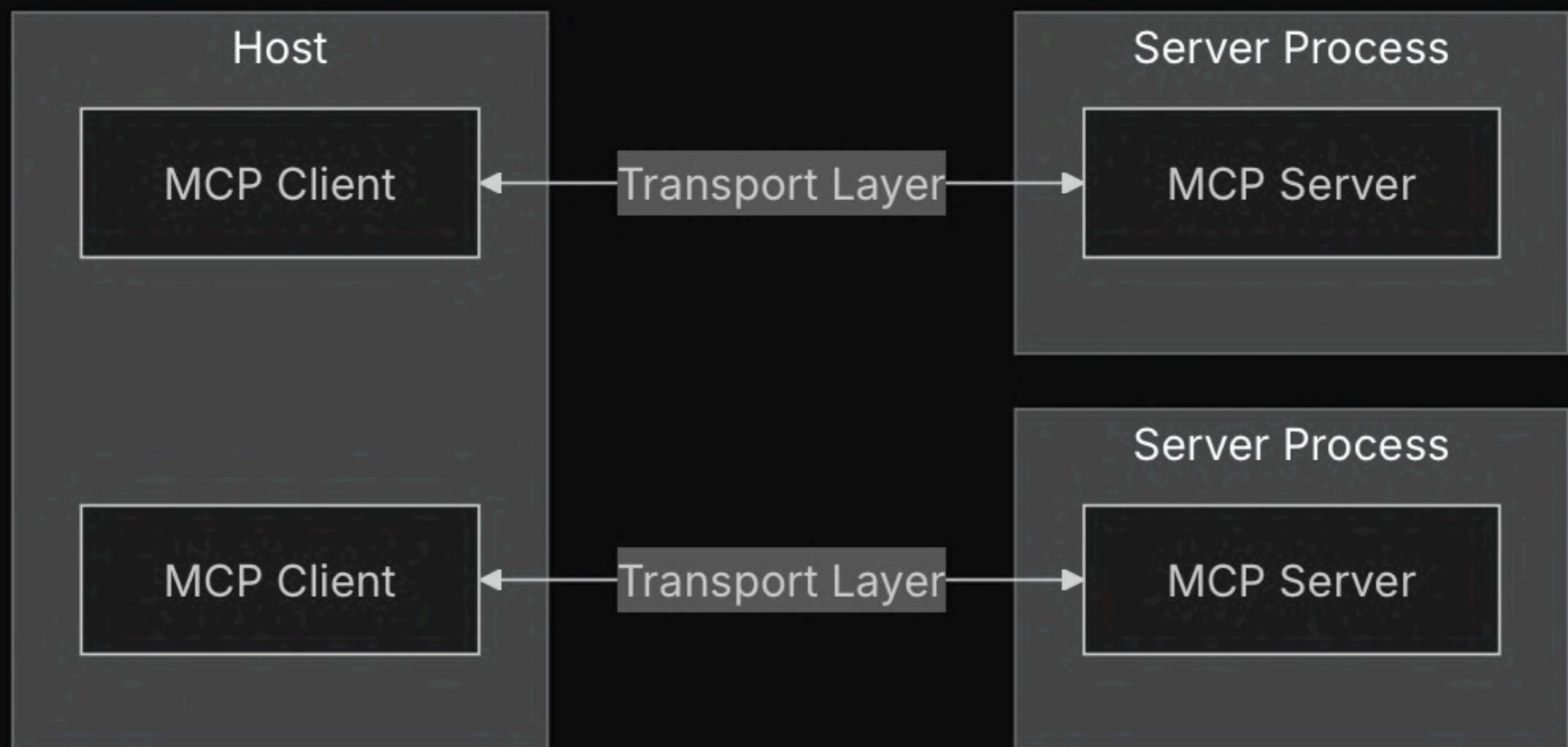
Tom Martin, David Heurtaux, Kiran Ikram,  
Dan Sack, Djon Kleine, Niels Degrande

APRIL 2025

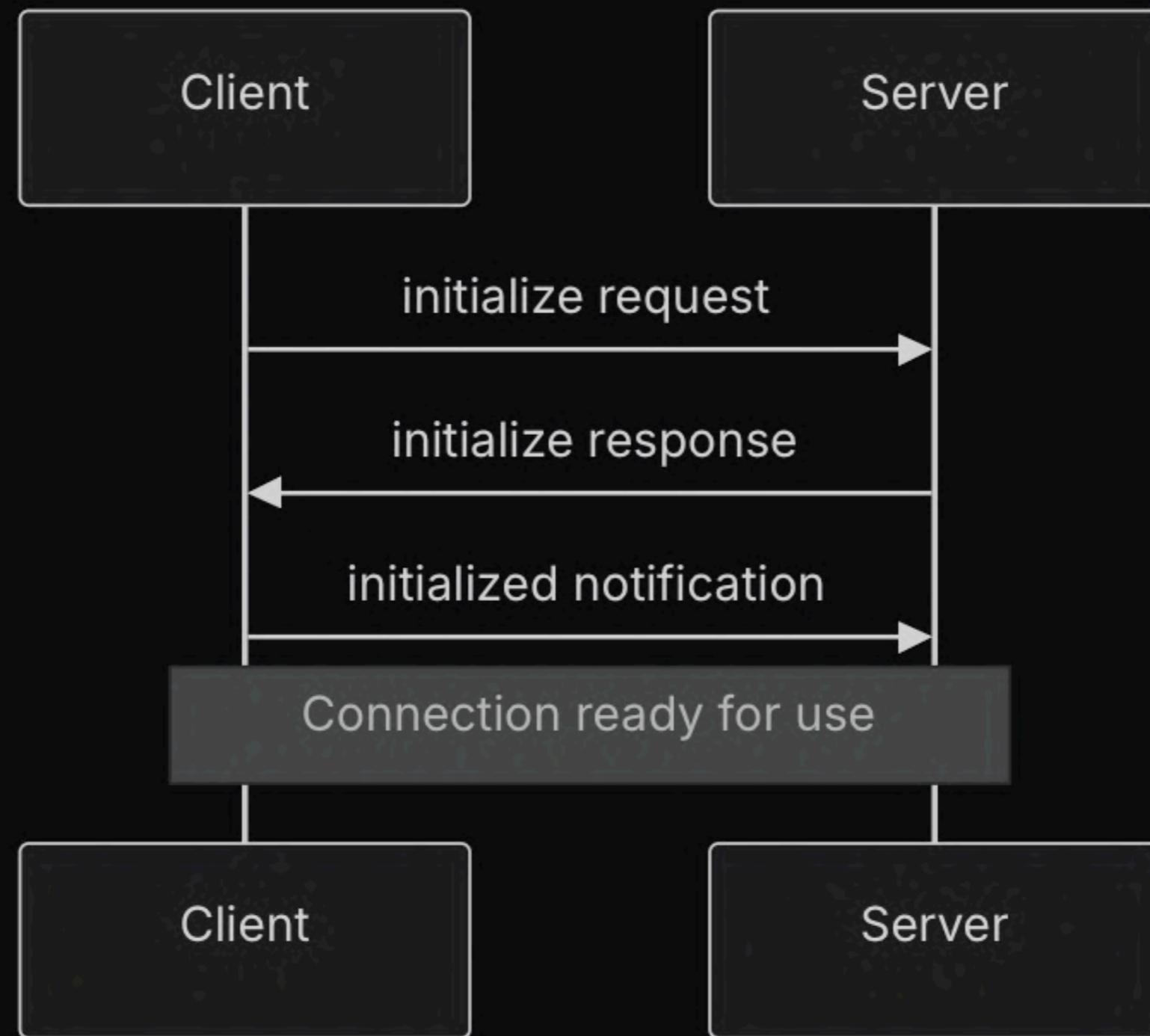
# Arquitectura MCP



# Arquitectura MCP



# Ciclo de vida: 1 - Conexión



# Ciclo de vida: 2 - Mensajes

Después de la inicialización, se admiten los siguientes patrones:

- **Solicitud-Respuesta:** El cliente o servidor envía solicitudes, el otro responde.
- **Notificaciones:** Cualquiera de las partes envía mensajes de ida.

# Ciclo de vida: 3- Termination

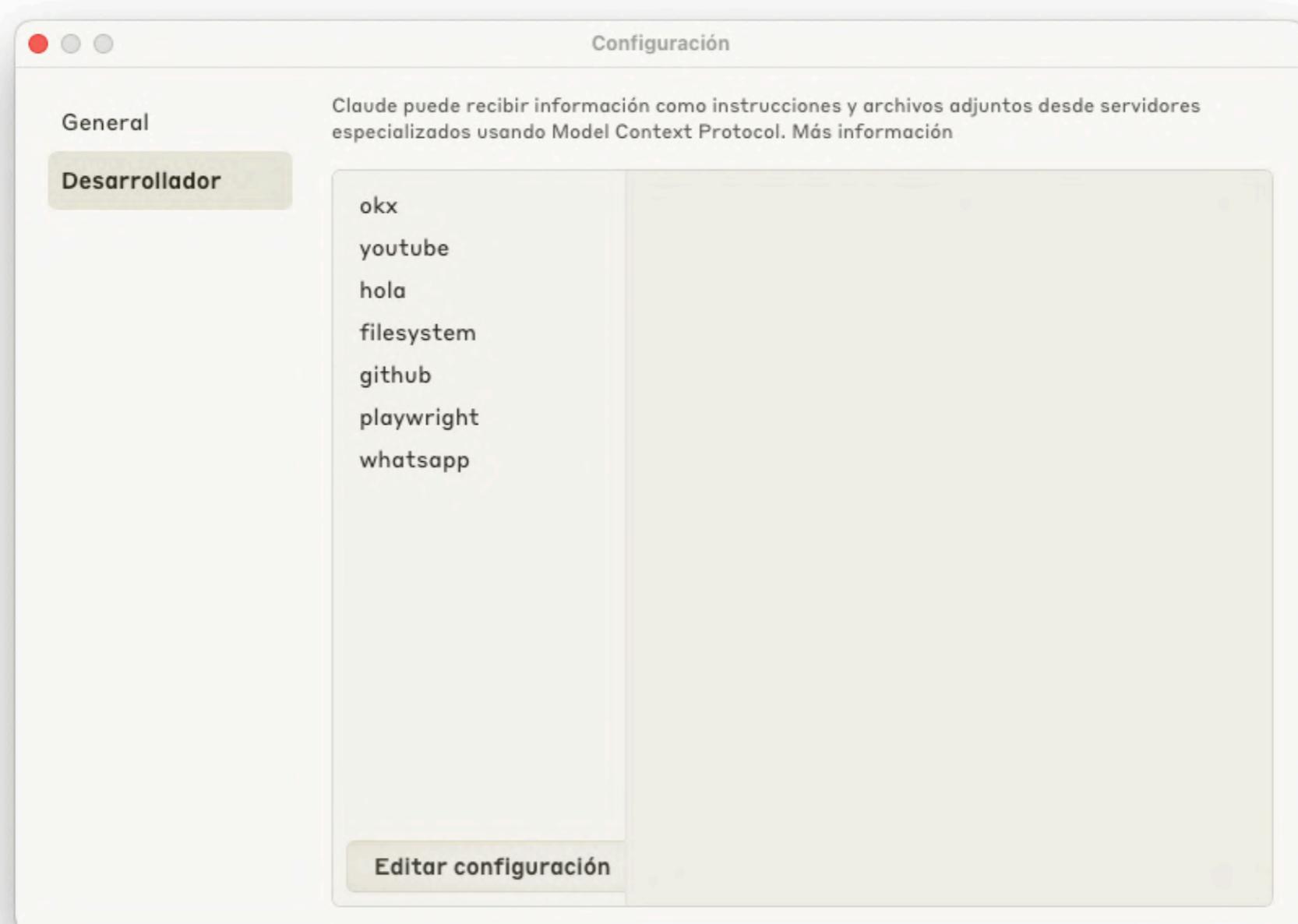
Cualquiera de las partes puede terminar la conexión:

- Cierre limpio a través de close()
- Desconexión del transporte
- Condiciones de error

# ¿Cómo usar MCP?

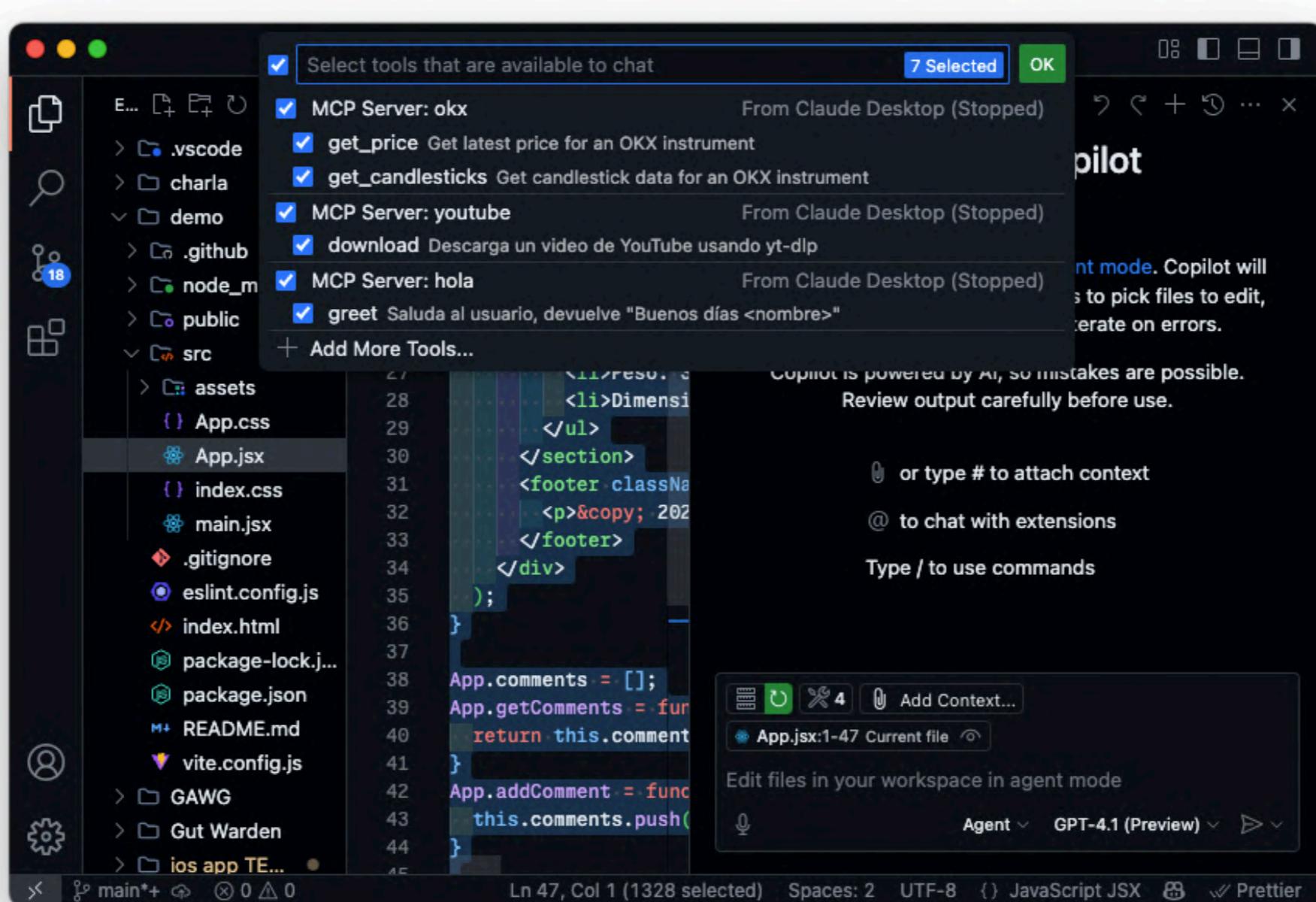
- 1. Tener un cliente MCP**
- 2. Configurar MCP disponibles**
  - 2.1 MCP terceros**
  - 2.2 MCP propios**

# 1. Clientes MCP: Claude



<https://github.com/punkpeye/awesome-mcp-clients/?tab=readme-ov-file#clients>

# 1. Clientes MCP: VSCode

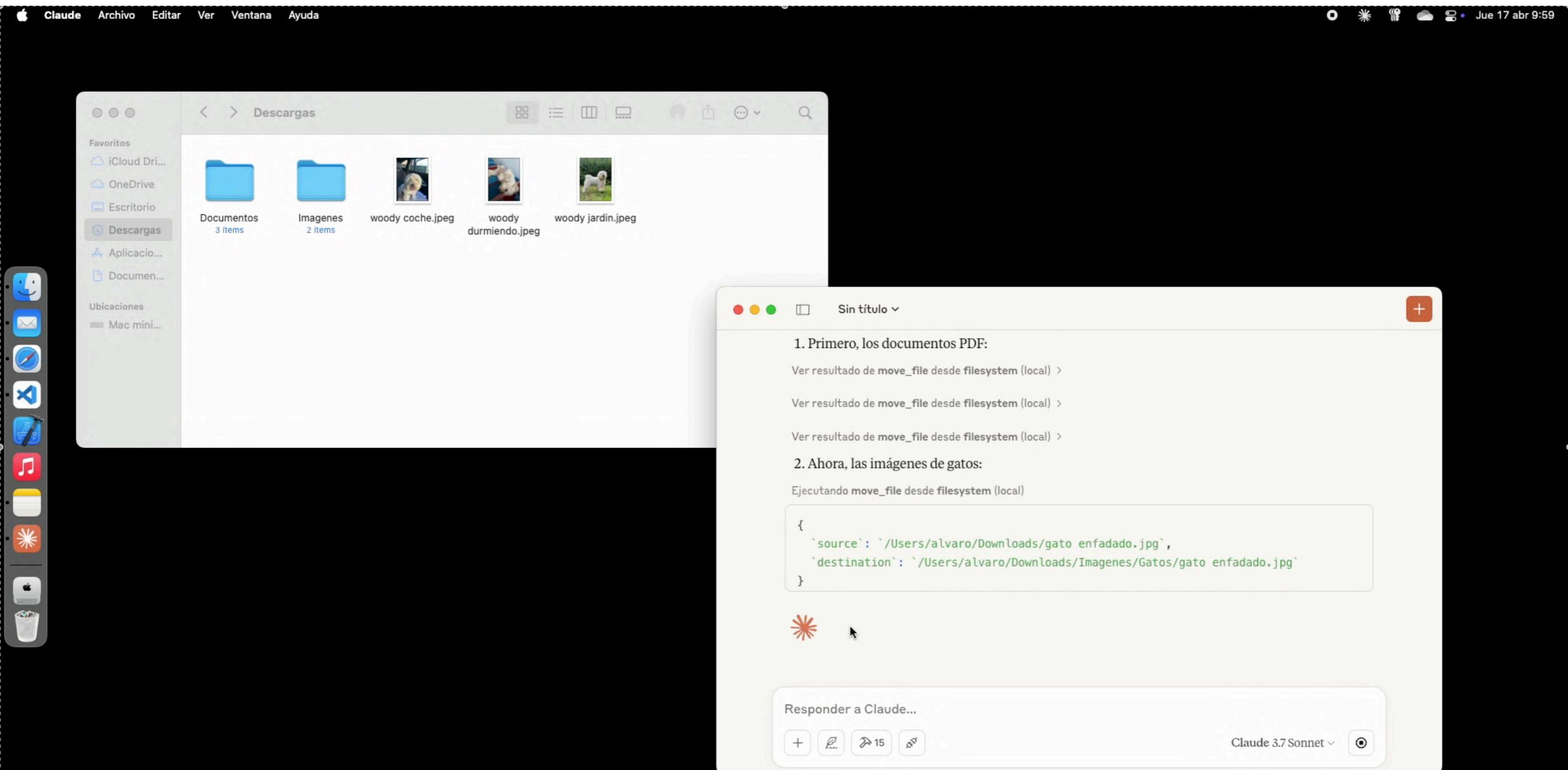


# 2. Configuración - Demo

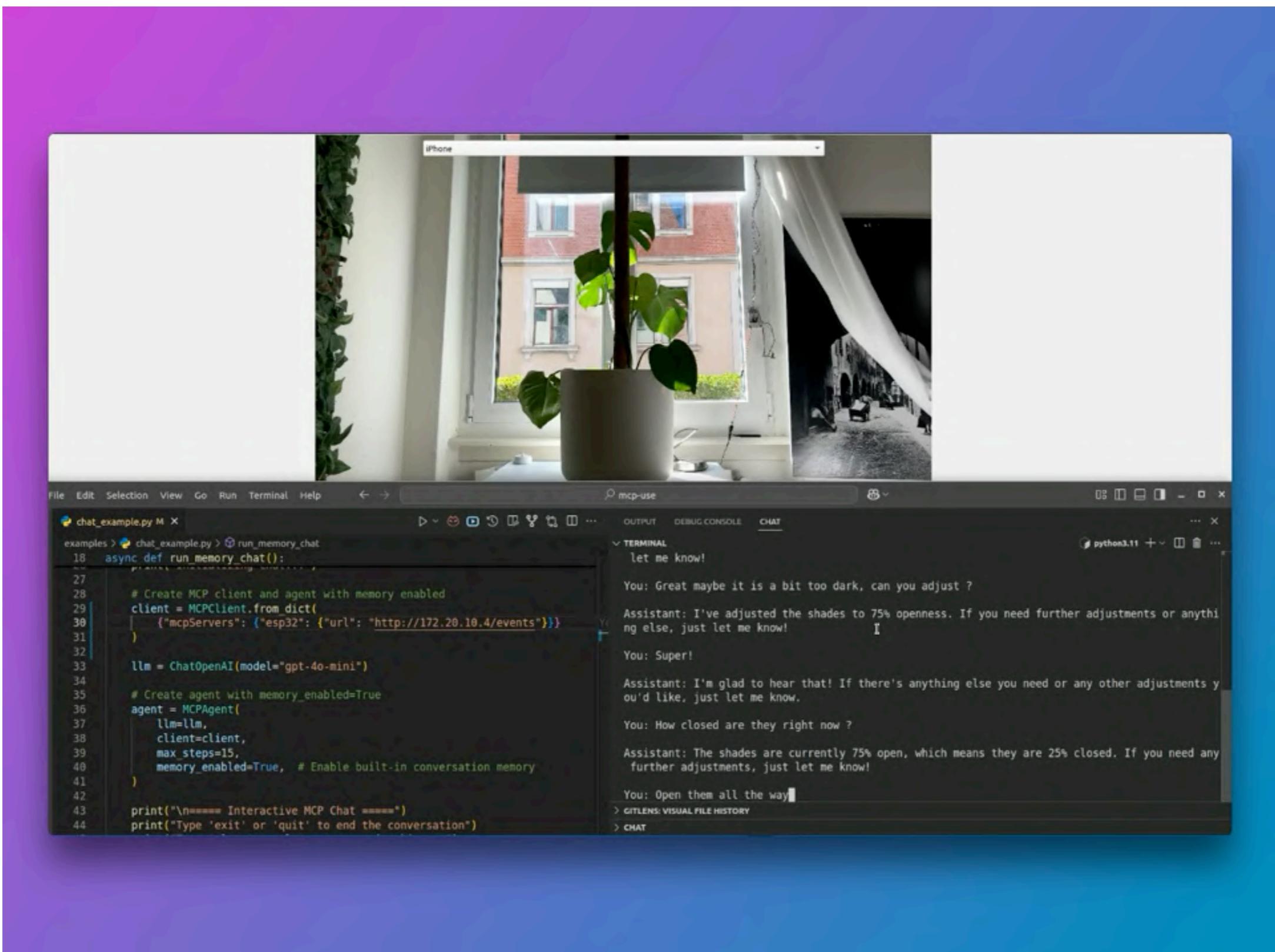
```
1  {
2    "mcpServers": {
3      "okx": {
4        "command": "node",
5        "args": ["/Users/alvaro/Documents/Coding/others/okx-mcp/build/index.js"],
6        "disabled": false,
7        "autoApprove": []
8      },
9      "youtube": {
10        "command": "node",
11        "args": ["/Users/alvaro/Documents/Coding/others/mcp-youtube/build/index.js"],
12        "disabled": false,
13        "autoApprove": []
14      },
15      "hola": {
16        "command": "node",
17        "args": ["/Users/alvaro/Documents/Coding/others/mcp-demo/build/index.js"],
18        "disabled": false,
19        "autoApprove": []
20      }
21    }
22 }
```

/Users/alvaro/Library/Application Support/Claude/clade\_desktop\_config.json

# 3.1 MCP de terceros - filesystem



# 3.1 MCP de terceros -Homekit



# 3.1 MCP de terceros - GitHub

The screenshot shows a GitHub pull request and a GitHub Copilot interface.

**Pull Request Details:**

- Author:** alvarogarciapiz
- Title:** Cambios sugeridos para hello\_world.py
- Description:** Propongo las siguientes mejoras para el script actual:
  1. Agregar un mensaje de bienvenida más extenso
    - o Podríamos incluir más información como la fecha y hora actual
    - o Personalizar el saludo para tomar un nombre como argumento
  2. Mejorar la estructura del código
    - o Agregar más comentarios para explicar la funcionalidad
    - o Implementar una función adicional para personalizar el mensaje
  3. Agregar funcionalidad para imprimir el saludo en diferentes idiomas
    - o Crear un diccionario con saludos en varios idiomas
    - o Permitir al usuario elegir el idioma mediante una opción en el script
- Labels:** enhancement, good first issue
- Assignees:** No one - Assign yourself
- Projects:** No projects
- Milestone:** No milestone
- Relationships:** None

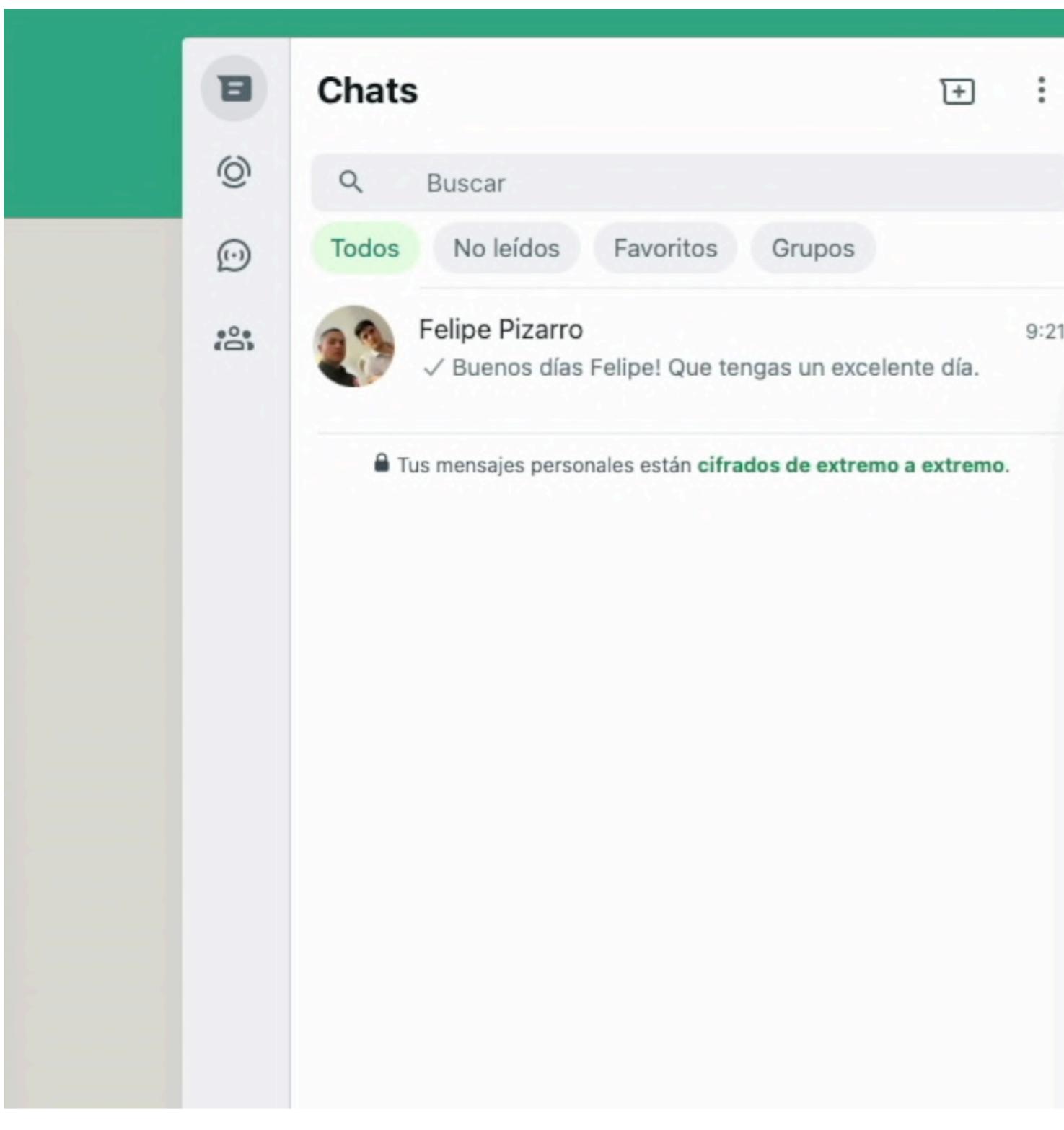
**Github Copilot Interface:**

- Text:** Voy a crear una issue en tu repositorio con algunos cambios sugeridos para el código.
- Code Snippet:** Ejecutando create\_issue desde github (local)

```
¿Qué opinas de estas sugerencias? ¿Cuáles te gustaría implementar?,  
`labels`: [  
  `enhancement`,  
  `good first issue`  
]  
}
```
- Call-to-Action:** Crea ahora una issue en el repositorio con cambios sugeridos
- Buttons:** +, 🎧, ⏲ 78, ⚙️
- Text:** Claude 3.7 Sonnet



# 3.1 MCP de terceros - Whatsapp



The screenshot shows the WhatsApp desktop application interface. On the left, there's a sidebar with icons for Chats, Status, Notifications, and Groups. The main area is titled "Chats" with a search bar. Below it are tabs for "Todos" (highlighted in green), "No leídos", "Favoritos", and "Grupos". A message from "Felipe Pizarro" is listed, timestamped at 9:21. The message content is "✓ Buenos días Felipe! Que tengas un excelente día." At the bottom of the left panel, a note states: "Tu mensajería personal está **cifrados de extremo a extremo**".

**A** Envía un whatsapp a Felipe Pizarro dándole los buenos días

Para enviar un mensaje de WhatsApp a Felipe Pizarro, primero necesitas encontrar sus contactos y luego enviar el mensaje. Voy a hacer esto por pasos.

Ver resultado de `search_contacts` desde `whatsapp (local)` >

Ahora que he encontrado el contacto de Felipe Pizarro, procederé a enviarle los buenos días:

Ejecutando `send_message` desde `whatsapp (local)`

```
{  
  `recipient`: `34722243312`,  
  `message`: `Buenos días Felipe! Que tengas un excelente día`  
}
```

Responder a Claude...

# 3.1 MCP de terceros - Varios MCP

A screenshot of a Mac OS X-style Notepad application window titled "Sin título". The window contains the following content:

**A** Crea un fichero txt en mi escritorio en el que expliques de forma breve en un párrafo por qué empezó la segunda guerra mundial. Una vez hayas creado el fichero coge su ruta y subelo al hosting y el enlace del fichero subido mándaselo a Manzanita por whatsapp

Voy a crear un fichero de texto sobre la Segunda Guerra Mundial, subirlo a hosting y enviarlo por WhatsApp como solicitas.

Primero, crearé el archivo en tu escritorio:

Ver resultado de write\_file desde filesystem (local) >

Ahora subiré el archivo al servicio de hosting:

Ver resultado de HostingFicheros desde hosting (local) >

```
{  
  `path`: `/Users/alvaro/Desktop/causas_segunda_guerra_mundial.txt`  
}  
  
[{"type": "text", "text": "https://pomf2.lain.la/f/n0xujyhd.txt", "uuid": "b0498db2-fa8b-40ef-a88e-da6e044676ed"}]
```

Por último, enviaré el enlace p

\*

Responder a Claude...

Claude 3.7 Sonnet

# 3.1 MCP de terceros

9056 Indexed

## Find Awesome MCP Servers and Clients

The largest collection of MCP Servers.

Sponsored by [deepsite.site](#).

Search with keywords

☆ Featured   ◎ Latest   ♫ Clients   ⚙ Hosted   ☰ Official

Featured MCP Servers

[View All →](#)

 Github ★  
Repository management, file operations, and GitHub API integration

 EdgeOne Pages... ★  
An MCP service designed for deploying HTML content to EdgeOne Pages and obtaining an...

 MiniMax MCP ★  
Official MiniMax Model Context Protocol (MCP) server that enables interaction with powerful Text to...

 Amap Maps ★  
高德地图官方 MCP Server

 Playwright Mcp ★  
Playwright MCP server

 Baidu Map ★  
百度地图核心API现已全面兼容MCP协议，是国内首家兼容MCP协议的地图服务商。

 Tavily MCP Serve... ★

 Blender ★  
BlenderMCP connects Blender to Claude AI through the Model Context Protocol (MCP), allowing...

# 3.2 MCP propios - Hello MCP



```
1 this.server.setRequestHandler(ListToolsRequestSchema, async () => {
2   tools: [
3     {
4       name: 'download',
5       description: 'Descarga un video de YouTube usando yt-dlp',
6       inputSchema: {
7         type: 'object',
8         properties: {
9           url: {
10             type: 'string',
11             description: 'URL del video de YouTube a descargar',
12           },
13         },
14         required: ['url'],
15       },
16     },
17   ],
18 });
});
```

# 3.2 MCP propios - Hello MCP



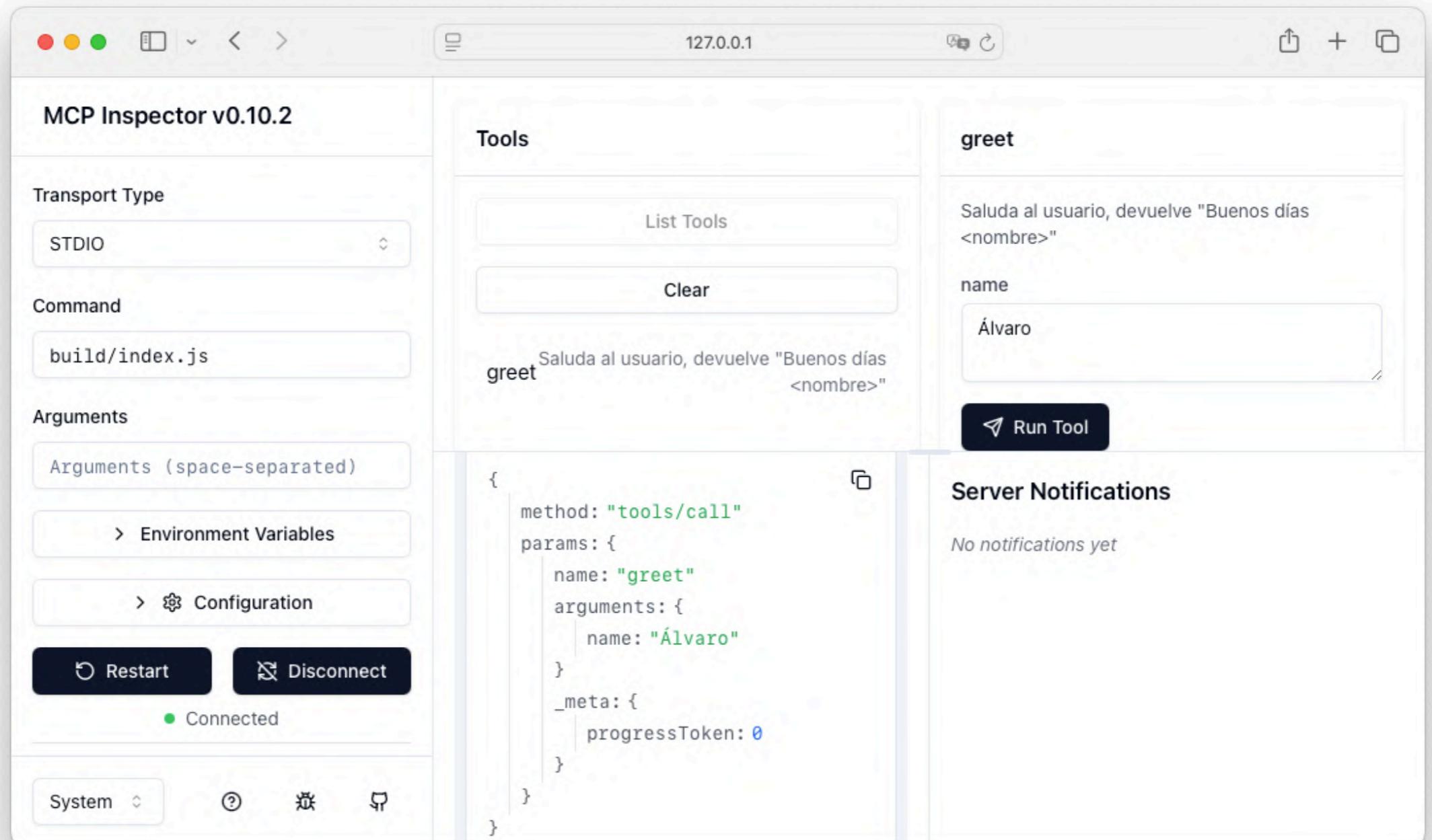
```
1  this.server.setRequestHandler(ListToolsRequestSchema, async () => ({
2    tools: [
3      {
4        name: 'HostingFicheros',
5        description: 'Sube un fichero a un servidor de hosting y devuelve la URL',
6        inputSchema: {
7          type: 'object',
8          properties: {
9            path: {
10              type: 'string',
11              description: 'Ruta absoluta del fichero a subir (ejemplo: /Users/alvaro/Desktop/a.txt)',
12            },
13          },
14          required: ['path'],
15        },
16      },
17    ],
18  }));
```

# 3.2 MCP propios - Inspector

```
npx @modelcontextprotocol/inspector build/index.js
```

```
○ alvaro@Mac-mini-de-Alvaro mcp-demo % npx @modelcontextprotocol/inspector build/index.js
Need to install the following packages:
@modelcontextprotocol/inspector@0.10.2
Ok to proceed? (y) y
Starting MCP inspector...
Proxy server listening on port 6277
MCP Inspector is up and running at http://127.0.0.1:6274 🚀
```

# 3.2 MCP propios - Inspector



# 3.2 MCP propios



**MILOps**

# Prácticas, herramientas y procesos

para

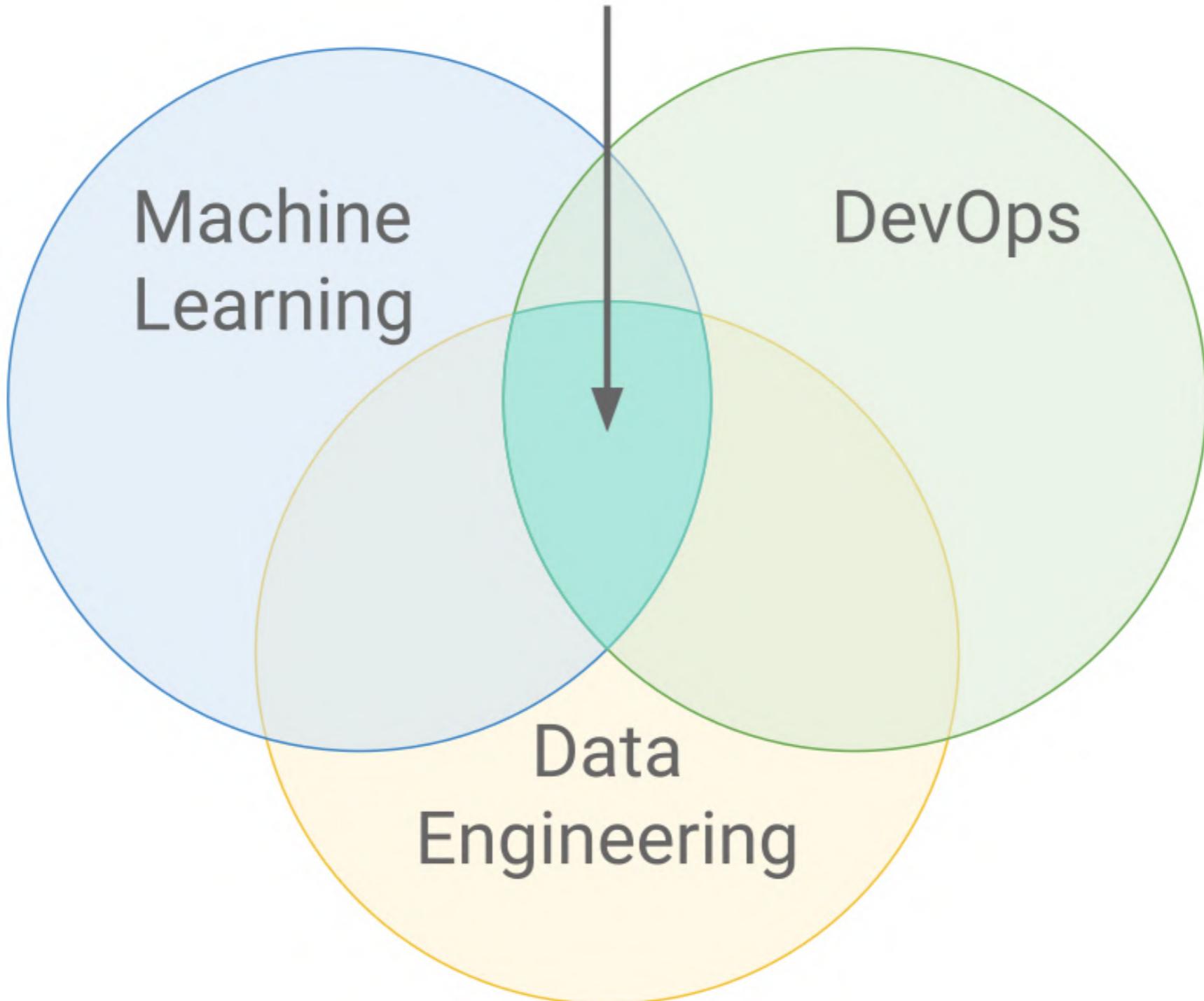
desarrollar, entrenar, validar,

desplegar y mantener



modelos de ML

# MLOps



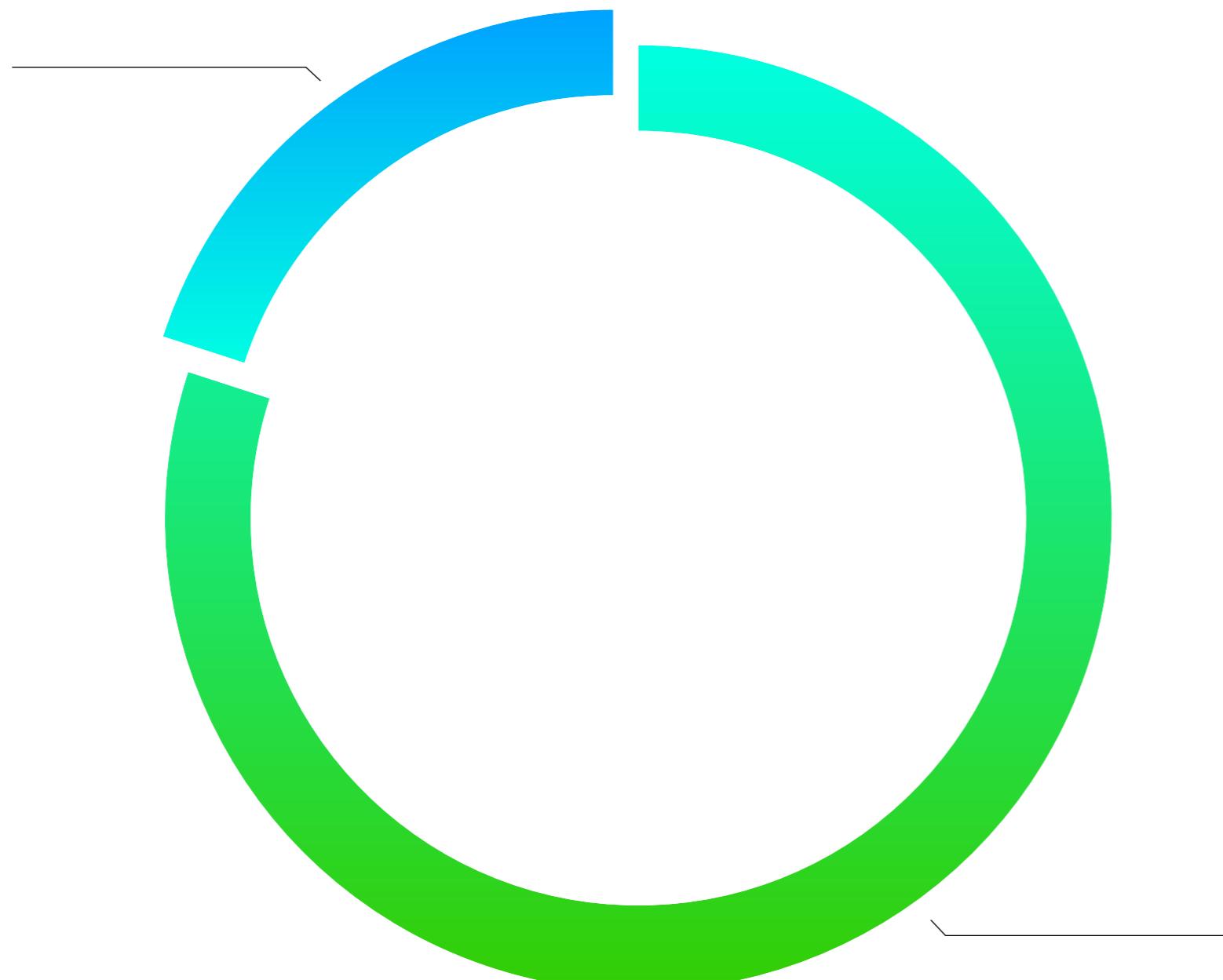
O'REILLY®

# Practical MLOps

Operationalizing Machine Learning Models

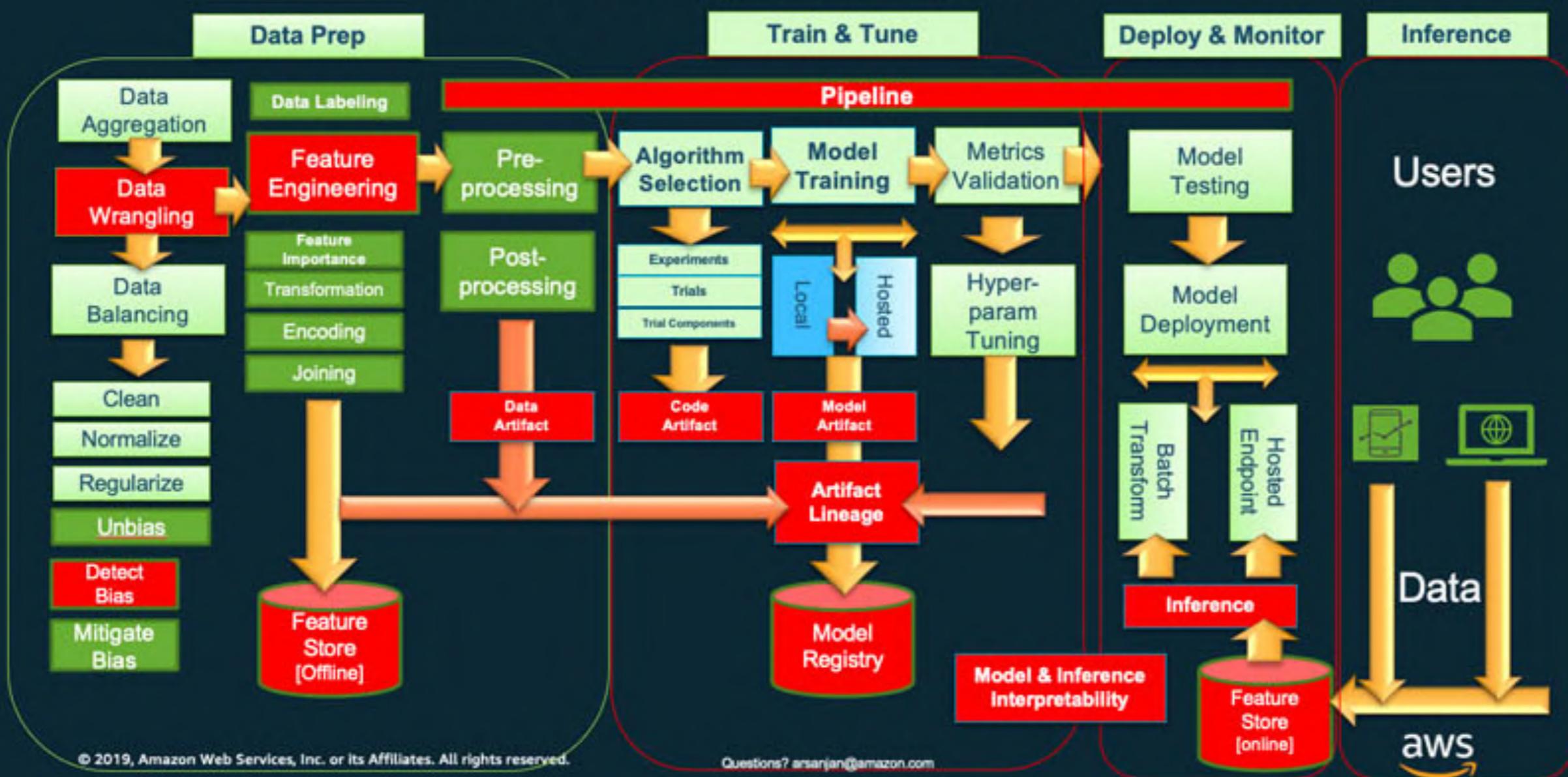


Noah Gift & Alfredo Deza



DevOps

# The ML-Lifecycle: Detailed View



# Principios de MLOps

**Control de versiones**

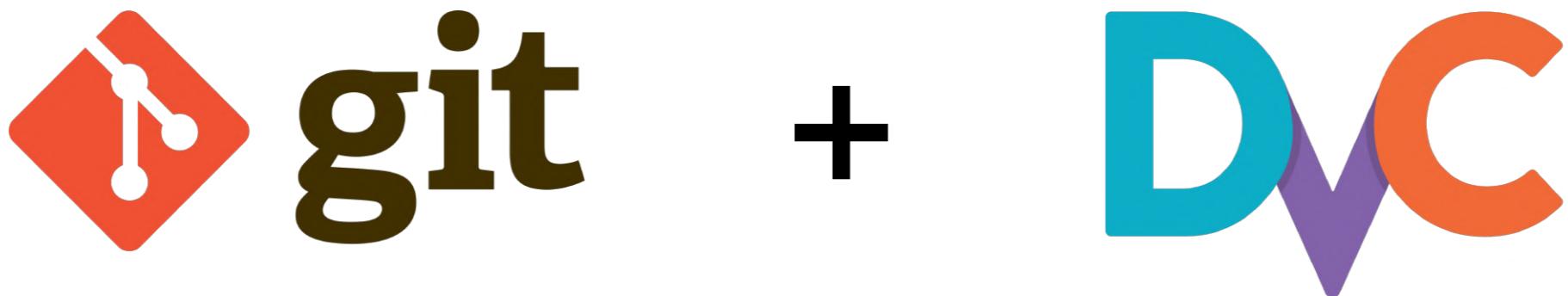
**Automation**

**CI/CD**

**Gobernanza de Modelos**

# 1. Control de versiones

Seguimiento de cambios en los activos (código, modelos y datos) para asegurar **reproducibilidad** para auditar, mejorar y depurar el sistema.



## 2. Automation

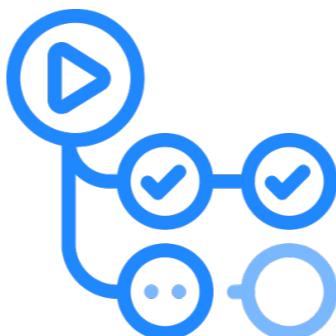
Automatizar con **pipelines** el flujo de  
Ingesta > preprocesado >  
entrenamiento > validación >  
implementación



## 3. CI/CD

**Integración continua:** prueba  
datos, código y modelos.

**Entrega continua:** Implementa  
modelos nuevos automáticamente



## 3. CI/CD

**Entrenamiento continuo:**

Reentrena modelos con nueva info.

**Monitoreo continuo:** Supervisa

datos y rendimiento del modelo en  
producción

## 4. Gobernanza de modelos

Buenas prácticas:

- > Colaboración entre perfiles técnicos y de negocio
- > Documentación clara + feedback
- > Seguridad y privacidad en acceso a datos e infra

# Beneficios de MLOps

**Reducción del time to market**

**Mayor productividad**

**Implementaciones eficientes**



## **3 Reflexiones**

**Apps > Navegador > LLM**

**'App Store' de MCP en ChatGPT**

**Agente = LLM + MCP**



linkedin.com



## Álvaro García Pizarro

Especialista en Cloud, DevOps y sistemas en Santander | Ingeniero Informático y Economista | Desarrollo software como hobby | Estudiante de máster en Informática | Más sobre mi en mi web

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Álvaro García Pizarro  
Ingeniero DevOps y Cloud

X Github LinkedIn

# Álvaro García Pizarro - Ingeniero Cloud, DevOps y de Automatización

alvaro@lvrpiz.com

Bulletin

CV

Apasionado de la tecnología, el deporte y la innovación. Actualmente trabajando como ingeniero Cloud, DevOps y de Automatización en Santander. Anteriormente desarrollador de software en Altia.

Comencé mi trayectoria académica graduándome en Comercio por la Universidad de Valladolid y en Business Administration por la South Champagne Business School, donde construí una base sólida en análisis y principios económicos. Sin embargo, mi interés por la tecnología me llevó a reorientar mi carrera y estudiar Ingeniería Informática acabando como el mejor estudiante de mi promoción. Actualmente, estoy ampliando mi especialización cursando un máster en Ingeniería Informática.

En mi tiempo libre, desarrollo aplicaciones innovadoras centradas en la salud y la inteligencia artificial, incluyendo soluciones para el Apple Watch y agentes de IA para distintas plataformas. Puedes descubrir más sobre mis proyectos en mi web. Mi mail está siempre abierto para nuevas oportunidades y colaboraciones.

## Proyectos



lvrpiz.com

# Q & A

[lvrpiz.com](http://lvrpiz.com)