Projeto Acadêmico – ChatBot CartBot-V12

UNINOVE – Universidade Nove de Julho
Curso: Ciência da Computação
Integrantes:
- Pedro Faria – RA: 2224201517
- Bruno Gil – RA: 2224104380
- Rian Mascarenhas – RA: 2224106376

Introdução

O CartBot-V12 é um chatbot voltado a dúvidas automotivas para leigos, com interface em HTML/CSS e lógica em JavaScript. Ele integra a API do Google AI Studio (Gemini) para gerar respostas em linguagem natural, mantendo histórico de conversas e suporte a tema claro/escuro.

Estrutura do Projeto

O projeto é composto pelos seguintes arquivos principais: -
index.html: Interface do usuário
- **style.css**: Estilos visuais
- **app.js**: Lógica e integração com API
- **package.json**: Configuração de dependências
- **package-lock.json**: Controle de versões

Códigos completos

index.html

```html
<!DOCTYPE html>
<html lang="pt-BR" class="h-full">
<head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width,
  initial-scale=1.0"/>
  <title>CartBot-V12</title>
  <script
  src="https://cdn.tailwindcss.com"></script>
  <link rel="stylesheet" href="style.css">
  <script
src="https://cdn.jsdelivr.net/npm/marked/marked.min.js"></script>
  <script
src="https://cdn.jsdelivr.net/gh/highlightjs/cdn-release@11.9.0/build/highlight.min.js"></script>
  <link rel="stylesheet"
href="https://cdn.jsdelivr.net/gh/highlightjs/cdn-release@11.9.0/build/styles/github.min.css">
</head>
<body class="h-full bg-gray-100 text-gray-900 dark:bg-gray-900 dark:text- gray-100 transition-colors duration-300">
  <div class="flex h-full">
    <!-- Sidebar -->
    <div id="sidebar" class="w-64 bg-white dark:bg-gray-800 border-r border-gray-200 dark:border-gray-700 flex flex-col hidden md:flex">
      <div class="p-4 border-b border-gray-200 dark:border-gray-700">
        <h1 class="text-xl font-bold text-blue-600">CartBot-V12</h1>
```

```html
        <p class="text-sm text-gray-500 dark:text-
gray-400">Seu assistente automotivo</p>
    </div>
    <div class="p-2 flex-1 overflow-y-auto">
      <button id="newChatBtn" class="w-full text-
left p-3 rounded-lg hover:bg-gray-100
dark:hover:bg-gray-700 mb-2 flex items-center
gap-2">
        <svg xmlns="http://www.w3.org/2000/svg"
        class="h-5 w-5"
fill="none" viewBox="0 0 24 24"
stroke="currentColor">
          <path stroke-linecap="round" stroke-
linejoin="round" stroke- width="2" d="M12 6v6m0
0v6m0-6h6m-6 0H6" />
        </svg>
        Nova conversa
      </button>
      <div id="chatHistory" class="space-y-1 mt-
      2"></div>
    </div>
    <div class="p-4 border-t border-gray-200
      dark:border-gray-700">
      <button id="themeToggle" class="w-full p-2
rounded-lg hover:bg- gray-100 dark:hover:bg-
gray-700 flex items-center justify-between">
        <span>Tema</span>
        <!--TEste-->
        <span id="themeIcon" class="ml-2">F</span>
      </button>
    </div>
  </div>

  <!-- Main Chat Area -->
  <div class="flex-1 flex flex-col">
    <div id="chatContainer" class="flex-1
overflow-y-auto p-4 pb-20 md:pb-4">
      <div id="messages" class="max-w-3xl mx-auto
      space-y-6"></div>
    </div>

    <!-- Input Area -->
    <div class="p-4 border-t border-gray-200
dark:border-gray-700 bg- white dark:bg-gray-800">
      <div class="max-w-3xl mx-auto">
```

```html
<div class="relative">
  <textarea
    id="userInput"
    placeholder="Pergunte algo sobre carros... Ex: 'Como calcular consumo de combustível?'"
    rows="1"
    class="w-full p-4 pr-12 rounded-xl border border-gray-300 dark:border-gray-600 bg-white dark:bg-gray-700 text-gray-900 dark:text-white resize-none focus:outline-none focus:ring-2 focus:ring-blue-500 shadow-sm"
  ></textarea>
  <button id="sendBtn" class="absolute right-3 bottom-3 bg- blue-600 text-white p-2 rounded-full hover:bg-blue-700 transition">
    <svg xmlns="http://www.w3.org/2000/svg"
    class="h-5 w-5"
```

```html
  viewBox="0 0 20 20" fill="currentColor">
            <path d="M10.894 2.553a1 1 0 00-1.788
            0l-7 14a1 1 0
001.169 1.409l5-1.429A1 1 0 009 15.571V11a1 1 0 112
0v4.571a1 1 0
00.725.962l5 1.428a1 1 0 001.17-1.408l-7-14z" />
        </svg>
      </button>
    </div>
    <div class="mt-2 text-xs text-gray-500
    dark:text-gray-400 text-
center">
        CartBot ainda esta em fase de testes. importantes. Verifique informações
    </div>
      </div>
     </div>
    </div>
  </div>

  <script src="app.js"></script>
</body>
</html>
```

style.css

```css
/* Estilos extras para melhorar a experiência */
body {
  font-family: 'Segoe UI', system-ui, sans-serif;
}

textarea {
  min-height: 56px;
  max-height: 200px;
}

textarea:focus {
  height: auto;
}

.message-user {
  display: flex;
  justify-content: flex-end;
}
```

```css
.message-ai {
  display: flex;
  justify-content: flex-start;
}

.bubble {
  max-width:
  85%; padding:
  16px; border-
  radius: 16px;
```

```css
    line-height: 1.5;
    position: relative;
    animation: fadeIn 0.3s ease-out;
}

@keyframes fadeIn {
  from { opacity: 0; transform:
  translateY(10px); } to { opacity:
  1; transform: translateY(0); }
}

.bubble-user {
  background-color: #3b82f6;
  color: white;
  border-bottom-right-radius: 4px;
}

.bubble-ai {
  background-color: #f9fafb;
  color: #111827;
  border-bottom-left-radius: 4px;
  border: 1px solid #e5e7eb;
}

.dark .bubble-ai {
  background-color:
  #1f2937; color:
  #f9fafb;
  border-color: #374151;
}

.typing {
  display: inline-block;
  width: 6px;
  height: 6px;
  background:
  #9ca3af;
  border-
  radius: 50%;
  margin: 0 2px;
  opacity: 0.4;
  animation: typing 1.4s infinite ease-in-out;
}
```

```css
.typing:nth-child(1) { animation-delay: 0s; }
.typing:nth-child(2) { animation-delay: 0.2s; }
.typing:nth-child(3) { animation-delay: 0.4s; }

@keyframes typing {
  0%, 100% { transform:
  translateY(0); } 50% {
  transform: translateY(-
  5px); }
}
```

```css
.copy-btn {
  opacity: 0;
  transition:
  opacity 0.2s;
  background:
  none; border:
  none;
  cursor:
  pointer;
  color:
  #6b7280;
  padding: 4px;
  border-
  radius: 4px;
}

.copy-btn:hover
  { background:
  #f3f4f6;
  color:
  #3b82f6;
}

.message-ai:hover .copy-btn {
  opacity: 1;
}

/* Markdown code blocks */
pre {
  background: #1e293b
  !important; color:
  #e2e8f0 !important;
  padding: 16px
  !important; border-
  radius: 8px
  !important; overflow-
  x: auto !important;
  font-family: 'Fira Code', monospace !important;
}
```

```css
code {
  font-family: 'Fira Code', monospace !important;
}

/* Mobile sidebar toggle */
#mobileMenuB
        tn {
    display:
      none;
}

@media (max-width:
 768px) {
  #mobileMenuBtn {
    display:
    block;
    position:
    fixed;
    top: 12px;
    left:
    12px;
    z-index: 50;
    background:
    white;
    dark:bg-
    gray-800;
    border: 1px solid #e5e7eb;
```

```
      dark:border-
      gray-700;
      border-radius:
      8px; padding:
      8px;
    }
  }
```

app.js
```javascript
// API Key do Google AI Studio
const API_KEY = 'AIzaSyCk0V645HYE4GQtk5Z9tn1__
zVcTzKB_tw';
const MODEL_NAME = 'gemini-2.0-flash-001';
const API_URL =
`https://generativelanguage.googleapis.com/v1/models
/${MODEL_NAME}:genera teContent?key=${API_KEY}`;
let currentChatId = Date.now().toString();
let chatHistory =
JSON.parse(localStorage.getItem('carAssistChats'))
||
{};
let currentMessages = [];

document.addEventListener('DOMContentLoad
  ed', () => { loadTheme();
  setupEventListeners();
  loadChat(currentChatId);
});

function setupEventListeners() {
  document.getElementById('sendBtn').addEventListene
  r('click',
sendMessage);
  document.getElementById('userInput').addEventListe
  ner('keydown', (e) =>
{
    if (e.key === 'Enter' &&
     !e.shiftKey) {
     e.preventDefault();
     sendMessage();
   }
});
```

```javascript
  document.getElementById('newChatBtn').addEventLi
stener('click', newChat);
  document.getElementById('themeToggle').addEventLis
tener('click', toggleTheme);
}
//carregar tema
function loadTheme() {
  const isDark = localStorage.getItem('theme') ===
  'dark';
  if (isDark) {
    document.documentElement.classList.add(
    'dark');
    document.getElementById('themeIcon').tex
    tContent = '☼';
  }
}
//escolher tema
function toggleTheme() {
  document.documentElement.classList.toggle('dark'
  );
```

```javascript
  const isDark =
  document.documentElement.classList.contains('dark'
  ); localStorage.setItem('theme', isDark ? 'dark' :
  'light');
  document.getElementById('themeIcon').textContent =
  isDark ? '☀' :
 '🌙';
}
//botao de novo chat
function newChat() {
  currentChatId =
  Date.now().toString();
  currentMessages = [];
  chatHistory[currentChatId] = { title: 'Nova
  conversa', messages: [] }; saveChats();
  renderChatHis
  tory();
  renderMessage
  s();
}

function renderChatHistory() {
  const container =
  document.getElementById('chatHistory');
  container.innerHTML = '';
  Object.entries(chatHistory)
    .reverse()
    .forEach(([id, chat]) => {
      const title = chat.messages.length > 0
        ? (chat.messages[0].text.length > 30 ?
chat.messages[0].text.substring(0, 30) + '...' :
chat.messages[0].text)
        : chat.title;
      const div = document.createElement('div');
      div.className = `p-3 rounded-lg cursor-pointer
hover:bg-gray-100 dark:hover:bg-gray-700 ${id ===
currentChatId ? 'bg-blue-50 dark:bg-gray- 700
font-medium' : ''}`;
      div.textContent =
      title; div.onclick = ()
```

```javascript
    => loadChat(id);
    container.appendChild(di
     v);
  });
}

function
  loadChat(id) {
  currentChatId =
  id;
  currentMessages = chatHistory[id]?.messages
  || []; renderMessages();
  renderChatHistory();
}

function renderMessages() {
  const container =
  document.getElementById('messages');
  container.innerHTML = '';

  if (currentMessages.length === 0) {
    const welcome = document.createElement('div');
    welcome.className = 'text-center py-12 text-gray-
    500 dark:text-gray-
```

```javascript
400';
  welcome.innerHTML = `
    <div class="inline-block p-4 bg-blue-50
dark:bg-gray-800 rounded-xl mb-4">
      <svg xmlns="http://www.w3.org/2000/svg"
class="h-12 w-12 mx-auto text-blue-500"
fill="none" viewBox="0 0 24 24"
stroke="currentColor">
        <path stroke-linecap="round" stroke-
linejoin="round" stroke- width="2" d="M13 10V3L4
14h7v7l9-11h-7z" />
      </svg>
    </div>
    <h2 class="text-xl font-semibold mb-2">Olá! Sou
seu assistente automotivo 🚗</h2>
    <p class="max-w-md mx-auto">Pergunte sobre
consumo de combustível, troca de óleo, capacidade
do tanque, valores de peças e muito mais!</p>
  `;
  container.appendChild(
  welcome); return;
}

 currentMessages.forEach(msg => {
   const msgDiv = document.createElement('div');
   msgDiv.className = msg.role === 'user' ?
'message-user' : 'message- ai';

   const bubble = document.createElement('div');
   bubble.className = `bubble ${msg.role ===
'user' ? 'bubble-user' : 'bubble-ai'}`;

   if (msg.role === 'user')
    { bubble.textContent =
    msg.text;
   } else {

    const html =
    marked.parse(msg.text);
```

```javascript
      bubble.innerHTML = html;
      hljs.highlightAll();
    }
    //botao de copiar mensagem
      if (msg.role === 'model') {
        const copyBtn =
        document.createElement('button');
        copyBtn.className = 'copy-btn';
        copyBtn.innerHTML = '📋';
        copyBtn.onclick = () => {
          navigator.clipboard.writeText
          (msg.text); copyBtn.innerHTML
          = '✅';
          setTimeout(() => copyBtn.innerHTML = '📋',
          2000);
        };
        bubble.appendChild(copyBtn);
      }
```

```javascript
    msgDiv.appendChild(bubble)
    ;
    container.appendChild(msgD
    iv);
  });

  scrollToBottom();
}

function scrollToBottom() {
  const container =
  document.getElementById('chatContainer');
  container.scrollTop = container.scrollHeight;
}

async function sendMessage() {
  const input =
  document.getElementById('userInput');
  const text = input.value.trim();
  if (!text) return;

  // Adicionar mensagem do usuário
  currentMessages.push({ role:
  'user', text });
  saveCurrentChat();
  renderMessages();
  input.value = '';
  input.style.height
  = '56px';

  // Mostrar animação de "digitando"
  showTypingIndicator();

  try {
    const response = await
      fetch(API_URL, { method:
      'POST',
      headers: { 'Content-Type':
```

```javascript
      'application/json' }, body:
    JSON.stringify({
      contents: [{
        role: "user",
        parts: [{
          text: `Você é um assistente especializado
em veículos para leigos. Responda de forma clara,
simples e prática.

        Tópicos comuns: consumo de combustível
(km/l), como trocar óleo, capacidade do tanque,
valor médio de peças,
        manutenção básica, significado de luzes no
        painel, etc.
        Se a pergunta não for sobre carros,
        gentilmente redirecione
para o tema.

        Pergunta do usuário: ${text}`
        }]
      }
    ]
  })
});
```

```javascript
    if (!response.ok) {
      const error = await response.json();
      if (error.error && error.error.status ===
        'RESOURCE_EXHAUSTED') { alert('⚠️ Limite de
        requisições atingido. Tente novamente mais
tarde.');
      } else {
        alert('❌ Erro ao conectar com a IA. Verifique
        sua API Key.');
      }
      removeTypingIndicator();
      return;
    }

    const data = await response.json();
    const aiText =
    data.candidates[0].content.parts[0].text;

    // Remover animação de digitando
    removeTypingIndicator();

    // Adicionar resposta da IA
    currentMessages.push({ role: 'model', text:
    aiText }); saveCurrentChat();
    renderMessages();

  } catch (err) {
    console.error(er
    r);
    removeTypingIndi
    cator();
    alert('Erro de conexão. Verifique sua internet e
    API Key.');
  }
}

function showTypingIndicator() {
  const container =
  document.getElementById('messages');
  const typingDiv =
  document.createElement('div');
```

```javascript
    typingDiv.className = 'message-ai';
    typingDiv.id =
    'typingIndicator';
    typingDiv.innerHTML = `
      <div class="bubble bubble-ai flex items-center">
        <span class="typing"></span>
        <span class="typing"></span>
        <span class="typing"></span>
      </div>
    `;
    container.appendChild(t
    ypingDiv);
    scrollToBottom();
}

function removeTypingIndicator() {
    const indicator =
    document.getElementById('typingIndicator');
```

```javascript
    if (indicator) indicator.remove();
}

function saveCurrentChat() {
  if (!chatHistory[currentChatId]) {
    chatHistory[currentChatId] = { title: 'Nova
    conversa', messages: []
  };
  }
  chatHistory[currentChatId].messages =
  currentMessages;
  if (currentMessages.length > 0 &&
    !chatHistory[currentChatId].title) {
    chatHistory[currentChatId].title =
    currentMessages[0].text;
  }
  saveChats();
}

function saveChats() {
  localStorage.setItem('carAssistChats',
  JSON.stringify(chatHistory));
}
```

package.json
```json
{
  "dependencies": {
    "@google/genai":
    "^1.21.0"
  }
}
```

package-lock.json
```json
{
  "name": "CartBot-
  V12",
  "lockfileVersion"
  : 3, "requires":
  true, "packages":
  {
    "": {
      "dependencies": {
        "@google/genai":
```

```json
      "^1.21.0"
    }
  },
  "node_modules/@google/gen
   ai": { "version":
   "1.21.0",
   "resolved":
"https://registry.npmjs.org/@google/genai/-/genai-
1.21.0.tgz",
    "integrity": "sha512-
k47DECR8BF9z7IJxQd3reKuH2eUnOH5NlJWSe+CKM6nbXx+wH3hm
tWQxUQR9M8gzWW1EvFuRV gjQssEIreNZsw==",
    "license": "Apache-2.0",
    "dependencies": {
      "google-auth-library":
      "^9.14.2", "ws":
      "^8.18.0"
    },
    "engines": {
```

```
    "node": ">=20.0.0"
  },
  "peerDependencies": {
    "@modelcontextprotocol/sdk":
    "^1.11.4"
  },
  "peerDependenciesMeta":
    {
    "@modelcontextprotocol
    /sdk": {
      "optional": true
    }
  }
},
"node_modules/agent-
  base": { "version":
  "7.1.4",
  "resolved": "https://registry.npmjs.org/agent-
base/-/agent-base- 7.1.4.tgz",
  "integrity": "sha512-
MnA+YT8fwfJPgBx3m60MNqakm30XOkyIoH1y6huTQvC0PwZG7ki8
NacLBcrPbNoo8vEZy7Jpu k7+jMO+CUovTQ==",
  "license":
  "MIT",
  "engines": {
    "node": ">= 14"
  }
},
"node_modules/base6
  4-js": {
  "version":
  "1.5.1",
  "resolved": "https://registry.npmjs.org/base64-
js/-/base64-js- 1.5.1.tgz",
  "integrity": "sha512-
AKpaYlHn8t4SVbOHCy+b5+KKgvR4vrsD8vbvrbiQJps7fKDTkjkD
ry6ji0rUJjC0kzbNePLwz xq8iypo41qeWA==",
  "funding": [
    {
      "type": "github",
      "url": "https://github.com/sponsors/feross"
```

```json
        },
        {
          "type": "patreon",
          "url": "https://www.patreon.com/feross"
        },
        {
          "type": "consulting",
          "url": "https://feross.org/support"
        }
      ],
      "license": "MIT"
    },
    "node_modules/bignumber.j
    s": { "version":
    "9.3.1",
    "resolved":
    "https://registry.npmjs.org/bignumber.js/-
/bignumber.js-9.3.1.tgz",
```

      "integrity": "sha512-
Ko0uX15oIUS7wJ3Rb30Fs6SkVbLmPBAKdlm7q9+ak9bbIeFf0Mwu
BsQV6z7+X768/cHsfg+Wl ysDWJcmthjsjQ==",
      "license":
      "MIT",
      "engines": {
        "node": "*"
      }
    },
    "node_modules/buffer-equal-
      constant-time": { "version":
      "1.0.1",
      "resolved":
"https://registry.npmjs.org/buffer-equal-
constant- time/-/buffer-equal-constant-time-
1.0.1.tgz",
      "integrity": "sha512-
zRpUiDwd/xk6ADqPMATG8vc9VPrkck7T07OIx0gnjmJAnHnTVXNQ
G3vfvWNuiZIkwu9KrKdA1 iJKfsfTVxE6NA==",
      "license": "BSD-3-Clause"
    },
    "node_modules/de
      bug": {
      "version":
      "4.4.3",
      "resolved": "https://registry.npmjs.org/debug/-
      /debug-4.4.3.tgz", "integrity": "sha512-
RGwwWnwQvkVfavKVt22FGLw+xYSdzARwm0ru6DhTVA3umU5hZc28
V3kO4stgYryrTlLpuvgI9 GiijltAjNbcqA==",
      "license":
        "MIT",
    "dependencies"
      : { "ms":
      "^2.1.3"
    },
      "engines": {
      "node":
      ">=6.0"
    },

```json
      "peerDependencies
       Meta": {
       "supports-
       color": {
         "optional": true
       }
      }
    },
    "node_modules/ecdsa-sig-
      formatter": { "version":
      "1.0.11",
      "resolved": "https://registry.npmjs.org/ecdsa-
      sig-formatter/-
/ecdsa-sig-formatter-
      1.0.11.tgz",
      "integrity": "sha512-
nagl3RYrbNv6kQkeJIpt6NJZy8twLB/2vtz6yN9Z4vRKHN4/QZJI
EbqohALSgwKdnksuY3k5A ddp5lg8sVoVcQ==",
      "license": "Apache-2.0",
      "dependencies": {
        "safe-buffer": "^5.0.1"
      }
    },
    "node_modules/ex
      tend": {
      "version":
      "3.0.2",
```

      "resolved":
      "https://registry.npmjs.org/extend/-/extend-
      3.0.2.tgz", "integrity": "sha512-
fjquC59cD7CyW6urNXK0FBufkZcoiGG80wTuPujX590cB5Ttln20
E2UB4S/WARVqhXffZl2LN gS+gQdPIIim/g==",
      "license": "MIT"
    },
    "node_modules/ga
      xios": {
      "version":
      "6.7.1",
      "resolved":
      "https://registry.npmjs.org/gaxios/-/gaxios-
      6.7.1.tgz", "integrity": "sha512-
LDODD4TMYx7XXdpwxAVRAIAuB0bzv0s+ywFonY46k126qzQHT9yg
yoa9tncmOiQmmDrik65UY sEkv3lbfqQ3yQ==",
      "license": "Apache-2.0",
      "dependencies": {
        "extend": "^3.0.2",
        "https-proxy-agent": "^7.0.1",
        "is-stream": "^2.0.0",
        "node-fetch": "^2.6.9",
        "uuid": "^9.0.1"
      },
      "engines": {
        "node": ">=14"
      }
    },
    "node_modules/gcp-
      metadata": { "version":
      "6.1.1",
      "resolved":
"https://registry.npmjs.org/gcp-metadata/-
/gcp- metadata-6.1.1.tgz",
      "integrity": "sha512-
a4tiq7E0/5fTjxPAaH4jpjkSv/uCaU2p5KC6HVGrvl0cDjA8iBZv
4vv1gyzlmK0ZUKqwpOyQM KzZQe3lTit77A==",
      "license": "Apache-2.0",
      "dependencies": {
        "gaxios": "^6.1.1",
        "google-logging-utils": "^0.0.2",

```json
      "json-bigint": "^1.0.0"
    },
    "engines": {
      "node": ">=14"
    }
  },
  "node_modules/google-
    auth-library": {
    "version": "9.15.1",
    "resolved": "https://registry.npmjs.org/google-
    auth-library/-
/google-auth-library-
    9.15.1.tgz",
    "integrity": "sha512-
Jb6Z0+nvECVz+2lzSMt9u98UsoakXxA2HGHMCxh+so3n90XgYWkq
5dur19JAJV7ONiJY22yBT yJB1TSkvPq9Ng==",
    "license": "Apache-2.0",
    "dependencies": {
```

      "base64-js": "^1.3.0",
      "ecdsa-sig-formatter": "^1.0.11",
      "gaxios": "^6.1.1",
      "gcp-metadata": "^6.1.0",
      "gtoken": "^7.0.0",
      "jws": "^4.0.0"
    },
    "engines": {
      "node": ">=14"
    }
  },
  "node_modules/google-logging-
    utils": { "version": "0.0.2",
    "resolved": "https://registry.npmjs.org/google-
    logging-utils/-
/google-logging-utils-
    0.0.2.tgz", "integrity":
    "sha512-
NEgUnEcBiP5HrPzufUkBzJOD/Sxsco3rLNo1F1TNf7ieU8ryUzBh
qba8r756CjLX7rn3fHl6i LEwPYuqpoKgQQ==",
    "license":
    "Apache-2.0",
    "engines": {
      "node": ">=14"
    }
  },
  "node_modules/gt
    oken": {
    "version":
    "7.1.0",
    "resolved":
    "https://registry.npmjs.org/gtoken/-/gtoken-
    7.1.0.tgz", "integrity": "sha512-
pCcEwRi+TKpMlxAQObHDQ56KawURgyAf6jtIY046fJ5tIv3zDe/L
EIubckAO8fj6JnAxLdmWk UfNyulQ2iKdEw==",
    "license":
    "MIT",
    "dependencies":
    {
      "gaxios": "^6.0.0",
      "jws": "^4.0.0"
    },
    "engines": {
      "node": ">=14.0.0"

```json
    }
  },
  "node_modules/https-
    proxy-agent": {
    "version": "7.0.6",
    "resolved":
"https://registry.npmjs.org/https-proxy-agent/-
/https- proxy-agent-7.0.6.tgz",
    "integrity": "sha512-
vK9P5/iUfdl95AI+JVyUuIcVtd4ofvtrOr3HNtM2yxC9bnMbEdp3
x01OhQNnjb8IJYi38VlTE 3mBXwcfvywuSw==",
    "license":
"MIT",
    "dependencies":
{
      "agent-base":
      "^7.1.2",
      "debug": "4"
    },
```

```
    "engines": {
      "node": ">= 14"
    }
  },
  "node_modules/is-
    stream": {
    "version":
    "2.0.1",
    "resolved": "https://registry.npmjs.org/is-
stream/-/is-stream- 2.0.1.tgz",
    "integrity": "sha512-
hFoiJiTl63nn+kstHGBtewWSKnQLpyb155KHheA1l39uvtO9nWIo
p1p3udqPcUd/xbF1VLMO4 n7OI6p7RbngDg==",
    "license":
    "MIT",
    "engines": {
      "node": ">=8"
    },
    "funding": {
      "url":
      "https://github.com/sponsors/sindresorhus"
    }
  },
  "node_modules/json-
    bigint": { "version":
    "1.0.0",
    "resolved": "https://registry.npmjs.org/json-
bigint/-/json-bigint- 1.0.0.tgz",
    "integrity": "sha512-
SiPv/8VpZuWbvLSMtTDU8hEfrZWg/mH/nV/b4o0CYbSxu1UIQPLd
wKOCIyLQX+VIPO5vrLX3i 8qtqFyhdPSUSQ==",
    "license":
    "MIT",
    "dependencies":
    {
      "bignumber.js": "^9.0.0"
    }
  },
  "node_modules/jw
    a": {
    "version":
    "2.0.1",
```

      "resolved": "https://registry.npmjs.org/jwa/-
      /jwa-2.0.1.tgz", "integrity": "sha512-
hRF04fqJIP8Abbkq5NKGN0Bbr3JxlQ+qhZufXVr0DvujKy93ZCbX
ZMHDL4EOtodSbCWxOqR8M S1tXA5hwqCXDg==",
      "license":
      "MIT",
      "dependencies":
      {
        "buffer-equal-constant-
        time": "^1.0.1", "ecdsa-
        sig-formatter": "1.0.11",
        "safe-buffer": "^5.0.1"
      }
    },
    "node_modules/jw
      s": {
      "version":
      "4.0.0",
      "resolved": "https://registry.npmjs.org/jws/-
      /jws-4.0.0.tgz", "integrity": "sha512-
KDncfTmOZoOMTFG4mBlG0qUIOlc03fmzH+ru6RgYVZhPkyiy/92O
wlt/8UEN+a4TXR1FQetfI pJE8ApdvdVxTg==",

    "license":
    "MIT",
    "dependencies":
    {
      "jwa": "^2.0.0",
      "safe-buffer": "^5.0.1"
    }
  },
  "node_modules/ms
   ": { "version":
   "2.1.3",
   "resolved": "https://registry.npmjs.org/ms/-
   /ms-2.1.3.tgz", "integrity": "sha512-
6FlzubTLZG3J2a/NVCAleEhjzq5oxgHyaCU9yYXvcLsvoVaHJq/s
5xXI6/XXP6tz7R9xAOtHn SO/tXtF3WRTlA==",
    "license": "MIT"
  },
  "node_modules/node-
   fetch": { "version":
   "2.7.0",
   "resolved": "https://registry.npmjs.org/node-
fetch/-/node-fetch- 2.7.0.tgz",
    "integrity": "sha512-
c4FRfUm/dbcWZ7U+1Wq0AwCyFL+3nt2bEw05wfxSz+DWpWsitgmS
gYmy2dQdWyKC1694ELPqM s/YzUSNozLt8A==",
    "license":
    "MIT",
    "dependencies":
    {
      "whatwg-url": "^5.0.0"
    },
    "engines": {
      "node": "4.x || >=6.0.0"
    },
    "peerDependenci
     es": {
     "encoding":
     "^0.1.0"
    },
    "peerDependenciesMeta":
     { "encoding": {

```json
      "optional": true
    }
  }
},
"node_modules/safe-
  buffer": { "version":
  "5.2.1",
  "resolved": "https://registry.npmjs.org/safe-
buffer/-/safe-buffer- 5.2.1.tgz",
  "integrity": "sha512-
rp3So07KcdmmKbGvgaNxQSJr7bGVSVk5S9Eq1F+ppbRo70+YeaDx
kw5Dd8NPN+GD6bjnYm2Vu PuCXmpuYvmCXQ==",
  "funding": [
    {
      "type": "github",
      "url": "https://github.com/sponsors/feross"
    },
    {
```

```
      "type": "patreon",
      "url": "https://www.patreon.com/feross"
    },
    {
      "type": "consulting",
      "url": "https://feross.org/support"
    }
  ],
  "license": "MIT"
},
"node_modules/tr
  46": {
  "version":
  "0.0.3",
  "resolved": "https://registry.npmjs.org/tr46/-
  /tr46-0.0.3.tgz", "integrity": "sha512-
N3WMsuqV66lT30CrXNbEjx4GEwlow3v6rr4mCcv6prnfwhS01rkg
yFdjPNBYd9br7LpXV1+Em h01fHnq2Gdgrw==",
  "license": "MIT"
},
"node_modules/uu
  id": {
  "version":
  "9.0.1",
  "resolved": "https://registry.npmjs.org/uuid/-
  /uuid-9.0.1.tgz", "integrity": "sha512-
b+1eJOlsR9K8HJpow9Ok3fiWOWSIcIzXodvv0rQjVoOVNpWMpxf1
wZNpt4y9h10odCNrqnYp1 OBzRktckBe3sA==",
  "funding": [
    "https://github.com/sponsors/
    broofa",
    "https://github.com/sponsors/
    ctavan"
  ],
  "license":
  "MIT", "bin": {
    "uuid": "dist/bin/uuid"
  }
},
"node_modules/webidl-
  conversions": {
  "version": "3.0.1",
```

      "resolved": "https://registry.npmjs.org/webidl-
      conversions/-
/webidl-conversions-
      3.0.1.tgz", "integrity":
      "sha512-
2JAn3z8AR6rjK8Sm8orRC0h/bcl/DqL7tRPdGZ4I1CjdF+EaMLmY
xBHyXuKL849eucPFhvBox MsflfOb8kxaeQ==",
      "license": "BSD-2-Clause"
    },
    "node_modules/whatwg-
      url": { "version":
      "5.0.0",
      "resolved": "https://registry.npmjs.org/whatwg-
url/-/whatwg-url- 5.0.0.tgz",
      "integrity": "sha512-
saE57nupxk6v3HY35+jzBwYa0rKSy0XR8JSxZPwgLr7ys0IBzhGv
iA1/TUGJLmSVqs8pb9Anv ICXEuOHLprYTw==",
      "license": "MIT",

```
    "dependencies":
      { "tr46":
      "~0.0.3",
      "webidl-conversions": "^3.0.0"
    }
  },
  "node_modules/ws
    ": { "version":
    "8.18.3",
    "resolved": "https://registry.npmjs.org/ws/-
    /ws-8.18.3.tgz", "integrity": "sha512-
PEIGCY5tSlUt50cqyMXfCzX+oOPqN0vuGqWzbcJ2xvnkzkq46oOp
z7dQaTDBdfICb4N14+GAR UDw2XV2N4tvzg==",
    "license":
    "MIT",
    "engines": {
      "node": ">=10.0.0"
    },
    "peerDependencies"
      : { "bufferutil":
      "^4.0.1",
      "utf-8-validate": ">=5.0.2"
    },
    "peerDependenciesMeta":
      { "bufferutil": {
        "optional": true
      },
      "utf-8-
        validate": {
        "optional":
        true
      }
    }
  }
 }
}
```

Conclusão

O projeto demonstra a integração prática entre front-end e serviços de IA, com base
em uma arquitetura simples, modular e preparada para evolução.