# Chevron New Energies

# Interactive Learning Hub

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# Members of Developing Team

**Lara Bezerra**

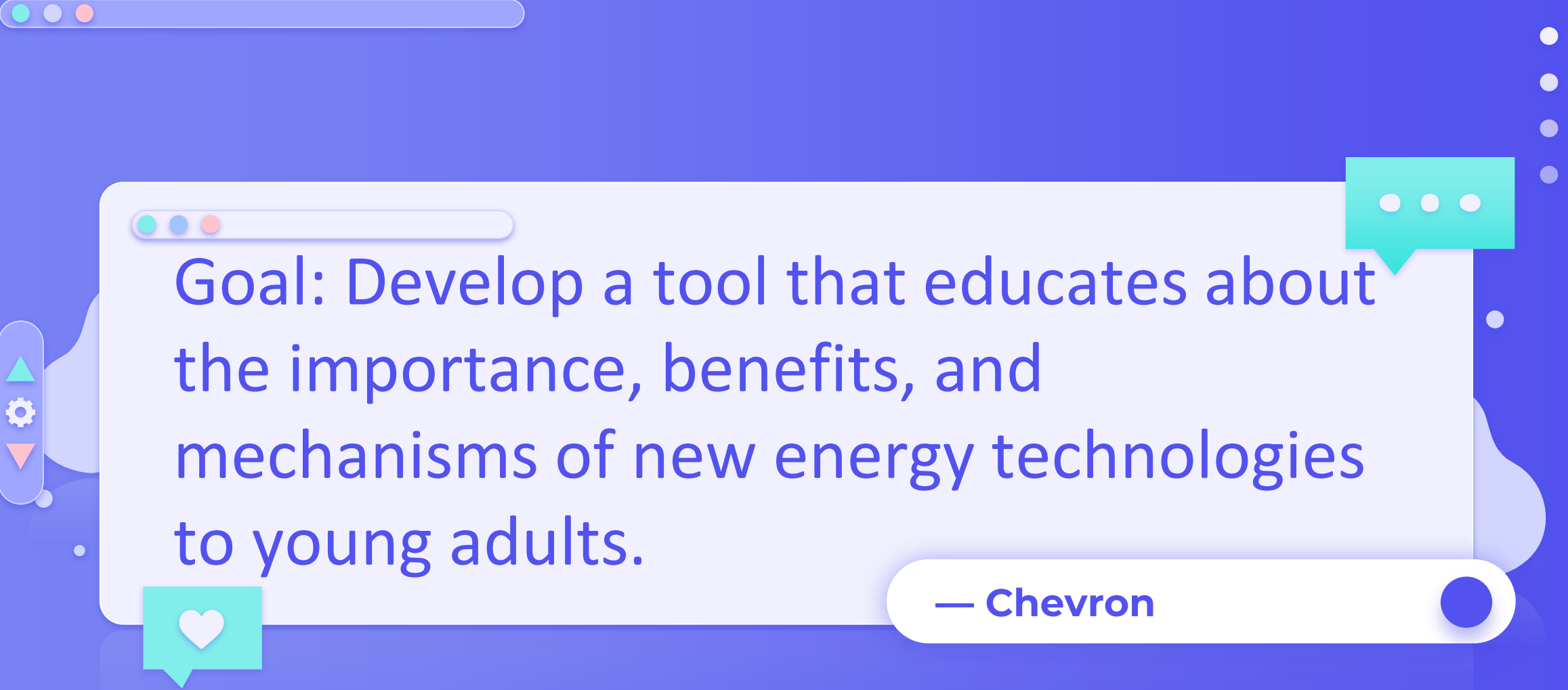Senior in Applied Mathematic And Satistics with Computational Emphasis

**Zhuoyi Wang**

Junior in Computer Science with Robotics and Intelligence Systems Emphasis, Engineering Physics Minor

**Ethan Wong**

Junior for a Bachelor of Science in General Computer Science

Goal: Develop a tool that educates about the importance, benefits, and mechanisms of new energy technologies to young adults.

— Chevron

# Our Solution

A website with multiple features, where you can learn more about each of the new technologies Chevron New Energies is currently interested in. It also contains a chatbot implementing GPT4 trained on a dataset created specifically for this website. And finally, a memory game testing all the knowledge acquired from the features.
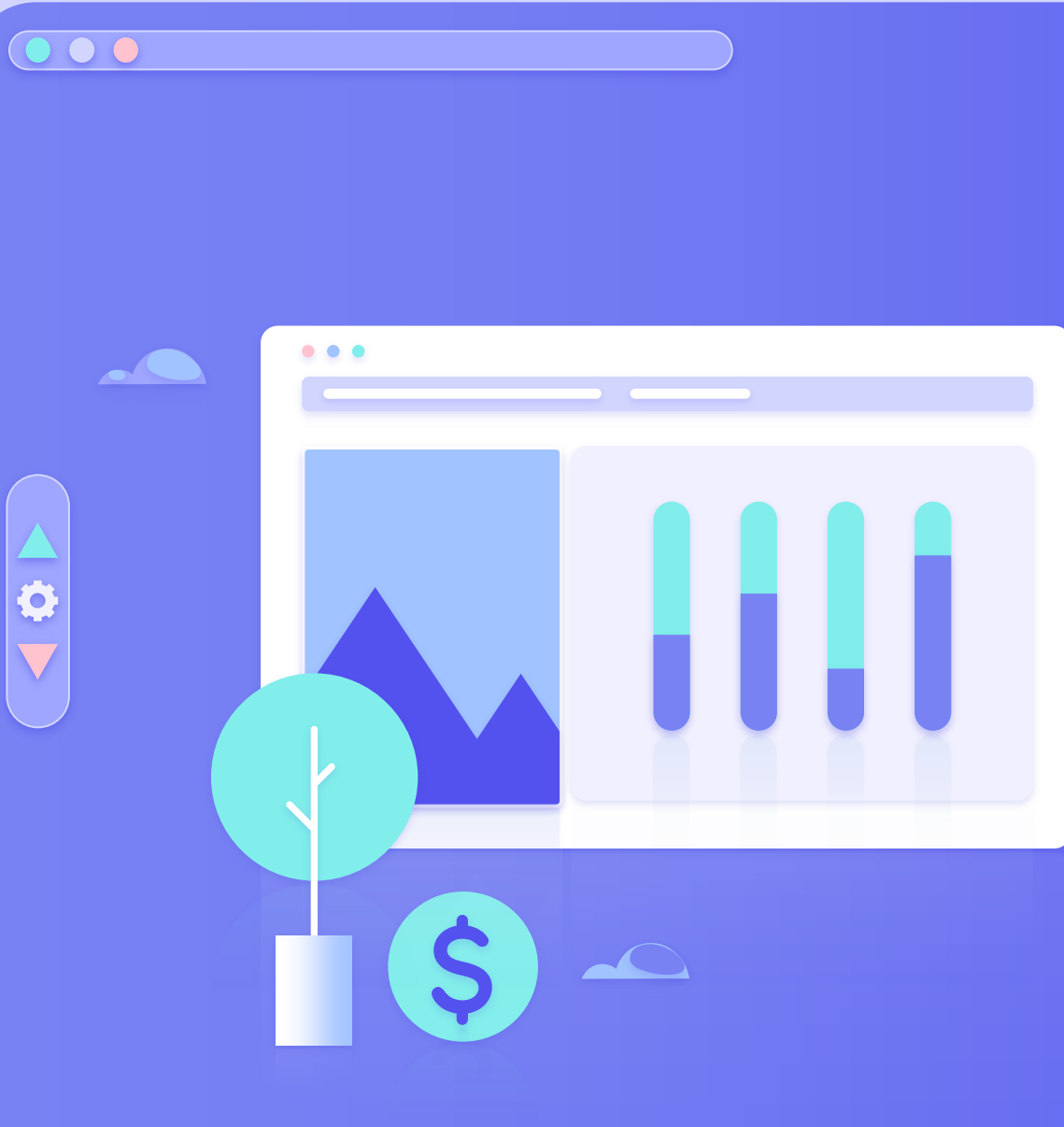
# Coding Languages Used

## JavaScript

React package to build the website and user interface

## Python

Connect chatbot's OPENAI API to answer questions on page

## HTML5

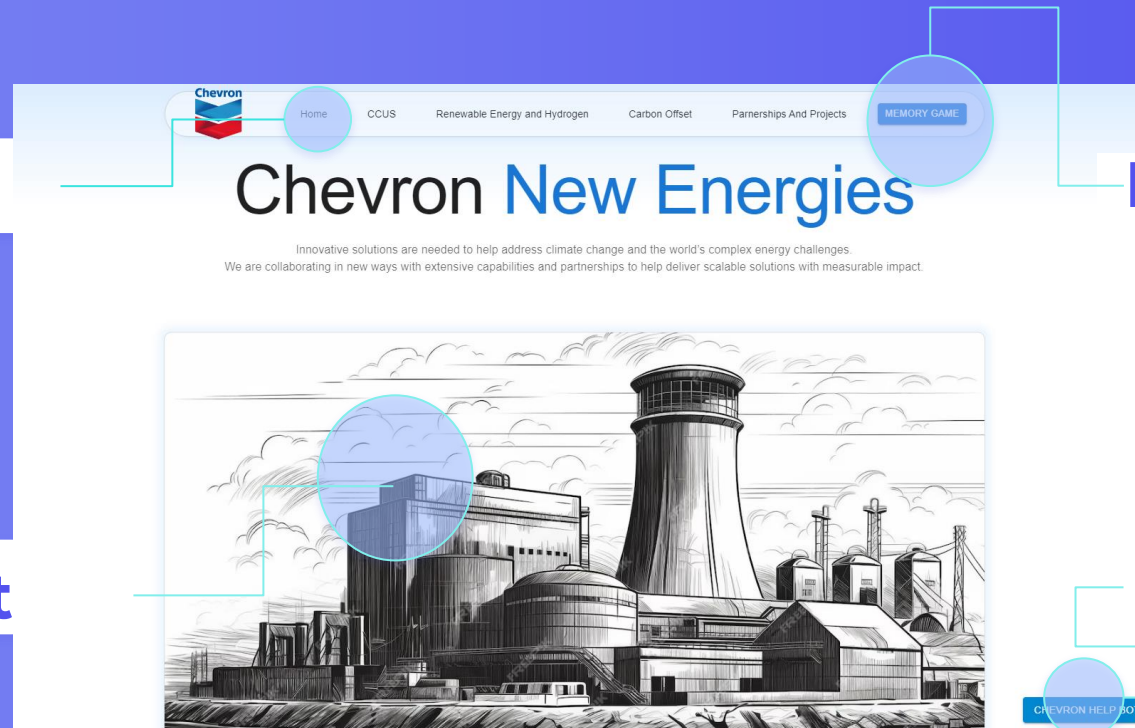Original build of memory game present in website

# Application Layout



## Features
Each of the new technologies more in depth

## Main Content
Differs from page to page in the website

## Memory Game
Try out your newfound knowledge on Chevron New Technologies

## Chat Bot
Ask questions about the project and Chevron's current goals

# Cost of Implementation

**Development Costs:**
- **Manpower:** The majority of the cost comes from the development team's effort. Considering the learning curve for React and integrating it with a backend, the man-hours can be substantial.
- **Tools and Services:** Include costs for any development tools or services used, even if they have free tiers, as scaling up may incur costs.
- **Learning Resources:** Any courses or materials purchased to learn React or other technologies.
- **Testing:** Time and resources spent on testing, which might include the use of testing platforms.

**Operational Costs:**
- **OpenAI API:** Usage costs depend on the number of API calls made. For heavy usage, consider OpenAI's pricing tiers to estimate expenses.
- **Maintenance:** Regular updates of React, Flask, and other dependent libraries to keep the application secure and efficient.

# Challenges and Impediments

**Technical Challenges:**
**Integration Complexity:** Difficulty in ensuring seamless communication between the React frontend and Flask backend.
**Learning Overhead:** Time spent upskilling on React, which has a rich ecosystem with a steep learning curve.
**API Limitations:** Constraints imposed by the OpenAI API, such as rate limits or response formats.
**Project Management Challenges:**
**Time Management:** Balancing the development timeline with the learning process for new technologies.
**Scope Creep:** The tendency to extend the scope of the project as more features and functionalities are considered.

# Key Learnings

## Web Dev

Website development takes time and translation between languages, as well as accordance in collaborators

## Existing Solutions

The details of things like CCUS were unknown to all of us

## Communication

In a team of developers, communicating needs and helping each other is essential

# Future Improvements

## Deployment and Hosting

- **Hosting Service:** Selecting a hosting provider (like Google Cloud, AWS, Heroku) that suits our needs and budget.
- **Domain Purchase:** Acquiring a custom domain name for the web application.
- **Scaling Up:** Planning for increased traffic and usage, potentially leading to higher hosting costs.

## Feature Development

- **User Accounts:** Implementing authentication for personalized experiences and saving progress in educational content.
- **Content Expansion:** Adding more interactive elements and diversified content to cover a broader range of topics.
- **Performance Optimization:** Continuous profiling and optimization to ensure the application runs smoothly as it scales.

## Community and Engagement

- **User Feedback:** Establishing a system for collecting user feedback and incorporating it into future iterations.
- **Gamification:** Enhancing the memory game with more features, levels, and possibly a leaderboard to encourage competition.