NLP - Poetry Generator

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1. Design Challenge

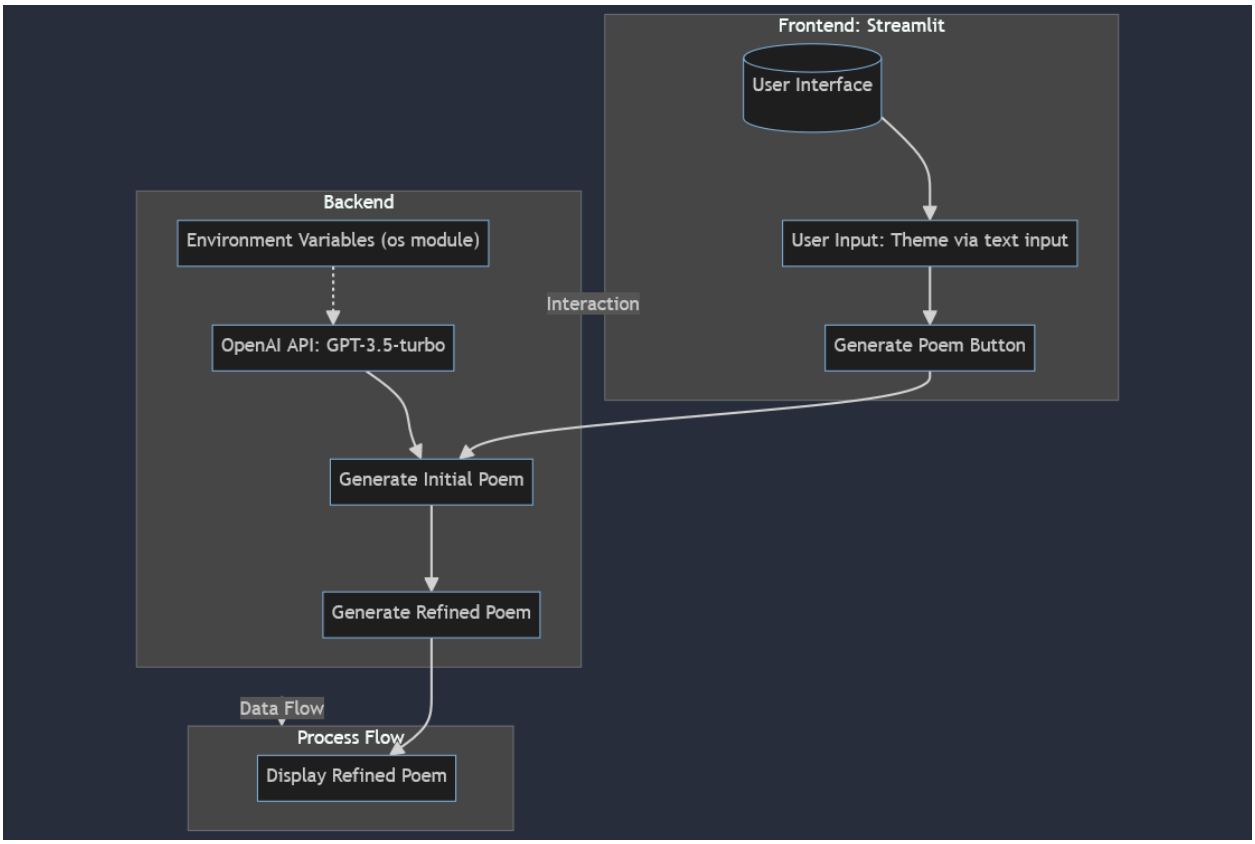
Design a poetry generation application to enable users in digital environments to express creativity through personalized poems with minimal effort.

2. Solution Design

2.1. Application Architecture:

1. **Frontend:**
    a. **Streamlit** - Provides an interactive GUI where users can enter a theme and trigger the poem generation process.
2. **Backend:**
    a. **OpenAI API:** Utilizes the GPT-3.5-turbo model for generating poems based on user input. The API call is structured to first generate a poem on a given theme, then refine the poem by expanding on the initial idea.
    b. **Environment Variables:** Uses os module to securely handle API keys.
3. **Process Flow:**
    a. **User Input:** The user provides a theme via a Streamlit text input.
    b. Poem Generation:
        i. Initial poem is generated based on the theme.
        ii. A refined poem is generated by expanding on the initial poem.
    c. **Display:** The refined poem is displayed to the user in the **Streamlit** application.

2.2. Visual Representation - Architecture



3. Code Documentation

3.1. Code Explanation:

1. **generate_poem(theme):**
    a. **Purpose:** Generates a poem based on the specified theme.
    b. **Parameters:** theme (string) - The theme or prompt for the poem.
    c. **Returns:** A string containing the poem.
    d. **Details:** Calls the OpenAI API with a structured prompt that instructs the model to behave as a poet and generate a poem relevant to the user's theme.
2. **chain_prompts(initial_theme):**
    a. **Purpose:** Generates an initial poem and refines it with a second generated poem based on the first.
    b. **Parameters:** initial_theme (string) - The initial theme for the poem.
    c. **Returns:** A string containing the refined poem.
    d. **Details:** First, a poem is generated from the initial theme. Then, this poem is used to create a refined prompt which generates a second, expanded poem.