Personalized Learning Streamlit App Overview

This document provides a comprehensive overview of a personalized learning application developed using Python and Streamlit. The app is designed to cater to different types of learners by offering tailored content and features, including authentication through AWS Cognito, integration with ChatGPT and Gemini LLMs, and various multimedia options for content delivery. Additionally, the app includes assessment tools, coding practice features, and a resource library, all aimed at enhancing the learning experience.

Overview of Features

User Authentication

- **AWS Cognito Integration**: Secure sign-in and sign-up functionality for users.
- **User Roles**: Two types of logins - Student and Instructor.

Content Delivery Options

- **Learning Preferences**: Users can select from three content types:

  - **Visual**: Utilizes YouTube API and Google Custom Search for visual content.
  - **Audio**: Converts text to audio or searches for relevant podcasts.
  - **Kinesthetic**: Provides step-by-step illustrations from educational websites like Geeks for Geeks.

AI Integration

- **Content Generation**: Integrated ChatGPT and Gemini LLMs APIs to generate personalized content based on user queries.
- **Self-Assessment**: Users can take multiple-choice quizzes with AI assistance for evaluation and motivation.

Coding Practice

- **Dynamic Coding Problems**: Users can practice coding with problems that come with different test cases and receive AI-enhanced support.

Resource Library

- **Recommendations**: A library that provides users with the best resources, including trending blogs, YouTube videos, and educational websites, powered by a news API.

Instructor Portal

- **Material Upload**: Instructors can upload educational materials using Google Drive API integration.
- **Document Retrieval**: Students can access and learn from uploaded documents.

Interactive Learning Features

- **DocChat**: A feature allowing students to upload documents and learn from them using AI.
- **Note-Taking**: Integrated Google Jamboard and a dedicated notes page for users to take notes.

Analytics

- **Statistical Tracking**: Tracks user engagement, including hours spent on topics, timestamps, and difficulty levels.
- **Advanced Neural Analysis**: Provides insights into user learning patterns and preferences.

Conclusion

This personalized learning app is designed to meet the diverse needs of learners by providing a rich set of features that enhance engagement and facilitate effective learning. With its robust integration of AI and multimedia content, the app aims to create a comprehensive educational experience for both students and instructors.

Infographic Overview

To visually represent the features and functionalities of the personalized learning app, an infographic can be created highlighting the following key areas:

- User Authentication
- Content Delivery Options (Visual, Audio, Kinesthetic)
- AI Integration (Content Generation, Self-Assessment)
- Coding Practice Features
- Resource Library
- Instructor Portal
- Interactive Learning Features (DocChat, Note-Taking)
- Analytics and Tracking

This infographic will serve as an engaging tool to communicate the app's capabilities to potential users and stakeholders.