Project Number: P40

Project Title: A Platform for Melody Mentoring

Project Clients: Dr Basem Suleiman

Project Specializations: Software development/Engineering, Web Application Development, Algorithms, AI

Number of groups: 2

Background:

Practicing and mastering musical instruments, such as the piano is a challenging task that requires effort, time, and expertise. People who would like to learn using musical instruments requires dedication and support while learning. This also includes multiple stakeholders and requires build expertise through engaging them.

Scope

The project will focus on developing a robust, flexible, and user-friendly platform that caters to people who would like to learn and excel musical instruments. This project will establish the basic framework, including user authentication, video uploads, and review features.

Software Requirements

User authentication and authorization functionality

- Signup and login for different users (mobile app – React Native and web page)

- Authentication using AWS Cognito.

- Develop APIs for user signup and login.

- User profile management

- User management through system and other admin roles

Experimenting with Instruments

- Share musical experimentation with experts.

- Video and audio recording functionality

- Develop audio analysis and comparison algorithms.

- Generate feedback reports with the support of large language models

- Performance evaluation

Manage musical experimentations.

- Users can track and manage their progress and experimentation history.

- Manage different levels and achievements.

- Analytics to monitor user activities and system usage.

Desing and other requirements:

- Integrate AWS S3 for storing audio and videos, and reports.

- Microservices and API-Based Architecture

- DynamoDB for data storage.

- Ensure secure handling of PII information.

- Intuitive and engaging user interface suitable for different users

- Navigation and user flows for both mobile and web platforms.

- Ensure accessibility features are included for diverse needs.

- Write unit tests, integration tests, and end-to-end automation tests.

- Implement secure coding practices.

- Use Terraform for infrastructure as code.

- Set up Jenkins pipeline for CI/CD.

- Implement and follow best software engineering practices and design principles.

- Create comprehensive user and developer documentation.

Required Knowledge and Skills:

- AWS
- HTML, CSS, and JavaScript
- React
- Python
- Docker, Kubernetes
- MySQL, DynamoDB
- PyTorch, scikit-learn
- LLM Models
- Jenkins
- Git/Github
- Terraform

Expected Outcomes:

- Robust and scalable architecture supporting seamless user experience across web and mobile platform.

- Fully functional application (robust, secure, and performance)
- Project documentation including source code, system architecture and design, UI/UX, different types of testing, user manuals and guide, technical guide.

Additional Resources:

TBC