Enhancing Personalized E-Learning: A Novel Approach to Adaptive Learning Pathways for Individualized KnowledgeAcquisition

RP24-112

Status Document 2

Nishshanka N.A.G.A.A

IT21032974

BSc (Hons) in Information Technology Specializing in Information Technology
Department of Information Technology

Sri Lanka Institute of Information Technology – Sri Lanka

September 2024

❖ **Supervisor Details:**

1. Supervisor: Ms. Sanjeevi Channdrasiri
2. Co – Supervisor: Ms. Akshi De silva
3. External-Supervisor: Mr. Danuka Balasooriya

❖ **Group Details:**

Member Name	**Student ID**
Nishshanka N.A.P.K.R	IT21033032
Abeykoon R.M.S.P	IT21021602
Jayasinghe K.A.K.N	IT21032806
Nishshanka N.A..G.A.A	IT21032974

Table Of Contents

Table Of Figures

1. Introduction

The education sector has been through key changes bearing in mind the current introduction of the technological innovations in learning. With more students out there, who do not fit to the traditional one size, one approach system of learning, it has become harder to cater for all the students hence the development of adaptive learning systems. Such systems use AI and ML technologies to adapt the content to students and their responses, and furthermore rely on the responses given by the newcomer.

Past research has pointed out that tailored instruction is essential for increases in students' performance. Research proves that when the delivery of the content is done with the help of adaptive learning platforms, the engagement, retention as well as the knowledge retention goes up significantly. However, there are several, if not many, learning systems with an adaptive version, which can be often problematic for providing timely changes of the learning paths in line with student progress and/or reviews.

For instance, the first forms of adaptive learning models including Intelligent Tutoring Systems (ITS), and Massive Open Online Courses (MOOCs) tried to integrate triune parameters of personal learning but most of them did not have the feedback mechanism that can change the learning paths constantly. Most of these models therefore incorporate pre-specified pathways or feedback cycles, which restrict the model's evolution as students advance through different stages of learning.

Adaptive learning has evolved over time and with the current research presented here a new dynamic adaptive system is added in which the learner data and the model is updated dynamically, and the learning is personalized for the initial data of the student as well as the dynamic data of an adaptive learner. The envisioned system is to incorporate dynamic learning paths and feedback loops which will then make the learning process more flexible and engaging and assist students gain improved results due to delivery of pertinent material at profitably timed intervals.

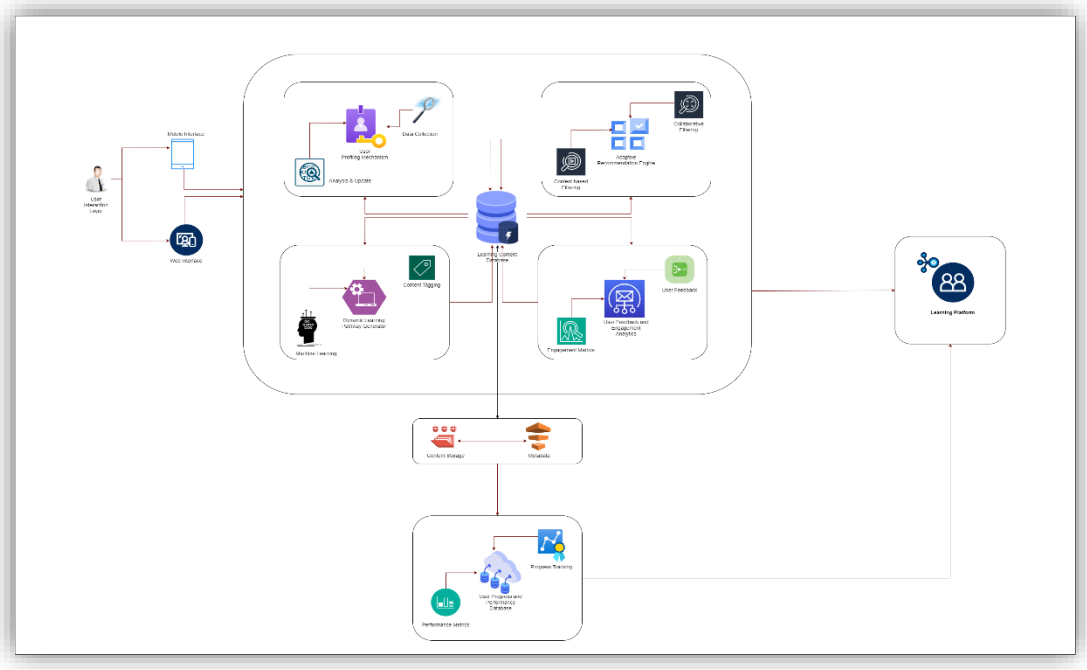

Figure 1: System Diagram

2. Ghantt Chart

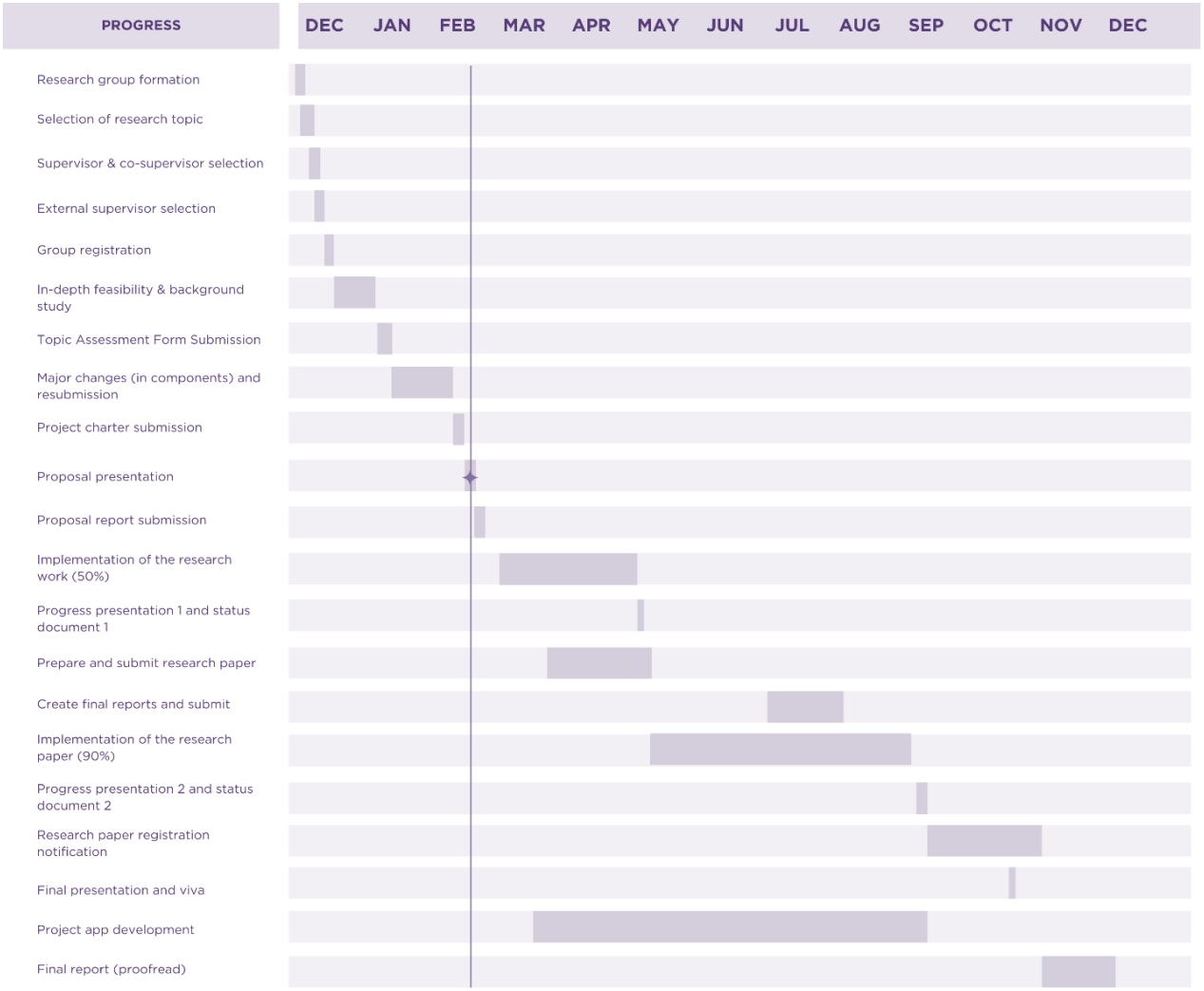

Figure 2:Ghantt Chart

3. Work Breakdown Structure

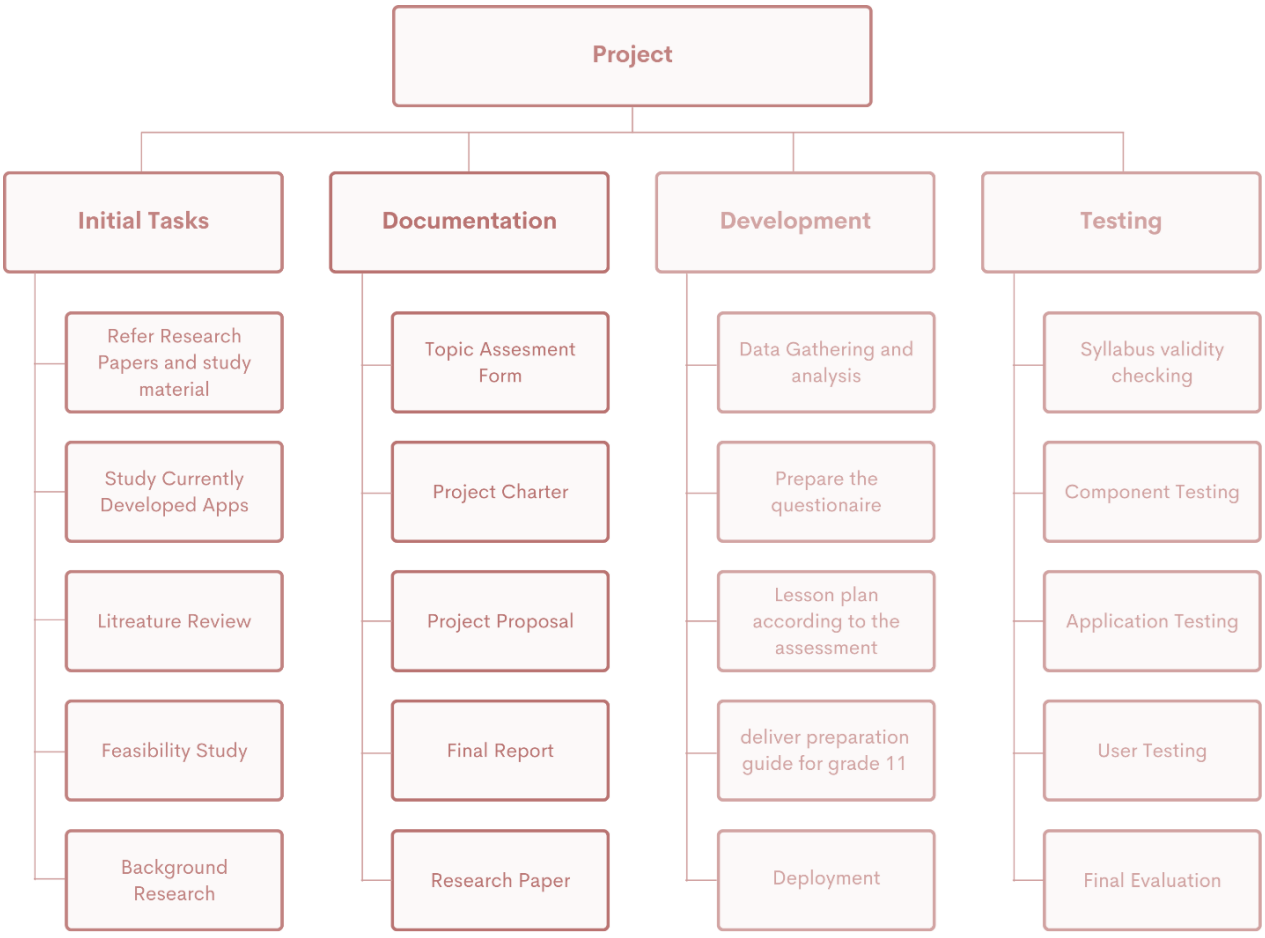

Figure 3: Work Breakdown Structure

4. Screenshots of Supervisor Meeting

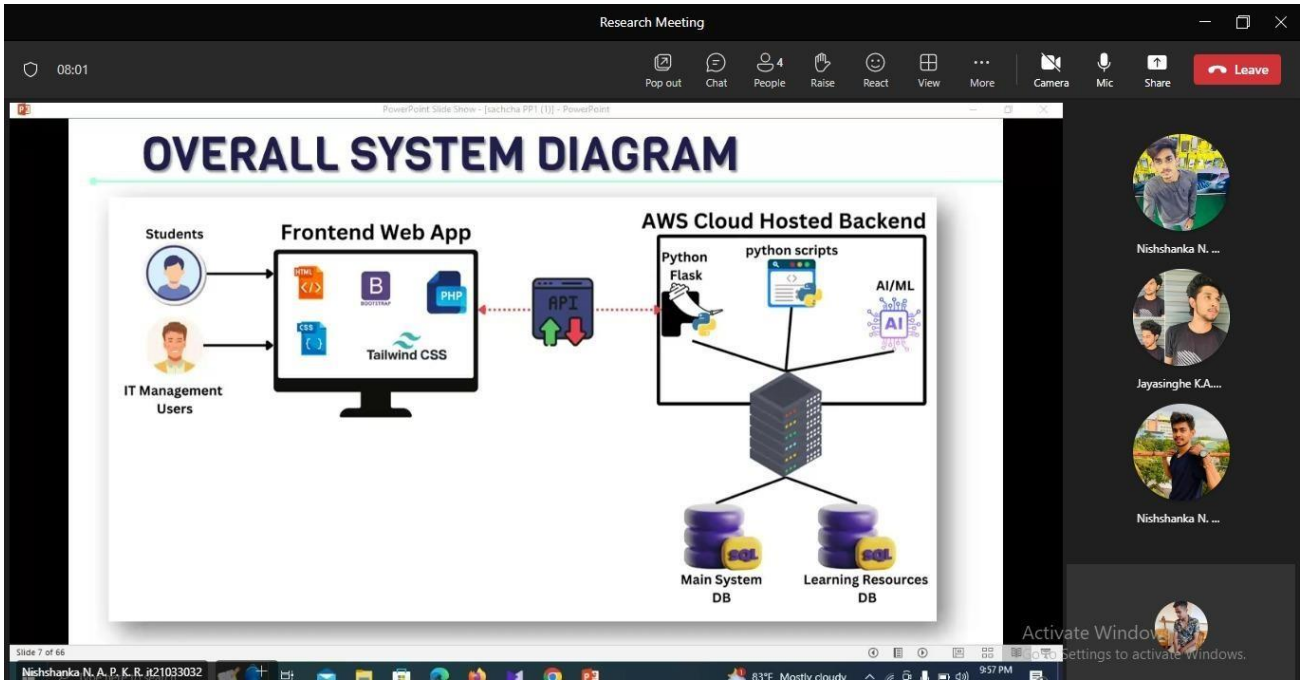

Figure 4: Personal Group Meetings

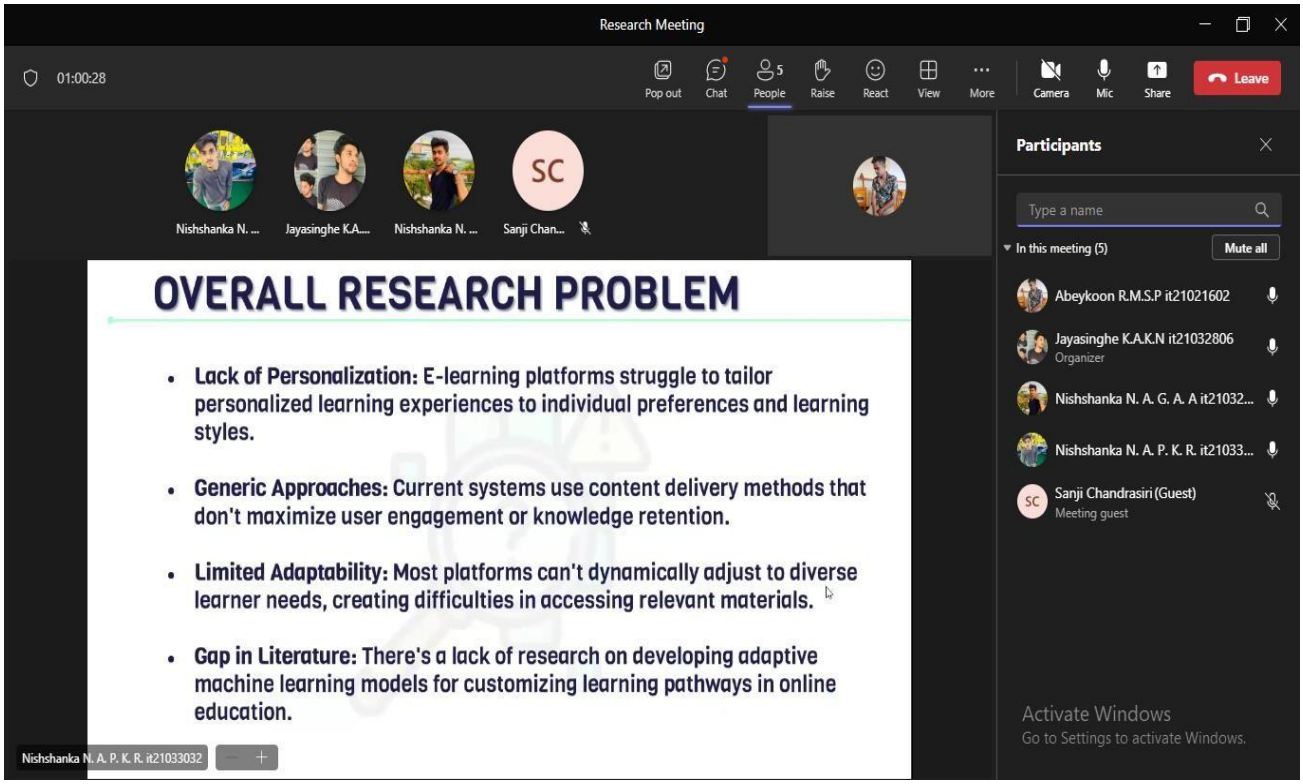

Figure 5: Supervisor Meeting

5. Screenshots of Teams Planner

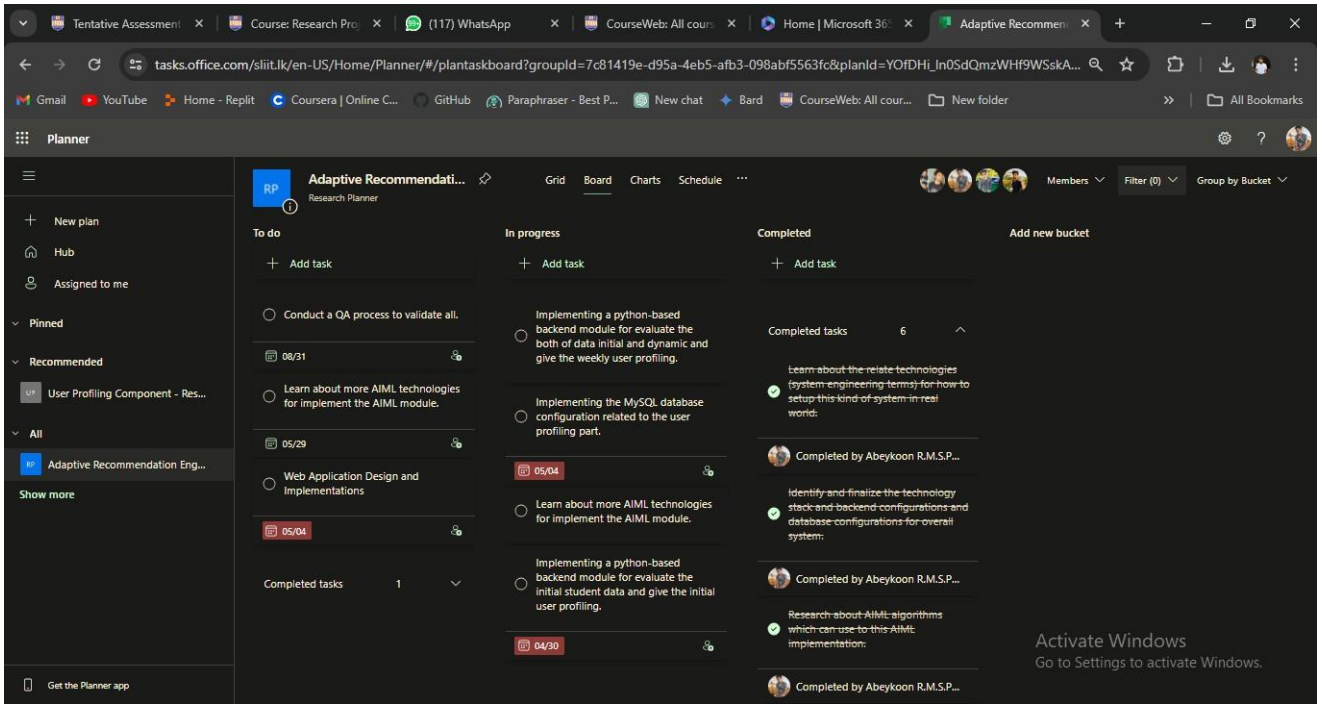

Figure 6 : Task Board

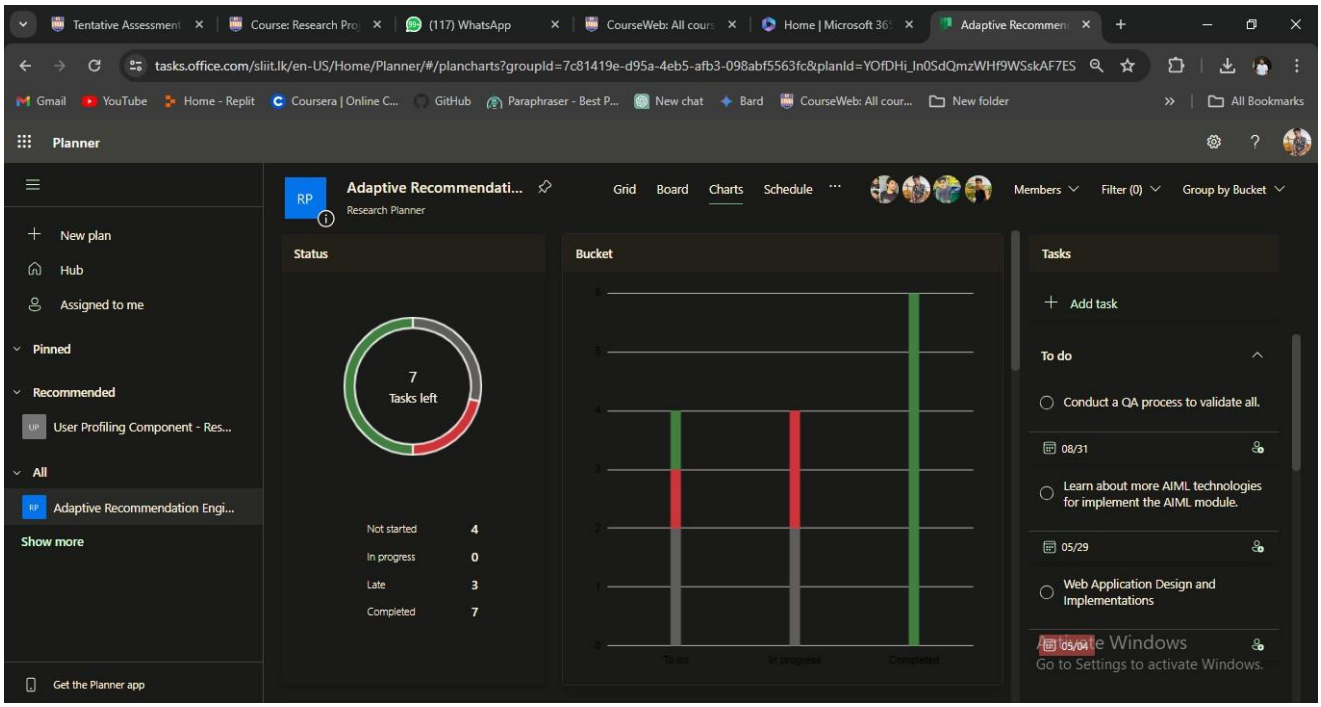

Figure 7 : Task Charts

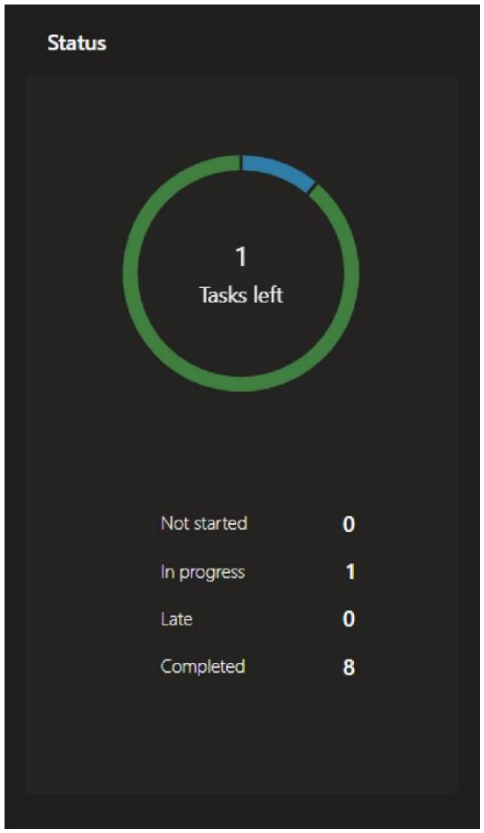

Figure 8: Project View of MS Planner

6. Teams Chat

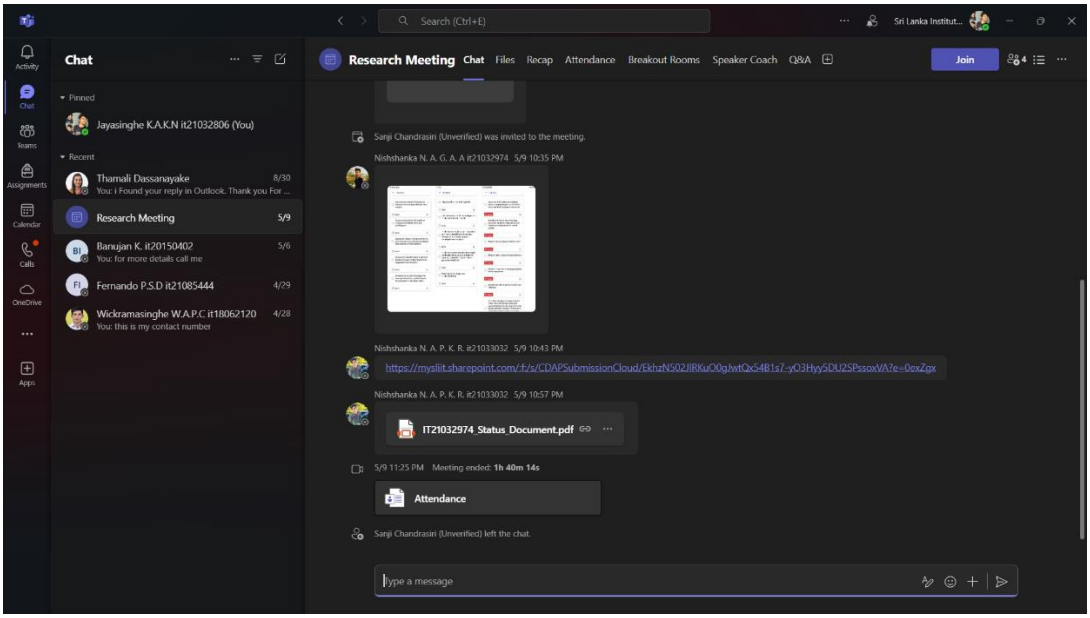

Figure 9 : Teams Chat

7. WhatsApp Chat

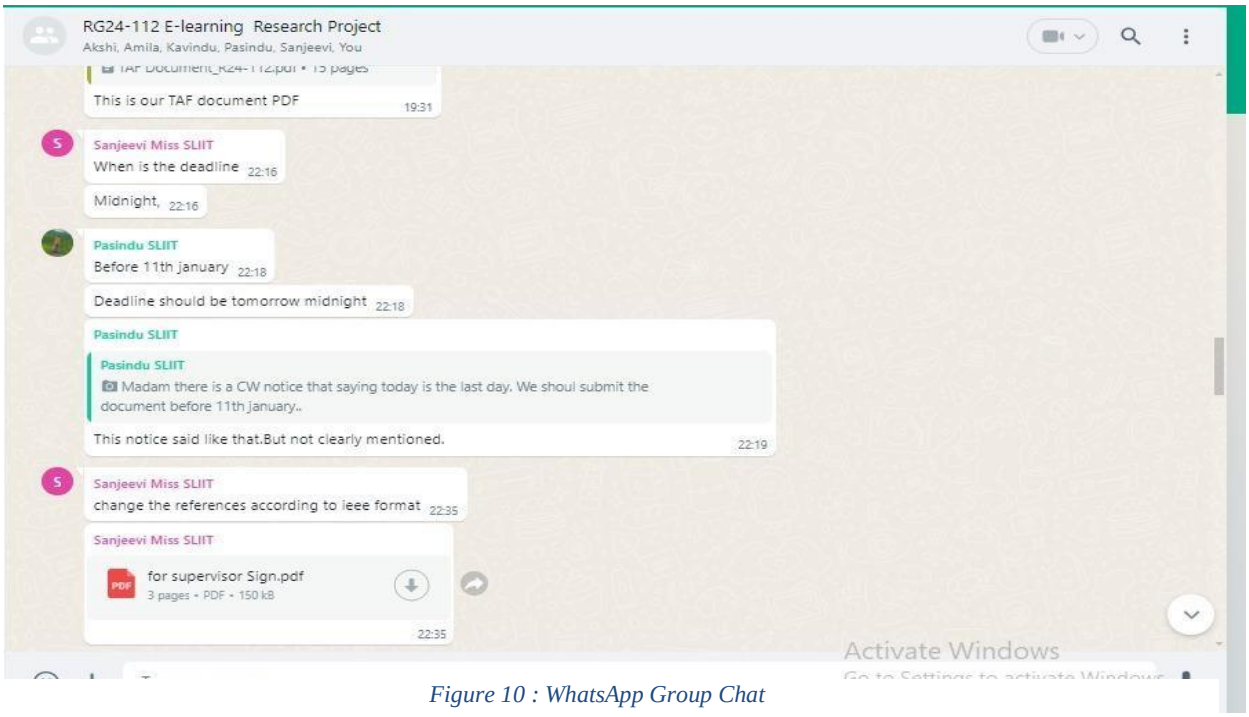

Figure 10 : WhatsApp Group Chat

8. Outlook Mails

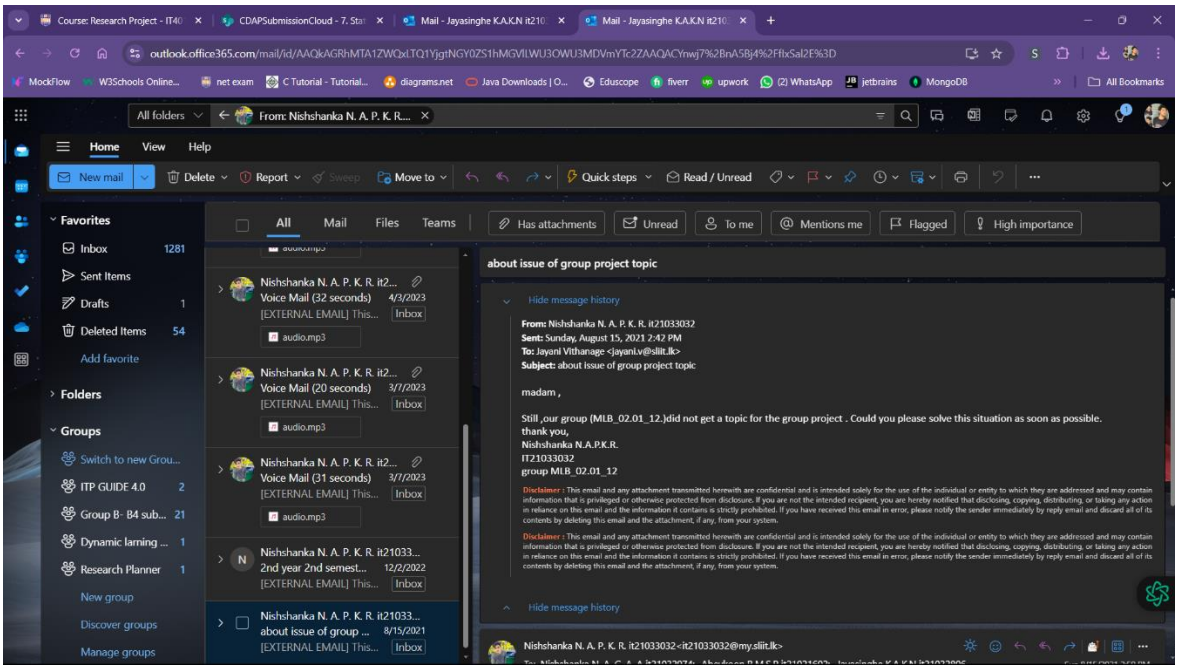

Figure 11 : Outlook Mails

9. Flow Chart

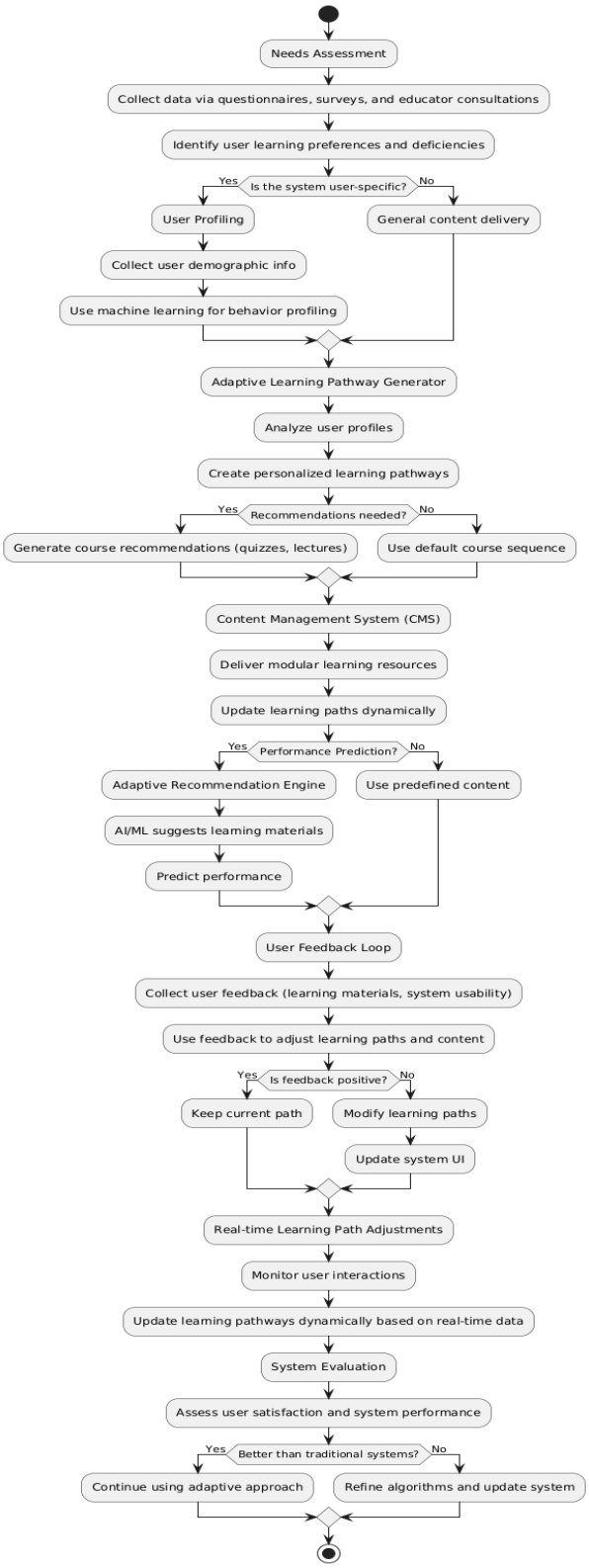

Figure 12 : Flow Chart

10.Completed UIs

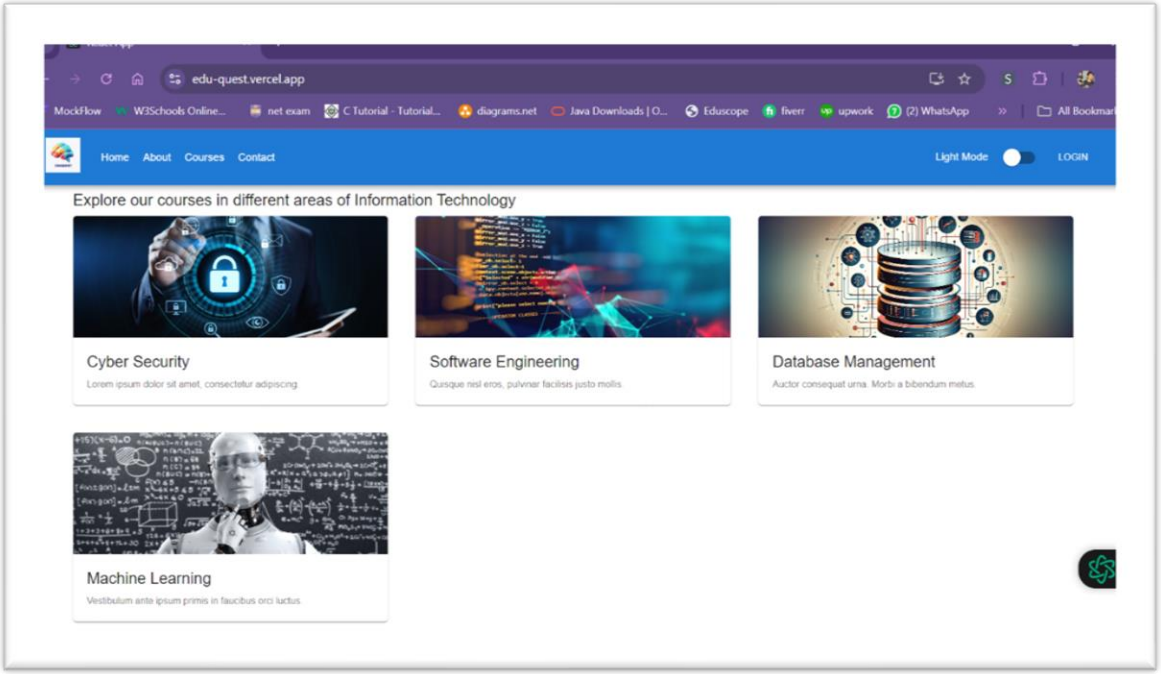

Figure 13: Sample Front-end - Dashboard

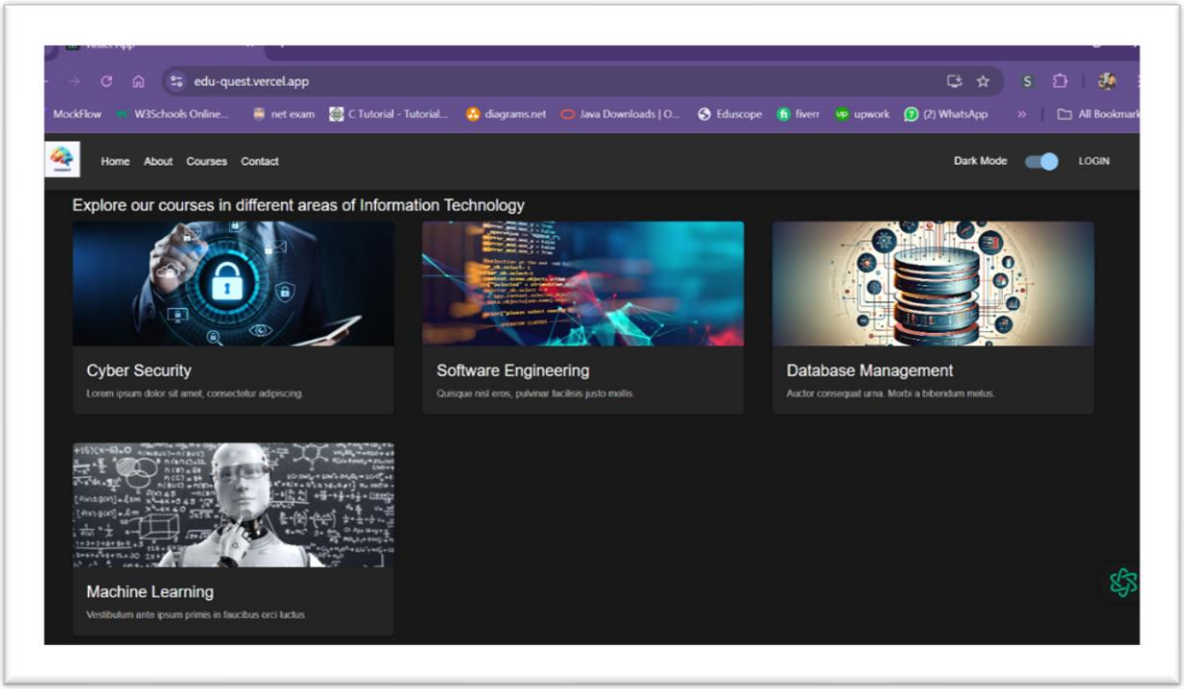

Figure 14: Front-End Dark Mode Active (UX)

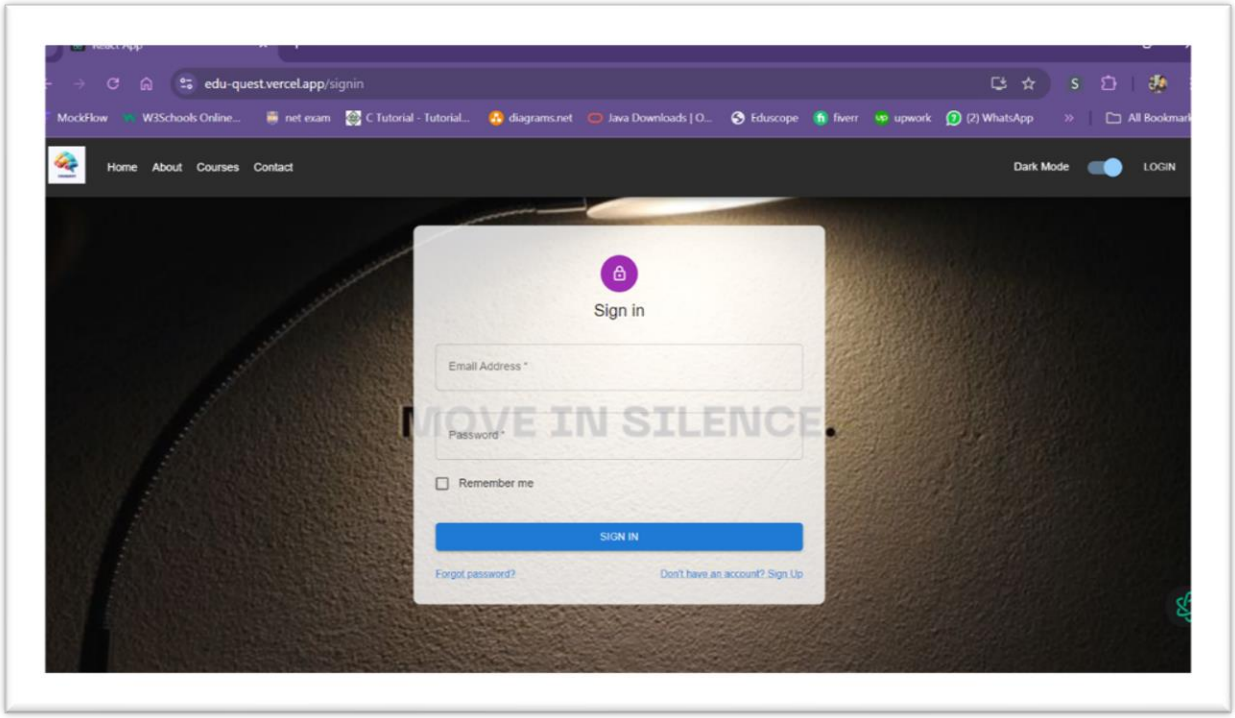

Figure 15: Sign In Interface

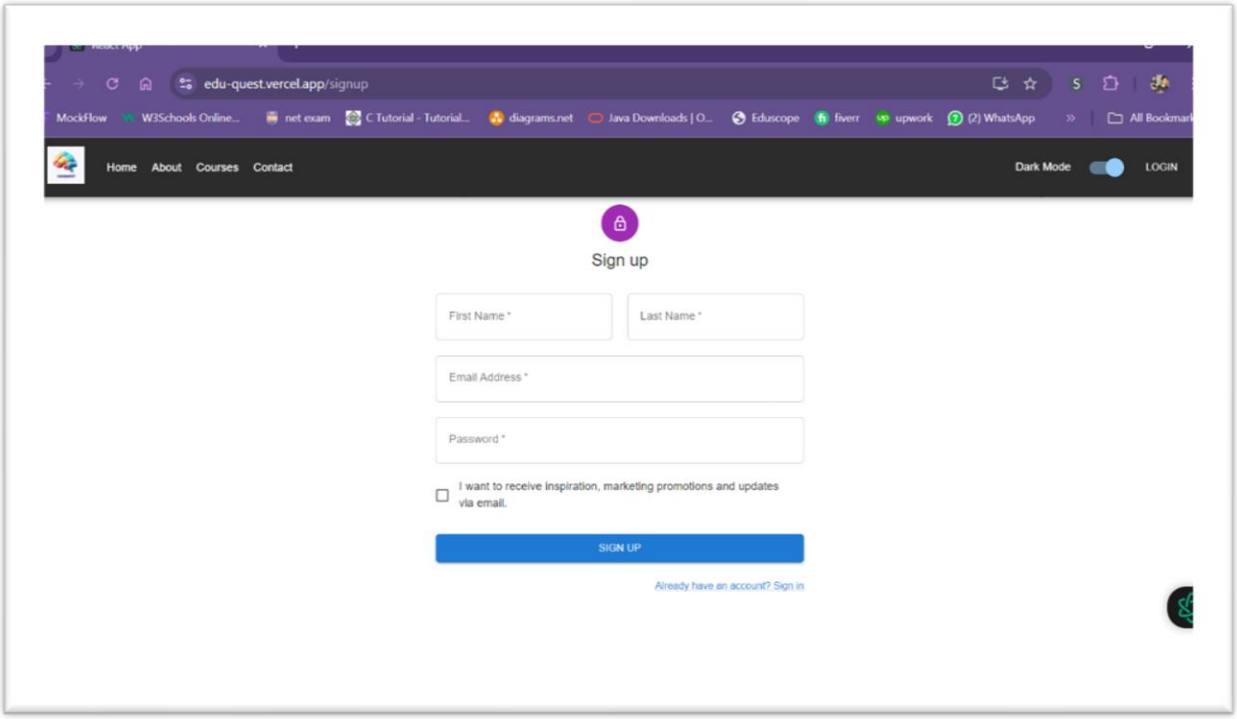

Figure 16: Sign Up Interface

Figure 17: Mobile Responsive Frontend

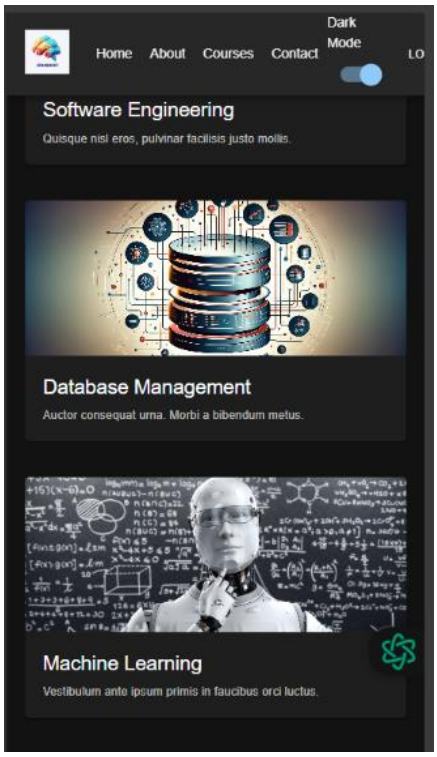

Figure 18: Mobile Responsive Frontend- Sample 2

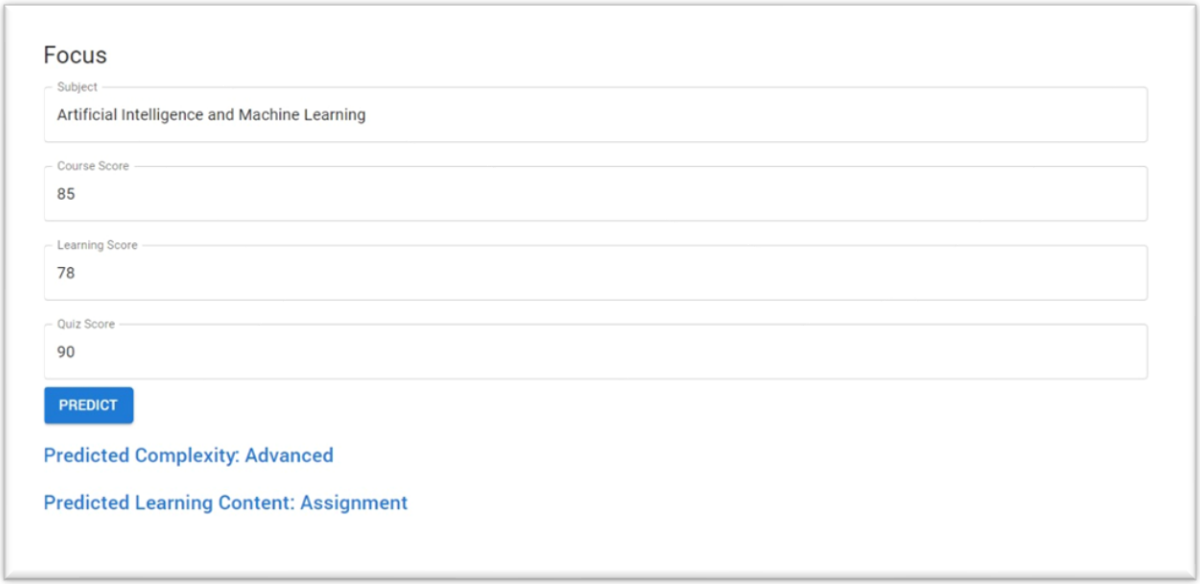

Figure 19: Results Were Checked from Frontend and Got the Outputs (SLPM)

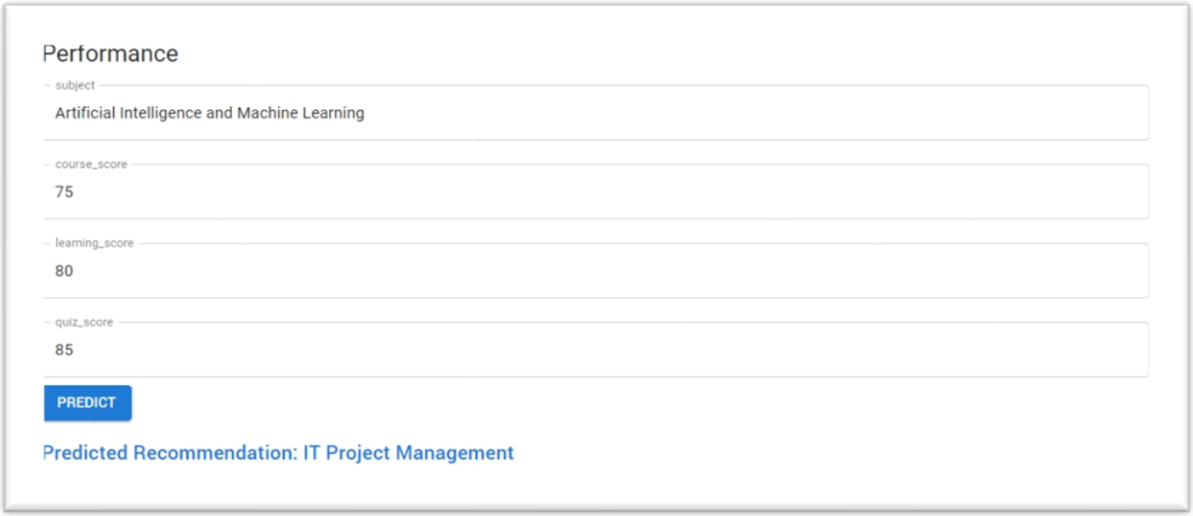

Figure 20: Inputs were passed to the URL and the outputs were received (ARE)

Figure 21: testing frontend (DLPG)

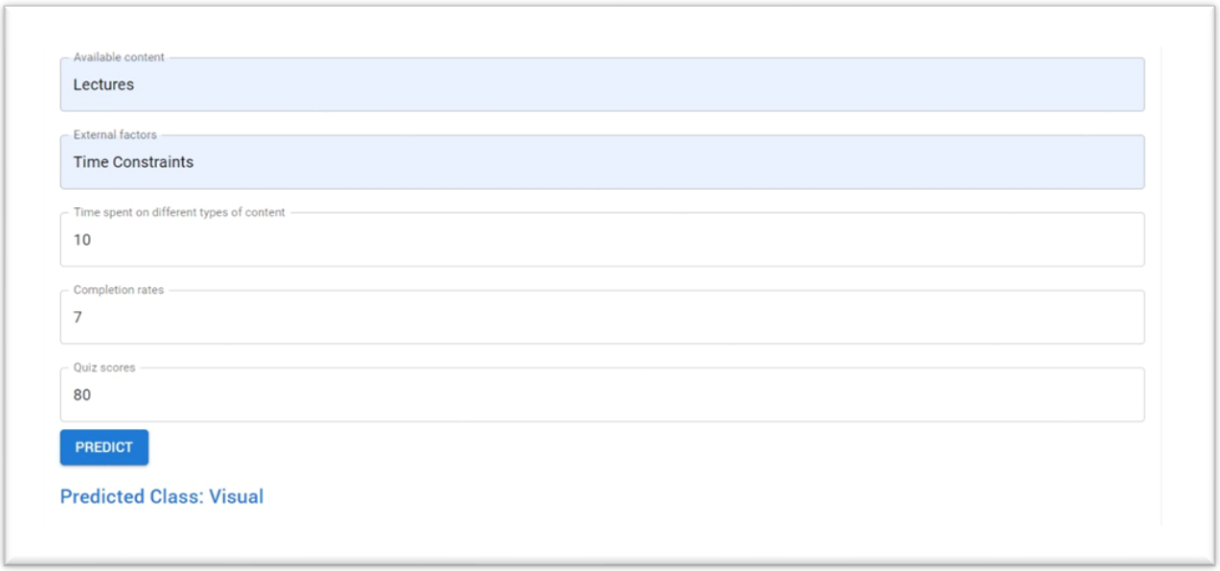

Figure 22: results were retrieved successfully (DLPG)

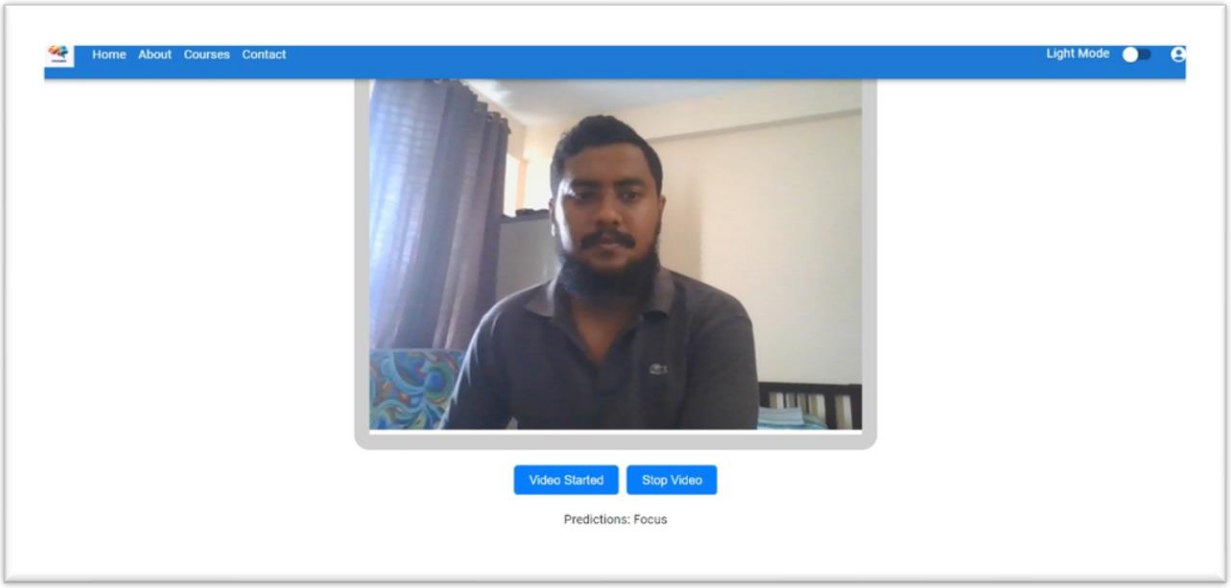

Figure 23: flask app connected to frontend and the checked with Realtime video (CUIFL)

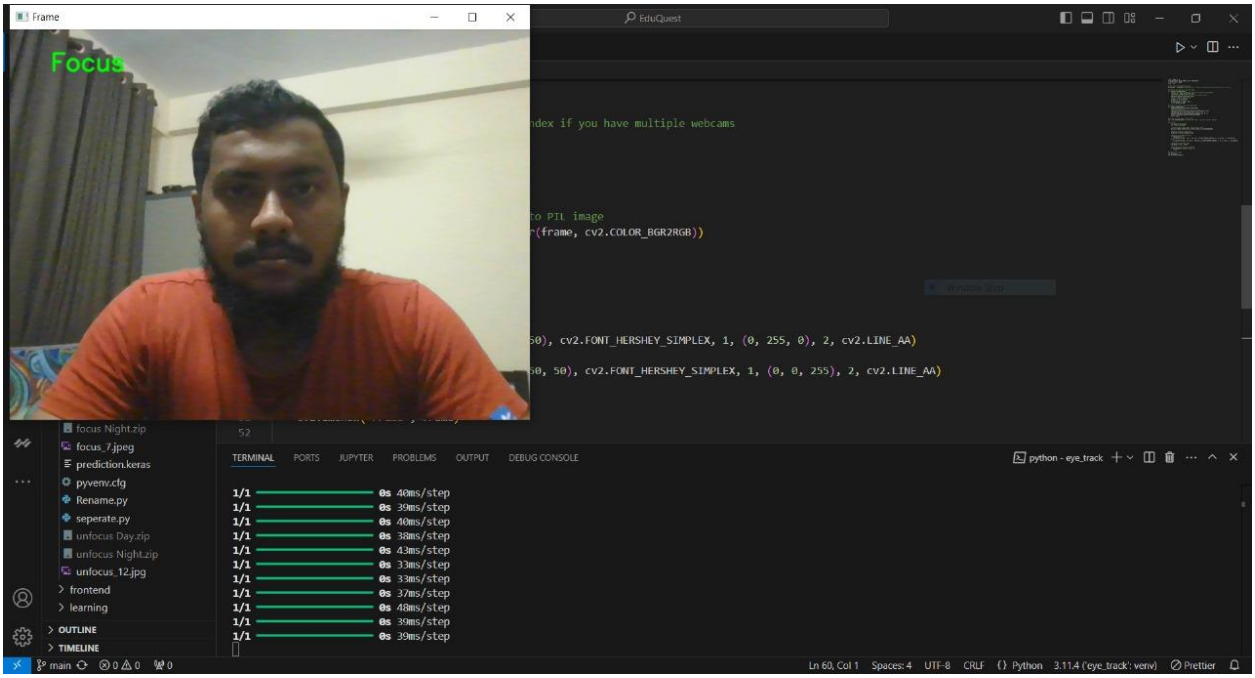

Figure 24: Realtime testing with camera (CUIFL)