GradeUP – Final Project Report

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1. Introduction

GradeUP is a Flask-based web application built to help students evaluate universities and academic programs through surveys and data collection. It serves as a feedback and analysis platform for students, administrators, and researchers to make informed decisions and improve educational offerings.

2. Team Contributions

Each team member contributed to different modules of the platform:
- Frontend: UI/UX design and Jinja templating
- Backend: Flask architecture, SQLAlchemy models, survey logic
- Admin Panel: Management tools for users, programs, and universities
- Survey System: Question types, response handling, progress tracking
- Documentation and Testing: User stories, ER diagram, and bug fixes

Backend:

KRRusev21 | TPIvanov21

Designers:

PSDineva21 | GYFilipov21

Scrum Master:

SGMikov21

3. Features Implemented

- Secure user authentication with role-based access
- University and program listings with search and filters
- Custom survey creation and results analysis
- Admin dashboard for managing users, content, and data
- Data export functionality
- Responsive, modern UI with cosmic design theme

3.1 AI Module Integration

An advanced AI recommendation system was developed, integrating two key modules into the GradeUP platform:

- AdvancedPredictionSystem: Generates program predictions using confidence scoring.

- RecommendationEngine: Provides personalized university and program recommendations based on survey responses, user interests, and academic profiles.

The AI modules are fully integrated into the Flask backend, directly interacting with SQLAlchemy models. They provide predictions through REST API endpoints:

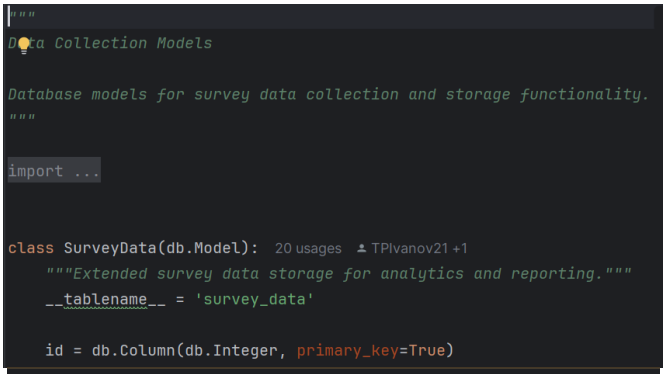
- `/api/predict` → `predict_with_confidence()`

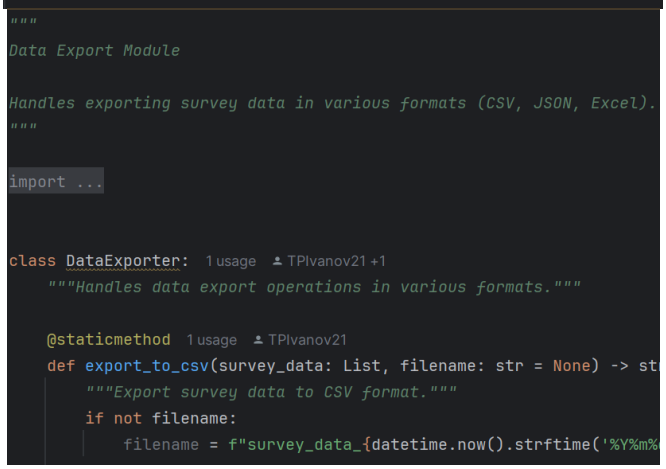
- `/api/recommend` → `recommend_programs()`

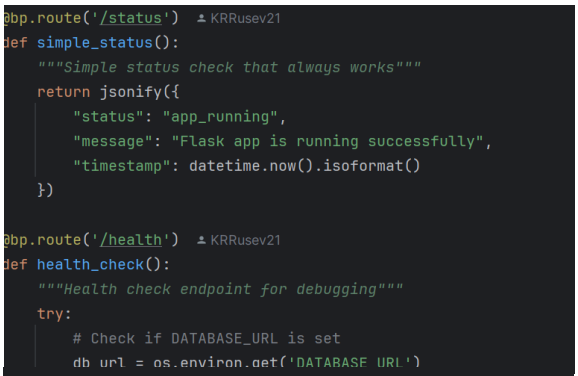
All predictions and recommendation results are stored in the database for analytics and future personalization. The AI engine enhances decision-making for students by delivering data-driven and personalized academic recommendations.

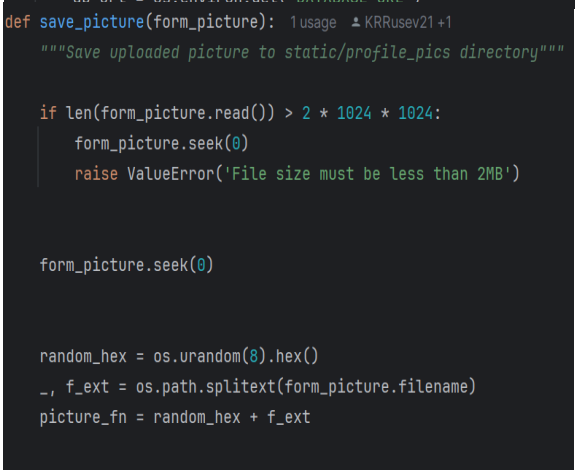
4. Code Documentation

The codebase (showed below) follows Python documentation standards with docstrings and inline comments.









4.1 System Architecture Diagram

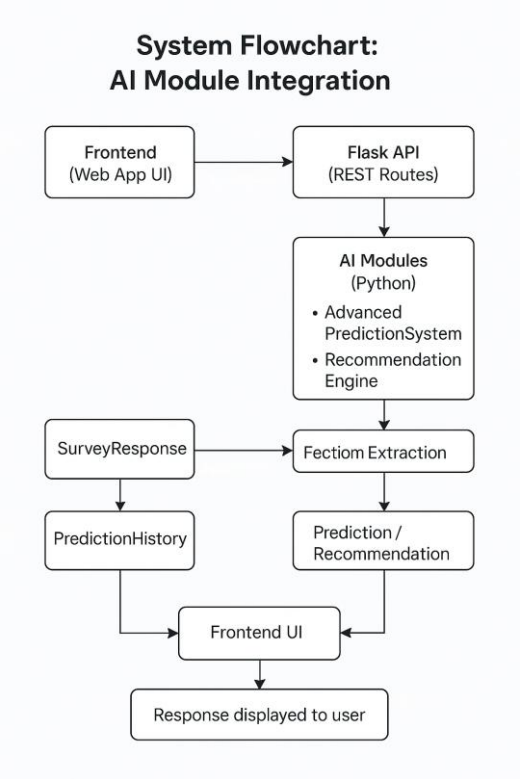
The diagram below illustrates the full integration between the frontend, Flask backend, AI modules, and database layers:

- The frontend collects user survey data.

- Flask backend routes data to the AI modules.

- The AI modules process the data and return predictions.

- Results are stored in the database and presented to the user.

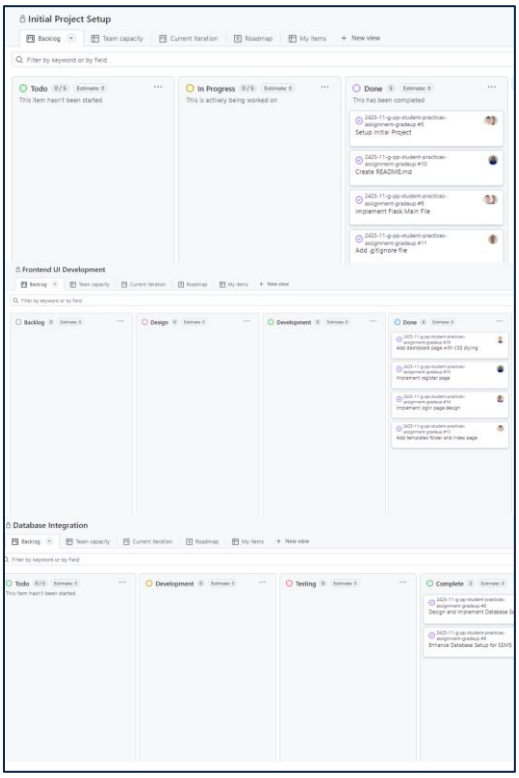


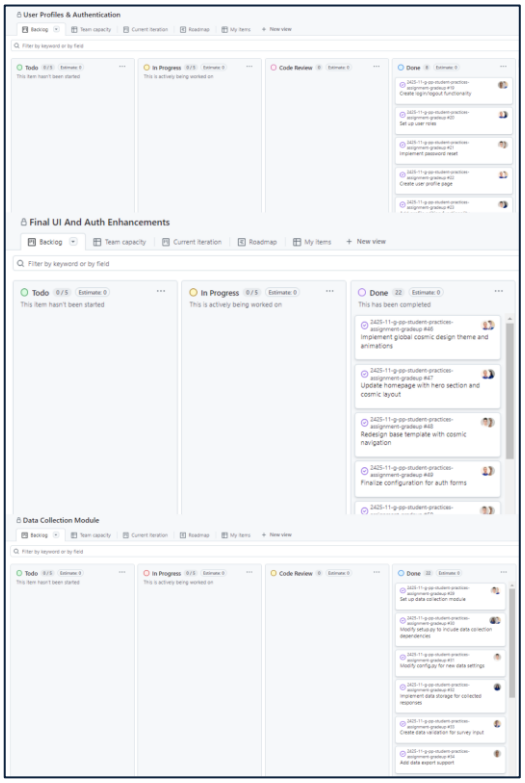
5. Development Process

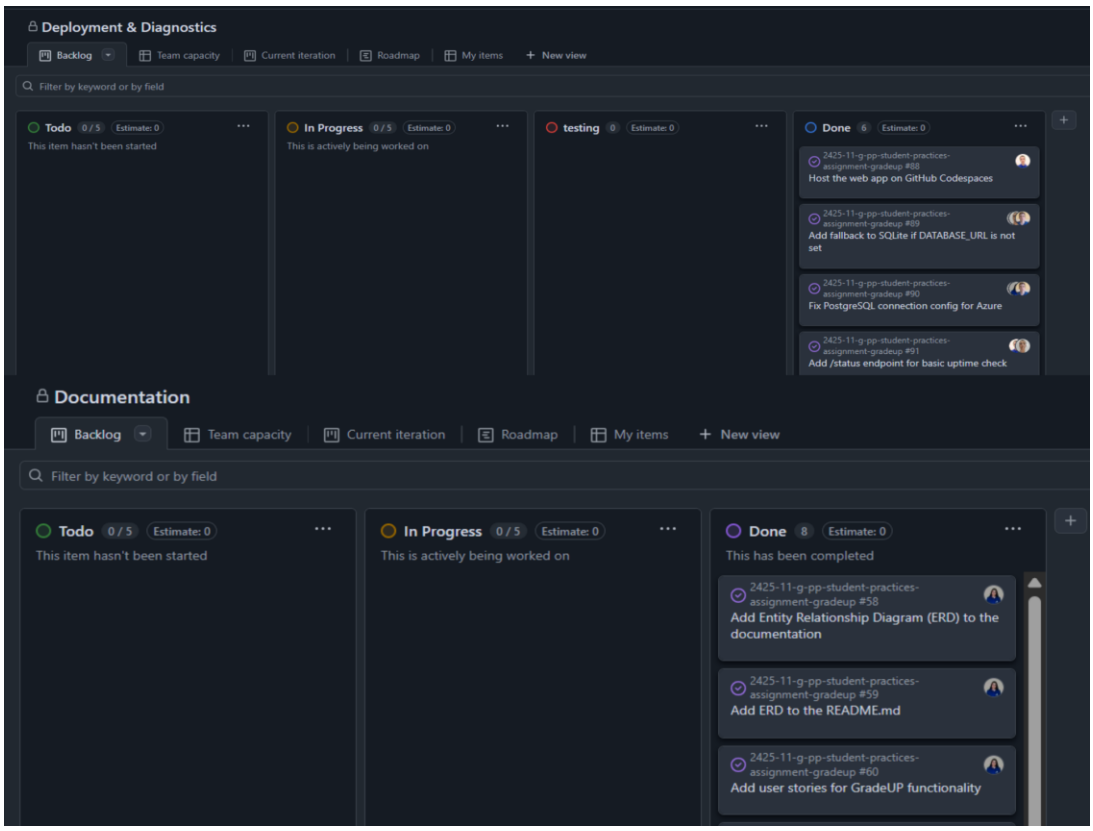
We followed an agile development cycle with user stories, sprints, and regular team check-ins. Progress was tracked using GitHub Projects boards. Sprint goals were defined weekly, and each iteration focused on building, testing, and refining a specific feature set.

Link to the project's User Stories: UserStories_GradeUp.docx

Screenshots of the GitHub Projects board would be included here:

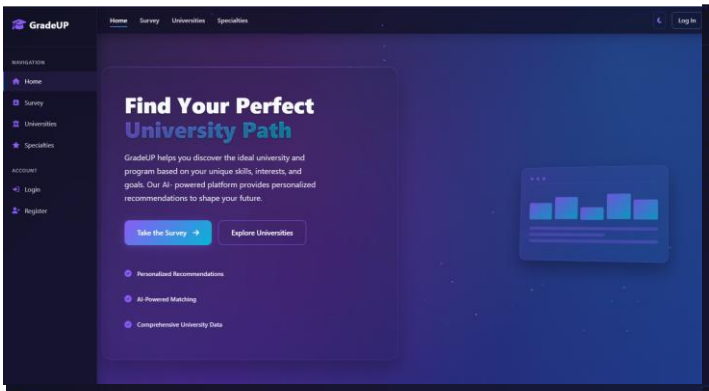


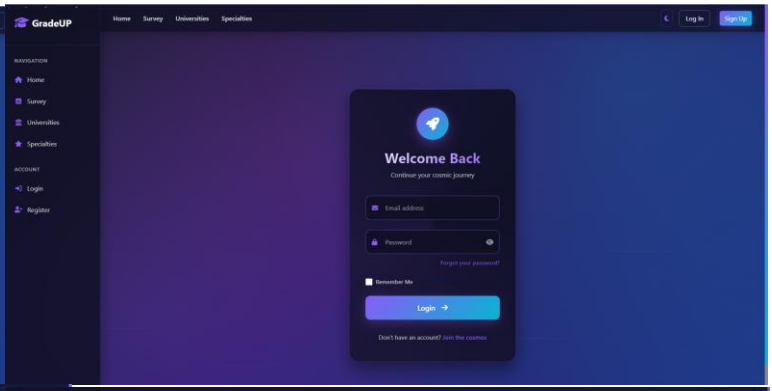


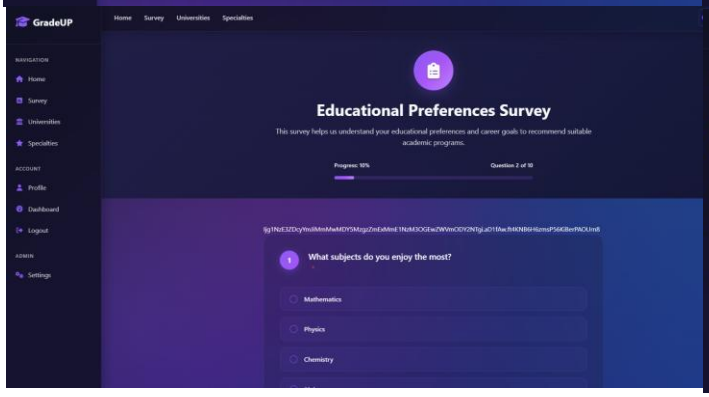


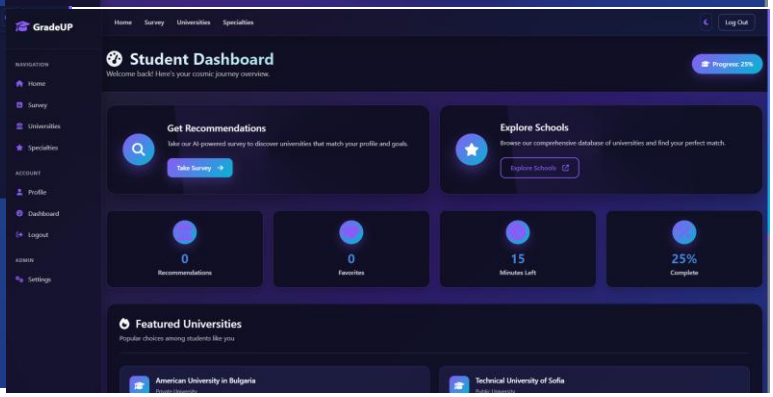
6. Screenshots

Screenshots of the UI and core features would be included here:





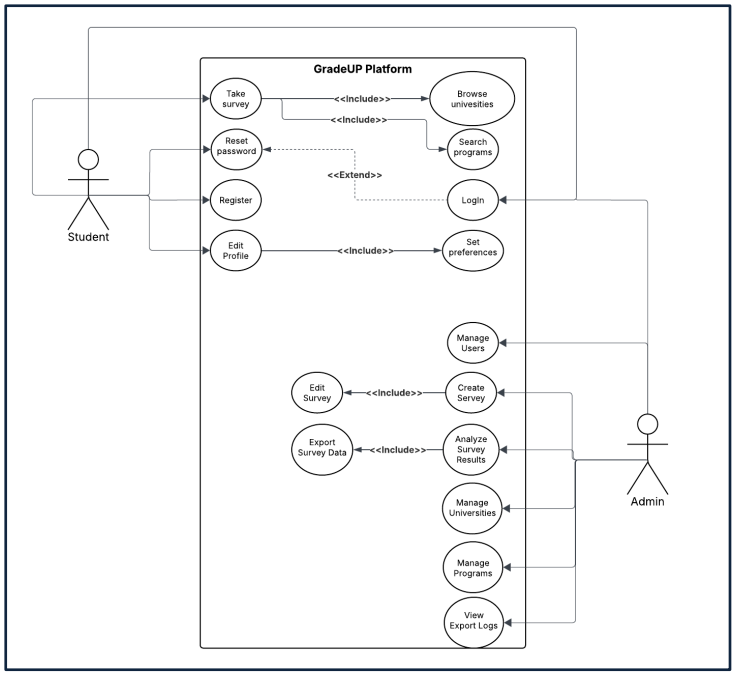


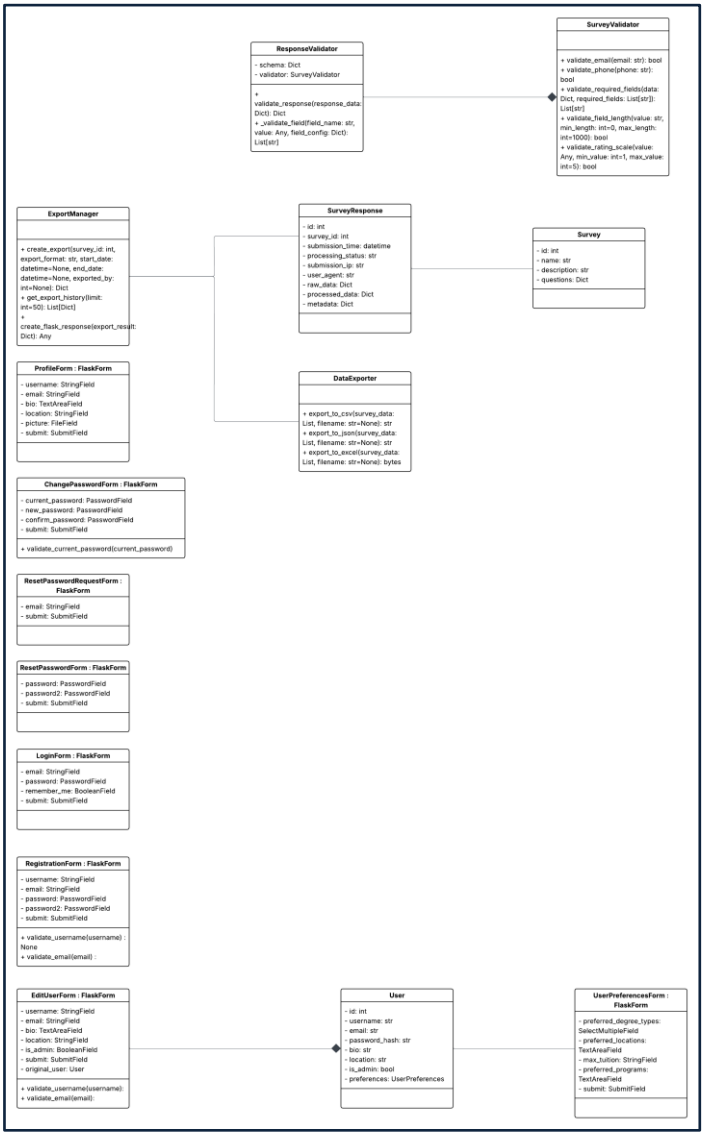


7. Results and Challenges

GradeUP successfully implements a complete evaluation workflow. Key challenges included managing dynamic survey structures and fixing infinite loading issues in the details modal. These were addressed through better data handling and optimized frontend rendering.

Screenshots of the UML Diagrams (Use Case, Class diagram and ERD) would be included here:


GradeUP Platform
Take survey
Browse univesities
Reset password
Search programs
Register
LogIn
Edit Profile
Set preferences
Manage Users
Edit Survey
Create Servey
Export Survey Data
Analyze Survey Results
Manage Universities
Manage Programs
View Export Logs
<<Include>>
<<Extend>>
Student
Admin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SurveyValidator
ExportManager
SurveyResponse
Survey
ProfileForm : FlaskForm
DataExporter
ChangePasswordForm : FlaskForm
ResetPasswordRequestForm : FlaskForm
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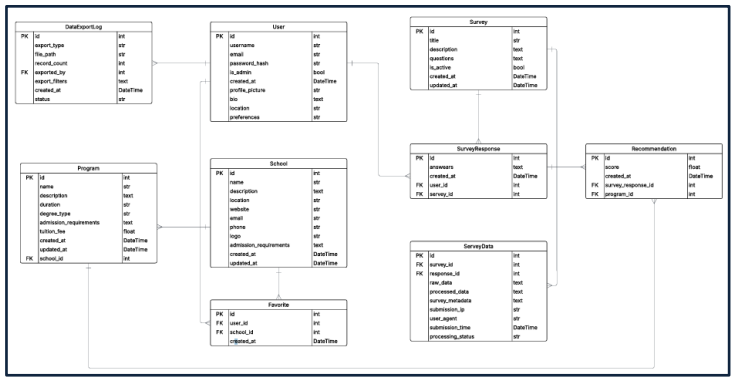
LoginForm : FlaskForm
RegistrationForm : FlaskForm
EditUserForm : FlaskForm
User
UserPreferencesForm : FlaskForm


DataExportLog
User
Survey
Program
School
SurveyResponse
Recommendation
Favorite
SurveyData

8. Conclusion

GradeUP is a functional and scalable tool for academic feedback and evaluation. It combines modern web technology with user-centric design to create value for students, educators, and researchers.