**Section 1: Project Proposal**

**Description of your artefact**

This project aims to create an intelligent online platform tailored to the academic environment of Nigerian tertiary institutions. The platform will manage student results and feedback digitally and securely. Users will include administrators, lecturers, students, and heads of departments. The system will allow authorized users to upload and access results, while students can provide feedback anonymously on courses and instructors. Additionally, the solution will feature performance analysis and feedback sentiment detection using simple artificial intelligence techniques. The system will be built using Laravel, MySQL, and Python for predictive capabilities.

In many Nigerian institutions, result management is still handled manually or through spreadsheets, which increases errors and reduces transparency. Most online systems, such as those used in some polytechnics and universities, are limited to result display and registration functionalities (Kibelloh and Bao, 2014). These portals lack integration with feedback or any form of intelligent analytics. There is often no provision for real-time GPA computation, predictive insights, or sentiment evaluation of course experiences. Even when feedback is collected (e.g., via Google Forms), it is not analyzed or used to inform teaching practices. This project seeks to bridge these gaps by building a unified, intelligent platform.

**Aim and Objectives of the Project**

The aim is to design and implement a smart result and feedback system to improve transparency, performance tracking, and academic quality assurance. Objectives include:

1. Develop a secure result upload and viewing module for students and lecturers.
2. Design a feedback system for course and lecturer evaluations.
3. Implement GPA/CGPA auto-calculation and result validation.
4. Apply machine learning for performance trend analysis and prediction.
5. Use NLP to analyse student feedback sentiment.
6. Design a role-based system for managing users and permissions.

**List of features that the artefact will include**

1. Role-based login system for admin, lecturer, student.
2. Manual and bulk result uploads with GPA/CGPA calculation.
3. Student dashboard to view results and download transcripts (PDF).
4. Anonymous feedback submission interface with star rating and comments.
5. Lecturer feedback dashboard showing average scores and sentiment counts.
6. Simple sentiment analysis using keyword-based logic.
7. Notifications for result uploads and feedback.
8. Course and department management modules.

**Added value that the project provides**

The project improves the reliability and efficiency of result processing and allows students to monitor academic progress over time. It introduces predictive analytics and sentiment analysis in a domain where such tools are rarely implemented in Nigeria. Lecturers receive actionable feedback anonymously. The integration of results and feedback in one system supports better decision-making (Aghadiuno, 2017).

**Intellectual challenges involved**

1. Designing a usable feedback system that ensures anonymity.
2. Training ML models on limited performance datasets.
3. Implementing accurate sentiment analysis with local context.
4. Ensuring data privacy and access control.
5. Integrating Laravel, MySQL, and Python-based modules efficiently.

**What methodology (structured process) will you be following to realise your artefact?**  
**Methodology and Structured Process**:

An iterative development approach will be employed in the creation of the artefact. This methodology involves breaking the project into manageable components, with each iteration introducing a new functional addition. The iterative structure facilitates continuous evaluation, enabling the early identification and resolution of potential issues at each stage of development.

Complementing the iterative approach, the Agile project management methodology will be implemented throughout the project lifecycle. Agile promotes adaptability and responsiveness to evolving requirements. The project will be organized into a series of sprints, each aiming to deliver a functional and testable increment of the overall system.

**Development and Testing:** The artefact will be developed using the Laravel framework, in conjunction with HTML, CSS, JavaScript, and MySQL. Testing procedures will include both unit and feature testing utilizing Laravel's built-in tools. Furthermore, integration testing will be conducted within a production-like environment to ensure system-wide reliability and performance.

**Research Methodology:** The research underpinning this project will consist of both secondary and quantitative methods. A comprehensive review of existing literature, including peer-reviewed journal articles, conference proceedings, and relevant academic publications, will be conducted. In addition, a structured survey will be administered to gain insights into the business rules and operational practices within the academic sector.

**Describe approach that will be employed to develop your project artefact**

* Laravel Breeze for login and authentication.
* HTML/CSS/Bootstrap/JavaScript/jQuery for frontend.
* PHP with Laravel for backend logic.
* MySQL for relational data management.
* Python (Scikit-learn) for student trend analysis.
* PHP string functions for sentiment scoring (strpos, explode).
* PDF generation using dompdf or SnappyPDF.
* Testing includes manual unit and usability testing.

**Justify the appropriateness and suitability of your approach**

Laravel offers fast and secure web application development. MySQL is robust and works well with Laravel’s Eloquent ORM. Python and Scikit-learn allow for quick development of performance prediction features. The tools are feasible for a one-month implementation timeline.

**How does your project relate to your degree course and build upon the units/knowledge you have studied/acquired**

**Relation to course of study:** The competencies and knowledge acquired throughout the course of study will significantly contribute to the successful execution of this project. Skills developed in research methods will support the collection and analysis of relevant data, while project management knowledge will facilitate effective planning, coordination, and execution of tasks. Additionally, expertise in database design and software development will be instrumental in constructing and testing a robust and functional system.

**Units related to the project:** Several course units are directly applicable to this project, including *Research Methodologies and Project Management*, *Computer Networks and Security*, *Data Modelling, Management and Governance*, and *Programming for Applications*. These units provide foundational and practical knowledge essential for addressing the technical and methodological requirements of the project.

**What are the main contributions of your project as compared to state-of-the-art?**  
Unlike existing result systems in Nigerian universities which mostly focus on static records, this project brings in:

* Performance prediction to help at-risk students early.
* Feedback analytics to improve course quality.
* Role-based transparency for academic integrity.
* Integration of feedback, performance, and notifications in one system.

**How would you sell your project outcome? What are you offering new to the market?**

The system offers predictive academic assistance, real-time feedback, and analytics under one secure platform. This is innovative in the Nigerian tertiary context where such tools are fragmented or absent.

**Resources**

1. Computer: Minimum 8GB RAM, stable internet connection.
2. Programming Languages: PHP, Python, JavaScript.
3. Frameworks: Laravel, Bootstrap.
4. IDEs: VS Code.
5. Tools: Figma (design), Canva (assets), GitHub (version control).
6. Libraries: Scikit-learn, NLTK, dompdf.
7. Literature: IEEE Xplore, Google Scholar, University of Bedfordshire Library.

**Section 2: Project Plan and Gantt Chart**

Project activities are spread across 15 weeks:

1. **Planning (Weeks 1–3):** Define project scope, supervisor assignment, ethics submission.
2. **Requirements & Research (Weeks 4–5):** Identify system needs through literature and surveys.
3. **System Design (Week 6):** Build user interface mockups and system architecture.
4. **Development (Weeks 7–13):** Construct backend, frontend, database, and sentiment tools.
5. **Testing & Validation (Week 14):** Conduct feature, integration, and usability testing.
6. **Deployment and Reporting (Week 14):** Final evaluations and report documentation.
7. **Poster Presentation (Week 15):** Visual summary of project output and objectives.
8. **Final Submission (Week 15):** Submit all project deliverables.

The table below is a Gantt chart that depicts the different project phases and timeline

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Phases / Sub-phases** | **Week #** | | | | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | |
| 1. **Planning Phase** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 1.1 Selection of Project Topic and Supervisor |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 1.2 Conducting Risk assessment |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 1.3 Drafting the Project Proposal |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 1.4 Drafting the Ethics Form |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 2. **Requirements Gathering & Research** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 2.1 Project Familiarization |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 2.2 Requirements Analysis |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 2.3 Identifying Tools and Resource |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 3. **Design Phase** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 3.1 Setup of Development Environment |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 3.2 Designing the User Interface |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 3.3 Planning the System Architecture |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 4. **Development Phase** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 4.1 Database Design Implementation |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 4.2 Backend System Development |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 4.3 Frontend Development |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 4.5 Report Writing |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| **5. System Testing & Compliance** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| **6. Deployment & Final Evaluation** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 7. **Poster Presentation Design** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| **8. Final Project Submission** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |

**Section 3: Project Risk Assessment**

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| --- | --- | --- | --- |
| **Risk** | **Impact** | **Likelihood** | **Mitigating action** |
| 1. Inadequate planning | High | Unlikely | Use a detailed Gantt chart and weekly reviews. |
| 1. Limited research data | High | Unlikely | Use university library and online journals. |
| 1. Change in requirements | Moderate | Likely | Maintain flexibility and scope prioritization. |
| 1. Feedback data unavailability | Moderate | Possible | Generate test data for feedback analysis. |
| 1. ML integration difficulty | Moderate | Likely | Use simplified models with open-source guides. |
| 1. Hardware issues | High | Unlikely | Frequent backups and use of cloud tools. |
| 1. Hardware issues | High | Unlikely | Frequent backups and use of cloud tools. |
| 1. Time constraints | High | Possible | Strict timeline tracking and sprint reviews. |

**References:**

* Aghadiuno, M. (2017) Evaluation of Result Processing Systems in Nigerian Universities, Journal of Information Engineering and Applications, 7(5), pp. 23–30.
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