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| **Student name:** | Chidera Onwumbiko | **Student ID:** | 2321479 |
| **Programme name:** | MSc Applied Data Science | **Programme start term:** | Winter 2024 |
| **Project title:** | Data-Driven Framework for Enhancing Student Applications, Acceptances, and Registrations at the University of Buckingham. | | |
| **Academic Supervisor(s):** | Prof Harin Sellahewa | | |
| **External supervisors (if applicable):** |  | | |

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| **Problem statement (100 – 200 words):** Explain a) the problem being solved; b) the product being developed; or c) the technology being investigated.  The University of Buckingham is one of the top 10 institutions in the United Kingdom that offer excellent teaching quality, produce exemplary graduate prospects, and are outstanding in student satisfaction. To maintain this success, the University of Buckingham seeks to gain a deeper understanding and insight into their student application, acceptance, and registration rates. This will enable them to make more informed decisions in the increasingly competitive higher education landscape, where institutions must continually adapt to changing demographics and student preferences.  This project aims to develop a data-driven approach to analyse and visualise student application, acceptance, and registration trends at the University of Buckingham. The primary product of this project will be an analytical framework comprising an interactive dashboard. This framework will provide the University of Buckingham with detailed insights to better understand their application process in comparison to other educational institutions in the United Kingdom, as well as its acceptance and registration rates. Additionally, it will provide a predictive model to aid the university in enhancing student registration, but this is not the main aim of this project. |
| **Project Aims & objectives (100 - 200 words):** Provide the overall aim of the project and list specific objectives.  **Aim:**  The overall aim of this project is to provide the University of Buckingham with a data-driven analytical and predictive framework to gain insights into students’ applications, acceptances, and registrations at the university. This framework will facilitate a clear understanding of the university's application process in comparison to other educational institutions in the United Kingdom, as well as its acceptance and registration rates. Additionally, it will provide a predictive model to aid the university in enhancing student registration.  **Objectives:**   * **Data Collection and Preprocessing:**   Extract and preprocess historical data on students’ applications, acceptances, and registrations from university records.   * **Exploratory Data Analysis:**   Conduct exploratory data analysis to identify and analyse trends and patterns in application, acceptance, and registration rates over the past years.   * **Data Visualisation:**   Develop an easy-to-understand interactive dashboard to visualise key trends and patterns in the data.   * **Predictive Model:**   Build and validate a predictive model to forecast the quantity of student applications that need to be accepted to aid in enhancing student registration. |
| **Project scope (100 - 200 words):** Provide details of what is within scope and what is not within scope of the project.  **Within Scope:**  This project will include the following.   * Extract and preprocess historical data on students’ applications, acceptances, and registrations from university records. * Conduct exploratory data analysis to identify and analyse trends and patterns in application, acceptance, and registration rates over the past years. * Develop an easy-to-understand interactive dashboard to visualise key trends and patterns in the data. * Build and validate a predictive model to forecast the quantity of student applications that need to be accepted to aid in enhancing student registration.   **Out of Scope:**  This project will not include the following.   * Formulating data-driven strategies to enhance student application, acceptance, and registration rates will not be part of this project due to the unavailability of the required data. * Data collection will be limited to internal university records and will not include external data sources unless available and relevant. * Long-term monitoring and adjustments of the developed framework are not included within the scope of this project but are recommended as future works. |
| **Expected outcomes:** Provide a list of outcomes expected to be delivered at the end of the project.   * Interactive Dashboard and Visualisations. * Predictive Model. * Final Project Report. * Final Project Presentation. |
| **Resources required:** Provide a list of resources (hardware, software, data, textbooks) required for the project and indicate if they are available in the School or via a third party.   * High-performance computing system – Available. * Scripting software with the necessary libraries (Python with Spyder) – Available. * Data exploration, data analysis, and modelling software (Python and necessary libraries with Spyder) – Available. * Visualisation software (Tableau) – Available. * Word processor software (Microsoft Word) – Available. * Integrated Development Environment software (Jupyter Notebook) – Available. * Historical data on student records from the University of Buckingham – Available. * Textbooks on data science, statistics, and machine learning – Available. * Version control software (GitHub) – Available. * Academic journals and related article databases (IEEE, Springer, JSTOR, Google Scholar, Research Gate, Taylor & Francis Online, Frontiers, Emerald Insight) – Available. |
| **Project constraints:** Indicate if there are any constraints on the project. For example, any constraints on accessing or sharing data, software or hardware. Are there requirements for Non-Disclosure Agreement (NDA)?  Yes, the data being handled is sensitive data therefore, a Non-Disclosure Agreement is required. |

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| **Signature (Student\*)** | 2321479@buckingham.ac.uk |
| **Signature (Academic Supervisor\*)** |  |
| **Signature (Project Coordinator\*)** |  |
| \*e-signatures or email confirmations are sufficient | |