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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 and acceptance 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 and acceptance 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 into historical trends and factors influencing applications and acceptances. Additionally, strategic recommendations will be formulated to enhance the university's recruitment efforts, ultimately improving the application and acceptance rates. This data-driven strategy will enable the University of Buckingham to make informed decisions, optimise marketing efforts, and implement targeted interventions to attract a more diverse and qualified applicant pool. A predictive model will also be incorporated to forecast future student applications and acceptances, 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.  The overall aim of this project is to enhance the University of Buckingham’s student application and acceptance processes through the development of a data-driven analytical and predictive framework. This framework will provide insights and strategic recommendations to improve recruitment efforts and increase both the quantity and quality of student applications and acceptances.  **Objectives:**   * **Data Collection and Preprocessing:**   Extract and preprocess historical data on student applications and acceptances from university records.   * **Exploratory Data Analysis:**   Conduct exploratory data analysis to identify and analyse trends, patterns, and factors that influence application and acceptance rates over the past years.   * **Data Visualisation:**   Develop an interactive dashboard to visualise key metrics and trends.   * **Predictive Model:**   Build and validate a predictive model using machine learning techniques to forecast future application and acceptance rates.   * **Strategic Recommendations:**   Formulate data-driven strategies to enhance student application and acceptance rates and propose geographic targeted marketing and outreach campaigns based on the insights gained from the analysis. |
| **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.   * Extracting and preprocessing historical data on student applications and acceptances from university records. * Conducting exploratory data analysis to identify and analyse trends, patterns, and factors that influence application and acceptance rates over the past years. * Developing an interactive dashboard to visualise key metrics and trends. * Building and validating a predictive model using machine learning techniques to forecast future application and acceptance rates. * Formulating data-driven strategies to enhance student application and acceptance rates and propose geographic targeted marketing and outreach campaigns based on the insights gained from the analysis.   **Out of Scope:**  This project will not include the following.   * The actual execution of marketing and outreach campaigns and recruitment strategies will not be part of this project. * Any strategic recommendation that requires changes to university operations, policies, or procedures will be outside the scope. * 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 recruitment strategies post-implementation are not included within this project. * Detailed financial analysis and budgeting for proposed strategies is outside the scope. |
| **Expected outcomes:** Provide a list of outcomes expected to be delivered at the end of the project.   * Interactive Dashboard and Visualisations. * Predictive Model. * Strategic Recommendations. * 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 modeling 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 applications and acceptances 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 | |