**University of Leicester**

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| **Project Reference** | BRC Studentships |

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| **Additional Supervisor** |  |

**Section 2 – *Project Information***

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| **Project Title** | Sudden Cardiac Death Risk Stratification using ECG and Artificial Intelligence |
| **Project Highlights:** | 1. | Opportunity to use of AI in ECG-based SCD risk stratification |
| 2. | Successful candidate can work to Improve the accuracy of SCD risk stratification and ultimately save lives by identifying high-risk individuals early.  |
| 3. |  |
| **Project Summary**  |
| Sudden cardiac death (SCD) is a leading cause of mortality worldwide, accounting for up to 50% of all heart-related deaths. Early identification of individuals at high risk of SCD is crucial for the implementation of preventive measures and timely interventions. Electrocardiogram (ECG) is a widely used diagnostic tool for the detection of cardiac abnormalities, but its interpretation can be challenging, especially in cases of subtle changes. Artificial intelligence (AI) can assist in the analysis of ECG data, potentially improving the accuracy of SCD risk stratification.  At Leicester, we have developed patented technology (LifeMap) based on ECG features, which has been proved to be accurate in the identification of individuals at high risk of SCD. This project will investigate the use of AI in ECG-based SCD risk stratification and to evaluate its performance compared to current methods. Additionally, we aim to investigate the potential for improvement of SCD risk stratification by incorporating artificial intelligence (AI) into the analysis of ECG data.  The proposed project aims to address major gaps in understanding risk stratification algorithms for sudden cardiac death (SCD) by developing an AI-assisted ECG-based algorithm using local and national databases. The specific objectives of the project are:  1. Developing the AI-assisted ECG-based SCD risk stratification algorithm using a combination of machine learning techniques and traditional statistical methods using local and national databases.
2. To evaluate the performance of the proposed algorithm in a large patient cohort from UK biobank.
3. To compare the performance of the proposed algorithm with current SCD risk stratification methods.

 The student will have access to a large patient dataset and will be expected to analyse and interpret the results to support the development of the algorithm. The results of the research project will be used to improve the accuracy of SCD risk stratification and ultimately save lives by identifying high-risk individuals early.  |
| **References** |