**Project Design Phase-I**

**Solution Architecture**

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| Date | 31 October 2022 |
| Team ID | PNT2022TMIDxxxxxx |
| Project Name | Project - xxx |
| Maximum Marks | 4 Marks |

**Solution Architecture:**

In this study, a deep-transfer learning approach is proposed for the automated diagnosis of diabetes mellitus (DM), using heart rate (HR) signals obtained from electrocardiogram (ECG) data. Recent progress in deep learning has contributed significantly to improvement in the quality of healthcare. In order for deep learning models to perform well, large datasets are required for training. However, a difficulty in the biomedical field is the lack of clinical data with expert annotation. A recent, commonly implemented technique to train deep learning models using small datasets is to transfer the weighting, developed from a large dataset, to the current model. This deep learning transfer strategy is generally employed for two-dimensional signals. Herein, the weighting of models pre-trained using two-dimensional large image data was applied to one-dimensional HR signals. The DenseNet pre-trained model yielded the highest [classification](https://www.sciencedirect.com/topics/computer-science/classification) average accuracy of 97.62%, and sensitivity of 100%, to detect DM subjects via HR signal recordings

