COLLEGE OF ENGINEERING AND TECHNOLOGY

COURSE: ELECTRICAL AND ELECTRONICS ENGINEERING

EEE 2501: PROJECT

<u>**PROPOSAL ABSTRACT**</u>

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LOAD SHEDDING/SCHEDULING ALGORITHM FOR MINI GRIDS USING ARTIFICIAL NEURAL NETWORKS

WHAT

Oloika mini-grid has seen a huge growth in demand leading to it operating near its full capacity. Due to a problem with some of its battery cells, it experiences shortages in power at night which cause the inverter system to trip affecting the whole village. However, there are still customers within the mini grid vicinity who wish to be connected to the grid.

THE SOLUTION AND THE OUTCOME

This project will involve development of a load shedding algorithm that leverages artificial neural networks for the existing customers based on their consumption profiles as well as the energy available and consideration for future demand later in the night. It will involve development of an index for determining the priority of each load and the load shedding criteria to arrive at different values of the indices for loads to be shed.

It will also involve development of a possible schedule for certain types of loads which can then be shed off during low energy conditions to maintain energy security of supply.

HOW

i. Development of Oloika mini grid priority allocation matrix as a case study and based on technical and economic considerations
ii. Modelling of the projected load demand for Oloika mini grid under different tariff levels.
iii. Development of a load shedding algorithm based on the priority allocation
iv. Simulate the load shedding algorithm in Oloika under the different tariffs using an artificial intelligence technique (Regression neural network (GRNN), support vector machine (SVM), back propagation neural network (BPNN)
v. Perform a cost benefit analysis of load shedding vs mini grid extension based on revenues