## PROJECT SUMMARY

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| **Ref No.:** MRIC/SISM-BG-06 | **Title:** S.M.A.R.T. H.E.R.D. - Synchronized Monitoring and Adaptive Response Technology for Holistic, Efficient, Robust, and Dynamic Livestock Management |
| **Local Institution:** Middlesex University Mauritius | |
| **Project Leader** | |
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### TECHNICAL ABSTRACT

This project proposes a low-cost, IoT-enabled livestock monitoring system using a Raspberry Pi, accelerometers, and various sensors for real-time tracking of animal behaviors, location, temperature, and heart rate. The system comprises a Raspberry Pi 4 Model B, MPU-9250 motion tracking sensor, DHT22 temperature and humidity sensor, NEO-6M GPS module, MAX30102 optical heart rate sensor, power supply, waterproof enclosure, and necessary accessories. Data collected from the sensors will be stored in a cloud storage system for easy access and analysis. Machine learning techniques, such as support vector machines or random forest classifiers, will be utilized for behavior classification, using preprocessed and feature-extracted data. The total budget for the system is approximately 7000 MUR, offering a cost-effective solution for livestock management and welfare. Augmented reality can be integrated to visually display the livestock's status and real-time data. This monitoring system provides valuable insights into livestock behavior (walking, feeding, rumination, etc), enabling informed decision-making and efficient management of resources, ultimately improving overall livestock health and productivity.



**Key Words:** Livestock monitoring, Raspberry Pi, IoT, Machine learning, Cloud storage, Augmented reality