



Use of Non -Invasive Technology with Artificial Intelligence for Mental Health Nursing Observations

Thanveer Shaik¹, Xiaohui Tao¹, Niall Higgins^{2 -3}, Raj Gururajan¹, Xujuan Zhou¹

University of Southern Queensland

Queensland University of Technology

Royal Brisbane and Women's Hospital

Introduction

High risk of suicide in isolated areas in evening and during night shifts when there is reduced staff supervision. Remote Patient Monitoring with non-invasive digital technology can enhance the efficiency of healthcare delivery in acute clinical settings.

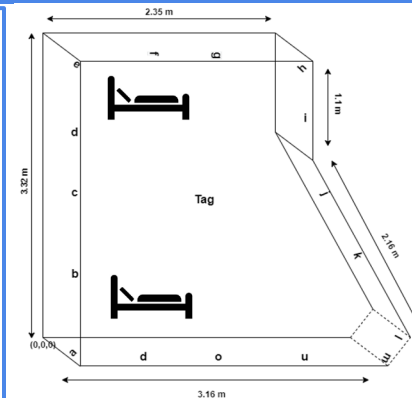
Objectives

01

Develop a prototype of RPM system

02

Early detection of patients' suicidal behaviour

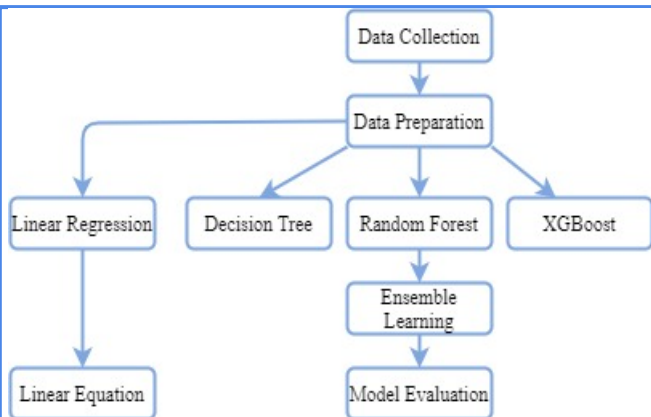


Results

- J,O positions were optimum positions for readers
- Distance_1, Distance_2 highly correlates with RSSI
- Decision tree model was best in predicting RSSI with minimal MAE & MSE



Methodology



Data collection on static RFID tag
Linear Regression model was used to estimate statistical correlation between variables.
Machine learning models were implemented to predict RSSI value based on reader-antenna position.



Conclusions

- Assist nursing staff with routine visual observations and patient safety monitoring.
- Alert staff to return to a patient room and assess a patient safety if any changes in vital signs.
- The research set path to dynamic moving RFID tags and retrieve patient vital signs to a handheld tablet.