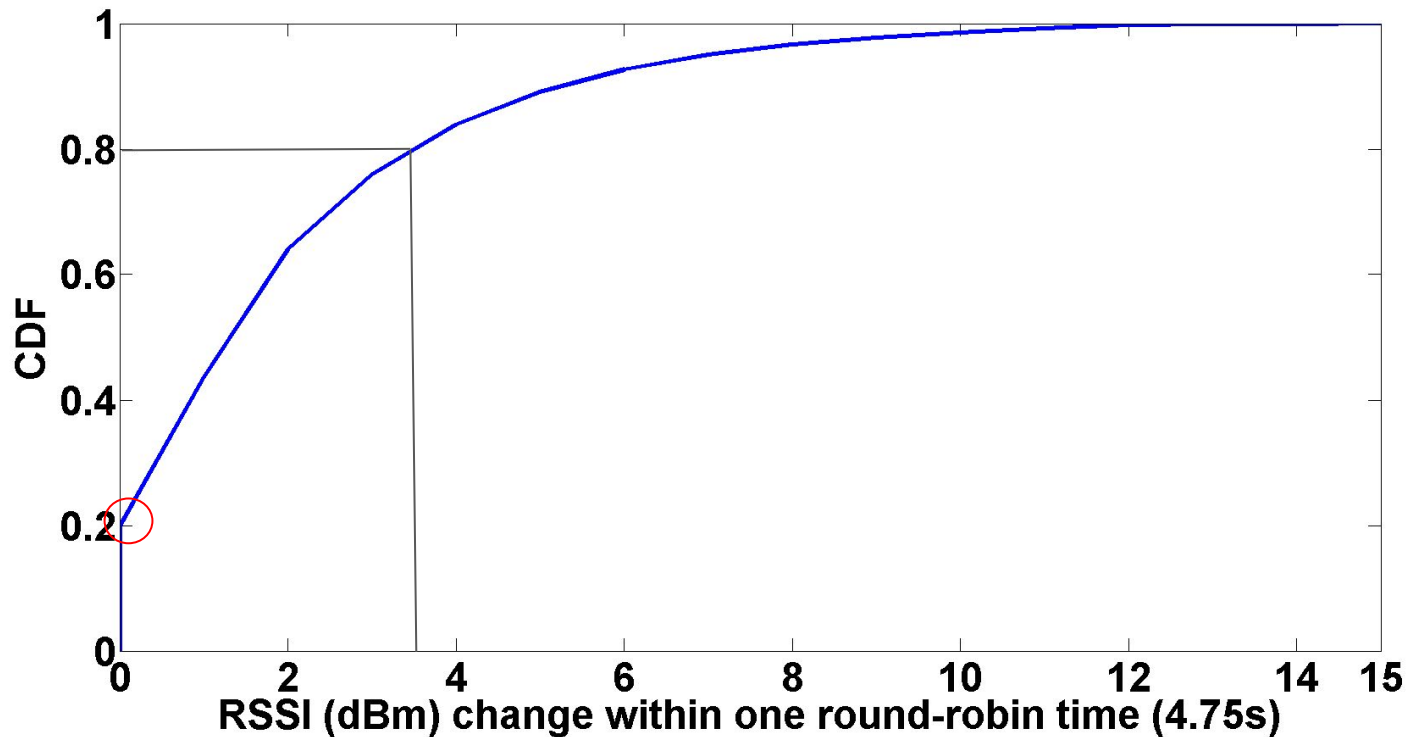


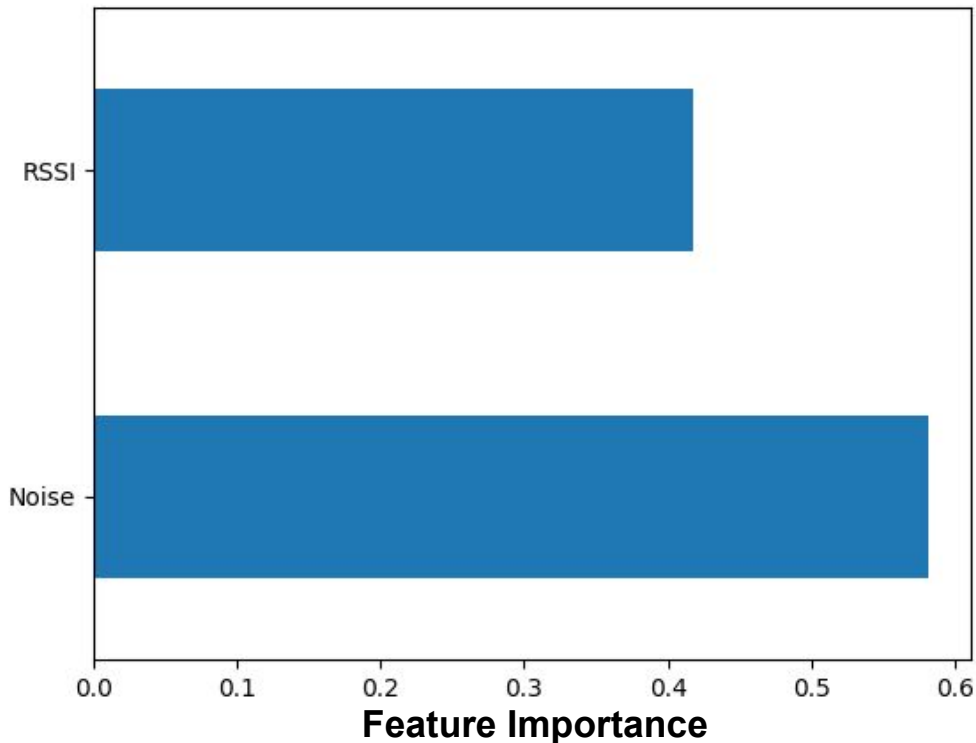
1. RSSI Change under different SFs



1. 20% RSSI change is 0dBm
2. 80% RSSI change is under 4dBm
3. SF12's RSSI value can be used in place of other SFs' values

2. Feature importance of $f(\text{RSSI}, \text{Noise}) = \text{PRR}$ model

Tree Based Feature Selection



1. RSSI and Noise have similar feature importance
2. We should use RSSI and Noise to build our PRR model

3. Build DNN model of $f(\text{RSSI}, \text{Noise}) = \text{PRR}$

Research Objective: Under **different SFs**, how to choose best SF and **properly schedule LoRa** transmission to achieve lower latency and higher reliability based on QoS requirements

DNN model

Input dimension: 2

First Layer: 120

Second Layer: 120

Output dimension: 93

Dataset

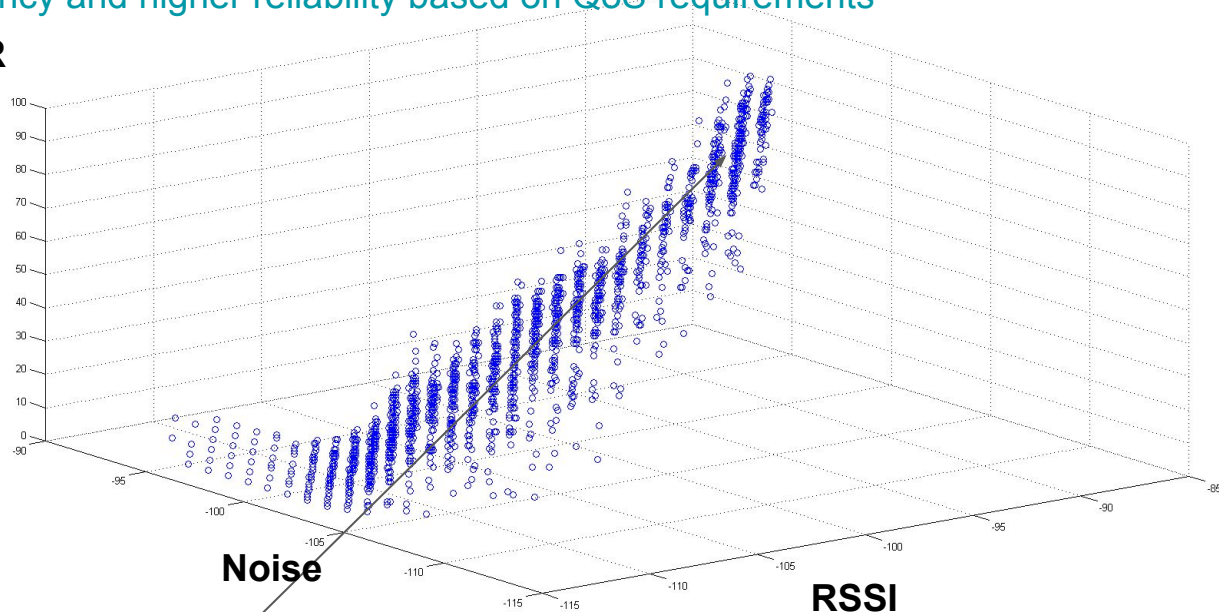
Training: 1314

Testing: 876

Testing Accuracy

20.31%

PRR



1. The reason of low accuracy: **same X -> multiple different Ys**. It is hard to build a model that maps x to different Y s.
2. Solution - Build a probability model: Inputs are **RSSI (retrieved from SF12), Current Noise value, different SFs and Transmission attempts**. Outputs are **PDR and Latency**. Assume the maximum retransmission is 2, we can get PDR and latency under different configurations. By defining an objective function and input environment variables (rssi and noise), we can select the best SF and transmission attempt.