

PaWLA: PPG-based Weight Lifting Assessment

In this work, we built a single sensor system that will collect PPG data from end users and try to identify the weight lifting activities and the weights through machine learning based algorithm. We design methods for data cleaning, feature extraction, selection, and classification. Our results with 9 users show good classification accuracy.

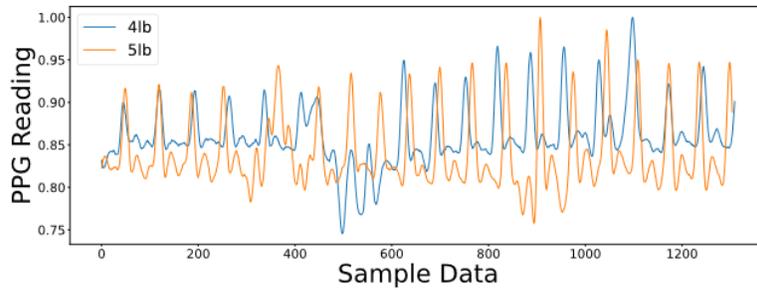


Figure 1. PPG data with user lifting different weights.

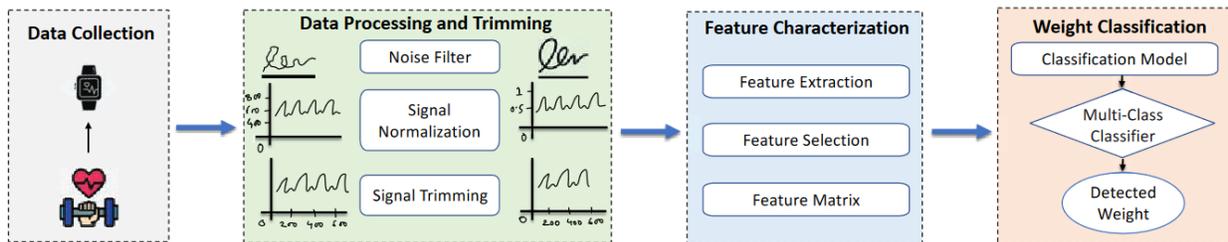


Figure 2. System structure of the PaWLA system.

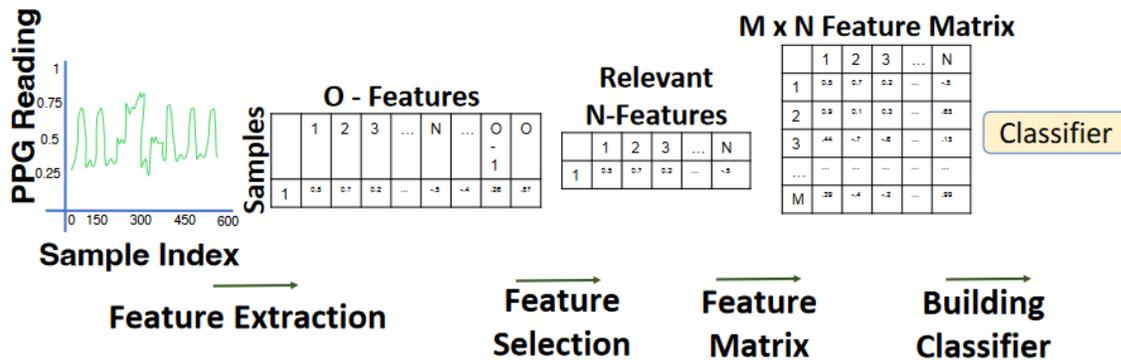


Figure 3. Flow structure for feature extraction and matrix construction.

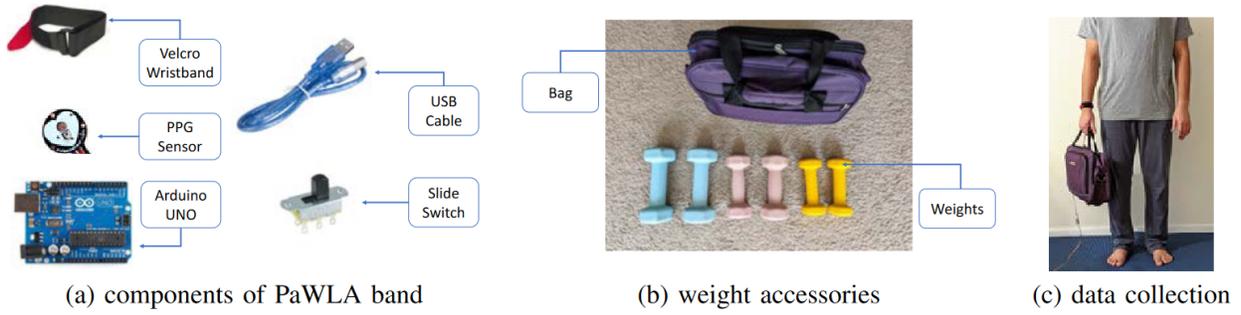


Figure 4. System implementation and experiment setup.

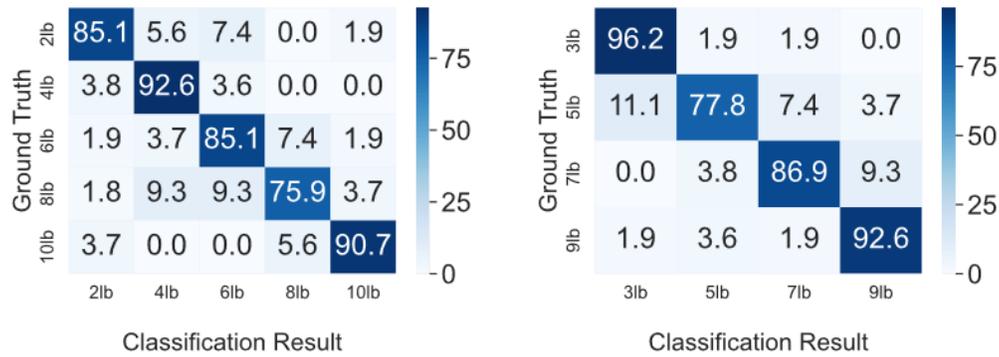


Figure 5. Classification results.

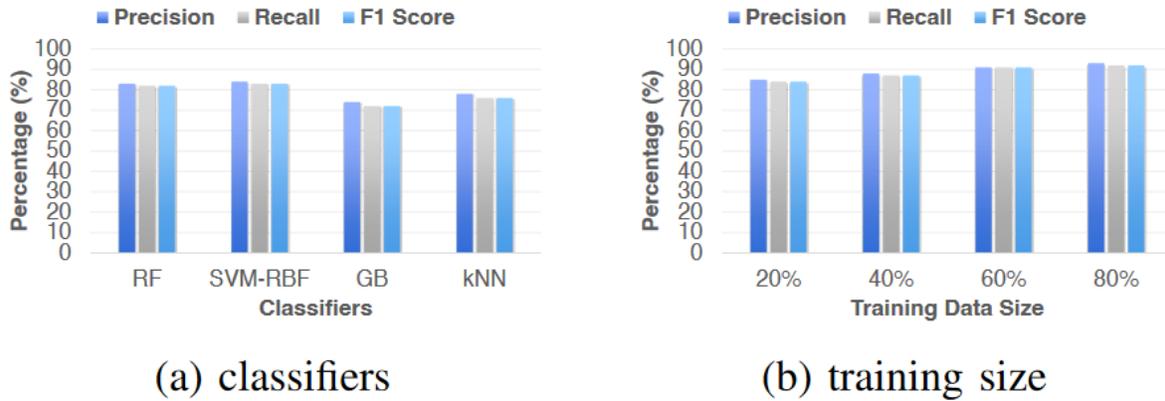


Figure 6. Impacts of classification algorithm choice and training data size.