On the Network Packet Loss Tolerance of SVM Based Activity Recognition

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Abstract : In this study, data loss tolerance of Support Vector Machines (SVM) based activity recognition model and multi activity classification performance when data are received over a lossy wireless sensor network is examined. Initially, the classification algorithm we use is evaluated in terms of resilience to random data loss with 3D acceleration sensor data for sitting, lying, walking and standing actions. The results show that the proposed classification method can recognize these activities successfully despite high data loss. Secondly, the effect of differentiated quality of service performance on activity recognition success is measured with activity data acquired from a multi hop wireless sensor network, which introduces high data loss. The effect of number of nodes on the reliability and multi activity classification success is demonstrated in simulation environment. To the best of our knowledge, the effect of data loss in a wireless sensor network on activity detection success rate of an SVM based classification algorithm has not been studied before.

Keywords : activity recognition, support vector machines, acceleration sensor, wireless sensor networks, packet loss
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