**CHAPTER 3**

**PROBLEM STATEMENT**

Common fall occurrences in the elderly population pose dramatic challenges in public healthcare domain. Adoption of an efficient and yet highly reliable automatic fall detection system may not only mitigate the adverse effects of falls through immediate medical assistance, but also profoundly improve the functional ability and confidence level of elder people. a pervasive fall detection system developed on smartphones (SPs) namely, FallDroid that exploits a two-step algorithm proposed to monitor and detect fall events using the embedded accelerometer signals. Comprising of the threshold based method(TBM) and multiple kernel learning support vector machine(MKL-SVM), the proposed algorithm uses novel techniques to effectively identify fall-like events (such as lying on a bed or sudden stop after running) and reduce false alarms. In addition to user convenience and low power consumption, experimental results reveal that the system detects falls with high accuracy (97:8% and 91:7%), sensitivity (99:5% and 95:8%), and specificity (95:2% and 88:0%) when placed around the waist and thigh, respectively. The system also achieves the lowest false alarm rate of 1 alarm per 59 hours of usage, which is best till date.

Android has been a major target of malicious applications (malapps). How to detect and keep the malapps out of the app markets is an ongoing challenge. One of the central design points of Android security mechanism is permission control that restricts the access of apps to core facilities of devices. However, it imparts a significant responsibility to the app developers with regard to accurately specifying the requested permissions and to the users with regard to fully understanding the risk of granting certain combinations of permissions. Android permissions requested by an app depict the app’s behavioural patterns. In order to help understanding Android permissions, we explore the permission-induced risk in Android apps on three levels in a systematic manner