

# **ADAPTIVE LEARNING FOR RESILIENT ACTIVITY RECOGNITION**

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# Abstract

Human Activity Recognition, as the name implies, is directly bound with humans. Humans, i.e 'we' live in a rapidly changing world. Our surroundings change, our devices change from one state to another, we ourselves change. In this kind of context, activity recognition is a very challenging task. Human activity data is a vital parameter for many applications. In this case, making it resilient for the environment is an important task. There may be many unpredictable consequences such as system failures, changes in the system's environment, changes in the priorities, new requirements. Therefore HAR should be capable of changing its behavior in the runtime. That's where the knowledge of the Self-Adaptive Systems is needed.

Human Activity Recognition is done based on the data gathered by various types of sensors. Basically, it translates sensor data to labeled activities. Machine learning techniques widely used in this process. The Machine Learning component is a key place where adaptation can be applied in order to make the activity recognition resilient. The goal of this research project is to introduce a software architecture to adapt the machine learning component to keep Human Activity Recognition resilient by achieving provided requirements/goals to the system.

**Keywords:**

Human Activity Recognition, Self-Adaptive Systems, Architecture