

Title:

A Context-Aware Activity Recommendation Smartphone Application to Mitigate Sedentary Lifestyles

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Abstract:

A sedentary lifestyle involves irregular or no physical activity. In this kind of lifestyle, people's activities do not increase their energy expenditure substantially above resting levels. Long periods of sitting, lying, watching television, playing video games, and using the computer are typical examples. Energy expenditures at 1.0-1.5 Metabolic Equivalent Units (METs) are considered sedentary behaviors. A recent study of sedentary lifestyles found that the length of sedentary times is associated with an increased risk of diabetes, cardiovascular disease, and cardiovascular and all-cause mortality. In this study, we developed a smartphone application called "On11", which continuously tracks and informs the user about how much time they have spent performing various activities such as sitting, walking and running throughout their day. In contrast with traditional pedometers which passively counts steps and estimates burnt calories, On11 runs in the background of users' smartphones and monitors the intensity, duration and types of physical activity performed 24/7. It detects sedentary patterns and promotes walking by recommending personalized detours off the users' usual routes, e.g. home to workplace to encourage more activity. Both Moderate-to-Vigorous Physical Activities (MVPA) such as jogging and Light Physical Activities (LPA) such as sitting are recorded for identifying activity patterns. Our ultimate goal is to help people change unhealthy sedentary behaviors.