# Feasibility Test of Activity Index Summary Metric in Human Hand Activity Recognition

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***Abstract*— Activity monitoring is a technique for assessing the physical activity that the person undertakes over some time. Activity Index is a metric that summarizes the raw measurements from tri-axial accelerometers, often used for measuring physical activity. Our research compared the Activity Index summary metric for different activity groups and hand usages. We also tested the feasibility of the use of this parameter as a classification feature. Data acquisition was done with previously developed system that includes two smartwatches (one on each wrist) and a smartphone placed in the subject's pocket. Raw data from smartwatch accelerometers was used for the analysis. We calculated the Activity Index for labelled data segments and used ANOVA1 statistical test with Bonferroni correction after data normality was determined by the Lilliefors test (modification of the Kolmogorov-Smirnov test). Significant differences were found between cases of hand usage (left, right, none, both) and between some of the activity groups (walking, sitting standing, grasping, pouring, drinking, opening and closing cupboard, and closing bottle), respectively.**

***Index Terms*—Activity Index, accelerometry, smartwatches, ANOVA1, Wilcoxon rank-sum**

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