RECOLIFT: AN ANDROID WEAR FITNESS TRACKER FOR STRENGTH TRAINING

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THESIS

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ABSTRACT

Despite the plethora of fitness trackers on the market, few monitor signals other than number of steps and heart rate. With the increasing mainstream acceptance of general-purpose smartwatches however, we have the capability to track more complex activities. We propose RecoLift, an Android-based system to track exercises and repetitions in weight training and bodyweight training activities based on the work of Morris et al. Our goal is to provide a system which provides feedback to the user in an autonomous, online fashion, harnessing both smartwatch and smartphone sensors. This system is separated into three key phases: *segmentation*, during which we use the periodicity of the signals to determine if an exercise is being performed, *recognition*, which calculates signal features to determine which exercise is being performed, and *counting*, which uses periodicity to calculate the number of repetitions in a set. Early classification results show 94% accuracy for our segmentation phase and 99% accuracy for our recognition phase, with counting phase results within two repetitions on average.

To my parents, for their love and support.

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THESE ARE MY ACKNOWLEDGEMENTS

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