

Graduate School of Science and Technology Master's Thesis Abstract

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Thesis title	Toward The Perfect Stroke: A Multimodal Approach for Table Tennis Stroke Evaluation 卓球ストローク技術評価のためのマルチモーダルアプローチ		
Abstract			
Developing a consistent stroke is a challenge and even more so for non-professional Table tennis players. To build consistent proper strokes for beginner players, there is a need to understand the stroke differences between standard and beginner players. In terms of table tennis applications, prior works used a video-based method, or accelerometer sensor embedded in a table tennis racket, or infrared (IR) depth sensor for evaluating the stroke. However, there are certain challenges in these methods such as having insufficient data to analyse a complete stroke, time-consuming and costly data collection, as well as using non-prevalent equipment. Hence, to improve the beginner player's performance, an ubiquitous way through readily accessible commercial devices for stroke evaluation is essential. In this study, to achieve such a goal, we (i) recorded videos and accelerator signals of standard and beginner players using consumer-grade products, and (ii) analysed the stroke consistency of both standard and beginner players. The results show the significant differences in the strokes between both kinds of players through the multimodal approach. Also, we found the significantly strong correlation between the stroke consistency and the hitting score for the forehand stroke. These findings motivate us to further examine the improvement of beginner players by instructing procedural knowledge of a standard player's stroke, and implement applications for the motor-skill instruction.			