智慧棒球(AI-Baseball)技術情蒐分析系統

An Information Collection and Analysis System for AI-Baseball

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This project aims to develop an AI-Baseball Data Analytics System, mainly for advanced technical and tactical analysis, which will also cover other sports where necessary. This is a long-term project, and we organized the team to start from basic technology development and integration in 2019-2020, under a very limited funding. The research team includes IC and AI-experts from the College of EECS, sensor/actuator experts from the College of Engineering, and baseball coaches from the College of Education (Dept. Phy. Edu.). We focus on two most important technical domains in baseball, i.e., pitching and batting. In pitching, we have developed a smart baseball by embedding G-sensors and finger-pressure gauge in the ball, together with a low-power Bluetooth module for real-time data communication during live pitching sessions. We have successfully measured the ball speed, spin rate, spin axle, trajectory, pressures of the index and middle fingers, etc. With the collected data, we will try to distinguish the ball types, and together with image-based AI algorithms, we will analyze the data and provide the biomechanical information of the pitcher for performance improvement and injury prevention. In batting, we have employed IMUs with an eye-tracking device to investigate different swing strategies between two levels (trainee and expert) of batters. Eye gaze position, head, shoulder, trunk, and pelvis angular velocity, and ground reaction forces were recorded. Again, together with image-based AI algorithms, we will analyze the data and provide the biomechanical information of the batter for performance improvement and injury prevention. Based on the current technologies, the team will submit a proposal for MOST funding.

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Samples of Results and On-Going Works