

Development of a Smart Cricket Bat Concept to Characterize the Orientation in Three-dimensional Space

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On par with the engineering advancements, the technology infusion to sports has substantially taken place. The qualitative approaches that have been adopted by the sports-trainers have gradually been translated into quantitative approaches using contemporary technology. During the stroke-play, it is difficult to understand the accuracy of the stroke, and at the same time, it is hard to obtain a real-time feedback of a stroke during the practice sessions. Consequently, this could lead the player to lose his psychological confidence and decrease the efficiency and the quality of the stroke-play. During the research study, a mathematical model is developed to quantify the orientation and the position of a cricket bat. Subsequently, a real-time, inertial sensor-based positional tracking device which is integrated into the cricket bat has been developed. The two types of inertial sensors that have been used during the study can be cited viz. accelerometer and gyroscope. Filtration process has been adopted to mitigate the noise associated with the signals and a complementary filter has been used in order to provide the user with the precise orientation. Moreover, testing has been conducted for roll, pitch motion, and respective results have been acquired utilizing the proposed bat device.

Keywords: *mathematical model, accelerometer, gyroscope; cricket, orientation, complementary filter*