Detection of Skateboarding Tricks Based on Gyroscopic Data

Fang, Ziyue (School: Singapore International School (Hong Kong))

With the rising popularity of skateboarding from large international events such as the Olympics, Street League Skateboarding and X Games, reliable and accurate trick detection gets increasingly important. However, under rapid movement and increasingly complicated tricks, it may be hard to accurately recognize a trick done in real-time. In order to improve competition fairness and real-time spectator commentary, pattern recognition methods and gyroscopes can be used to detect trick classification based off quaternions from its unique gyroscopic pattern changes. By utilizing a 6-axis gyroscopic sensor, an accurate recognition of the trick performed could be determined by the combination of the analysis of its angular velocity, angular acceleration, and magnetic force.