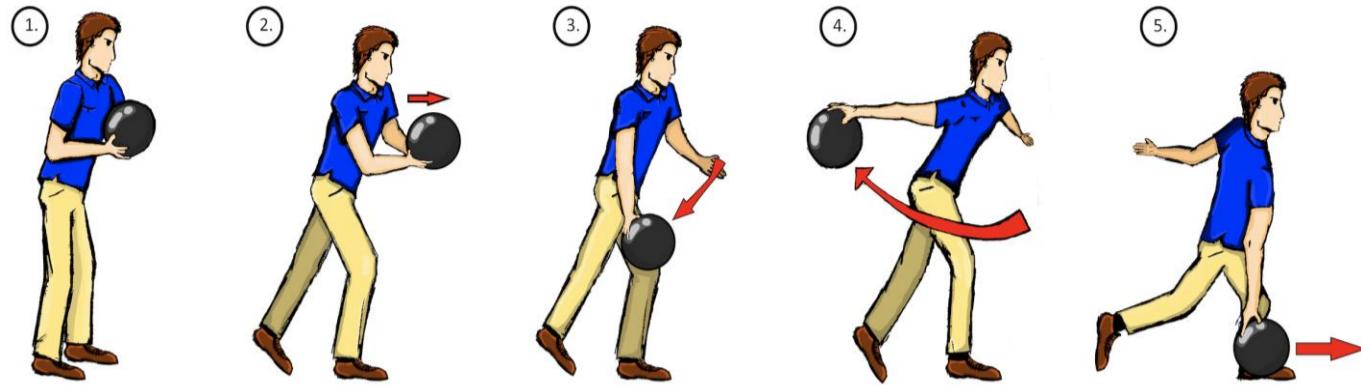




Bowling Assistant A!

Aalto University
School of Engineering

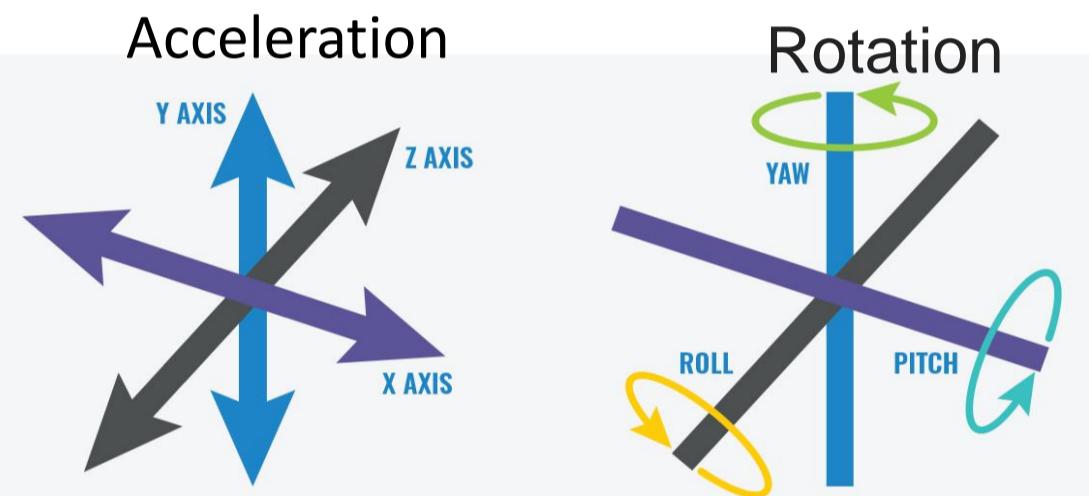
The aim is to create a device to easily enhance your bowling performance.



A usual bowling performance consists of 5 steps. Some key movements have been determined:

- swing plane
- step timings
- ball-ankle distance.

With the help of an IMU attached to the bowler, the human motion can be tracked. An IMU has multiple sensors, which can be combined with the help of a human model, to generate a precise sense of location and orientation. The casing of the IMU and the rest of the sensor unit can be seen in the top left corner.



To validate the IMU data, a reference device has been built. With two rotational encoders on each axis, the position of the IMU can be calculated and compared.

In the Figure below, a comparison is shown. The largest error of the pitch angle was 6 degrees. Among other tests, this implies that the IMU is capable of detecting fast movements of the bowler and detecting the human movement.

