Motivation

The current automatic coaching system is costly, and only focused on determining the arc of the ball from a fixed position.

The system that we build will try to reduce the cost for an automated basketball training system, and can measure shots from different positions.

Architecture and Design Concepts

User’s Movement → Accelerometer → Robostix

- Processing all I/O data
- LED

Hardware:
- Gumstix
- Robostix
- 3-axis accelerometer
- LEDs

Software:
The software that compute the optimal angle, position, orientation and acceleration of the hand.
Then, give feedback via the LED.
Developed by Chiron Team.

Results

- Given a pre-computed position on the field, the system will detect the user hand’s orientation via the accelerometer.
- Gumstix calculate the angle(x-z axis)/acceleration(y-axis)/position(x-z axis) of the hand when it detects a certain pattern in x,y, and z accelerations. Then it gives a feedback accordingly.
- User power the system off: Gumstix and accelerometer halted.
- Upon getting any exceptions in the system: the system will restart itself.
- The following graphs show the reading from the three axis of the accelerometer. The plot starts with a person doing random hand orientation; then, taking several shots one after another. One units of the x-coordinate represent 20ms in a wall-clock time. The first 2 seconds is when the person is doing random hand orientations. The rest of the graph is consecutive shooting motions using different amount of force applied.