



Power-Eye

IoT Course 2 Project

The Problem?

Currently, progress of power, strength, speed and efficiency is measured by how much weight the individual is pushing as well as how many repetitions they are able to do. The specifics here aren't measured to accuracy and can prove to be very vague i.e the athlete can dead-lift 150kg 5 x repetitions in 5 different sets. Some aspects of accuracy to measure would therefore be:

- How fast can they shift the weight?
- How consistent is their speed/power?
- How many watts of power are they generating per repetition?
- Is one side of the body more dominant in the lift/push or is their overall consistency?
- Is their grip consistent and measured specifically prior and during the lift/push?
- Is their weight distribution balanced during the lift?
- Is their technique correct with accuracy to avoid injury/ensure best possible results?
- How stable is the weight being held?
- The list goes on!!!!

The Solution?

- ▶ To answer all of the previous questions!

Essentially, Power-Eye will give detailed, extensive and specific results for all forms of power-lifting activities. These are specific to Olympic Bars and Halo-Bars. This will enable individuals & teams to collect specific data, thus monitoring and measuring progress.

There is no hiding for the modern-day athlete!



Product Infrastructure:



These stick-on, water resistant sensors weight 1.0 gram and are colour coded to go onto 3 different sections of the Olympic Bars or Halo-Bars (Halo-Bar pictured left). Sensors indicated in pictures are not to scale!

The Sensors:

- ▶ The sensors included are:
 - An Accelerometer to measure speed/power on the bars themselves, as well as on the athletes sticker.
 - Motion sensors to detect the specific angles of movement on the bar, as well as posture and technique of the athlete.
 - Temperature sensors to detect grip accuracy.



Connectivity:

- ▶ Power-Eye can be connected via Bluetooth to measure the relevant aspects through smartphone's and devices. Power-Eye can also utilise the connectivity of the smartphone and devices cellular capabilities, as well as the wi-fi to further record/log activities, thus measuring progress over time.



Analytics:

- ▶ The Power-Eye sensors, as previously stated, record speed, power, motion and grip accuracy. Each repetition is therefore logged recording accurate information throughout a workout. This would therefore give indicators of progression and consistency, as well as highlighting other areas such as technique and power output efficiency when lifting/pushing the weight.
- ▶ All results are logged per user and can be analysed over a prolonged period of time.



Application:

- ▶ The application can run on smartphones or devices and can be configured to “athlete-mode” (individual recording) or “coach-mode” (team recording). The reason 2 modes are created is so that progress can always be monitored, regardless of personnel availability. For example, in an off-season when all personnel go on leave, an athlete might want to maintain their physical condition off-season. They would be able to do this using their individual log-in details via “athlete mode”.
- ▶ All data is non-editable of course, thus avoiding false/manipulated results.
- ▶ For post-workout purposes, especially when using “coach-mode”, information can also be monitored, reviewed and analysed through a web-interface using the Power-Eye website with a unique login.

HAPPY TRAINING!

