Weight Lifting Performance Monitor
David Stoddard, Electrical Engineering
Advisor: Dr. Marc Mitchell

UNIVERSITY OF EVANSVILLE
EST 1854 · Civic Mission…Sacred Trust

Introduction:

Lifting weights can oftentimes be an imprecise exercise where the lifter is unable to fully understand the subtle nuances of his lift. This can cause a weightlifter to fail to get as much out of his exercise as possible and on some occasions can be dangerous. If a weightlifter can receive as much information as possible about his exercise he can have a far more efficient and safe workout

OLYMPIC LIFTS — SNATCH, CLEAN, JERK

Design Requirements:

Measure,

- Peak velocity
- Peak power
- Peak force
- Average velocity

of a standard Olympic Lift such as a Clean.
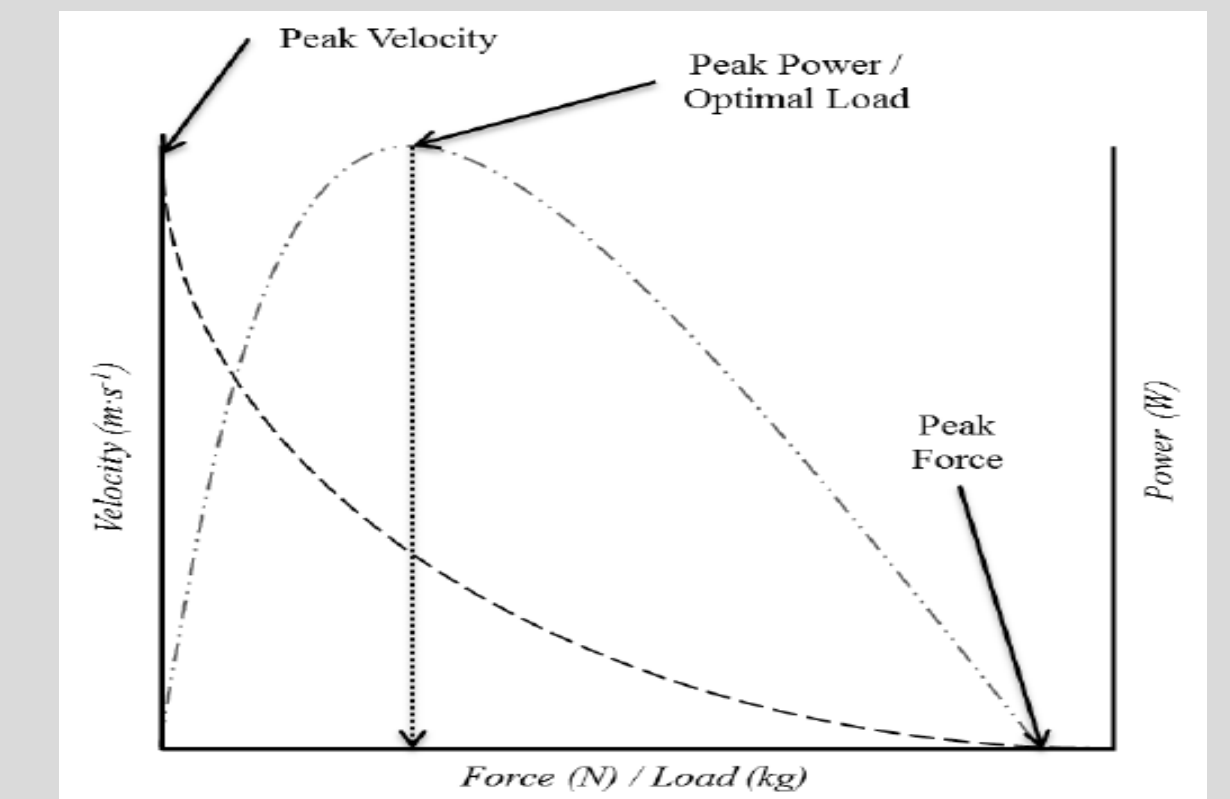
At different points in a season an athlete will want to focus on different areas of this graph.

Design:

Components:

- STML432KC Microcontroller
- MPU 6050 6-Axis Accelerometer/Gyroscope
- SERLCD 16x2 display
- Custom printed circuit board
- Custom designed 3-D printed container

Function:

STML432KC Microcontroller → MPU-6050 X2 / SERLCD / Push Buttons X7
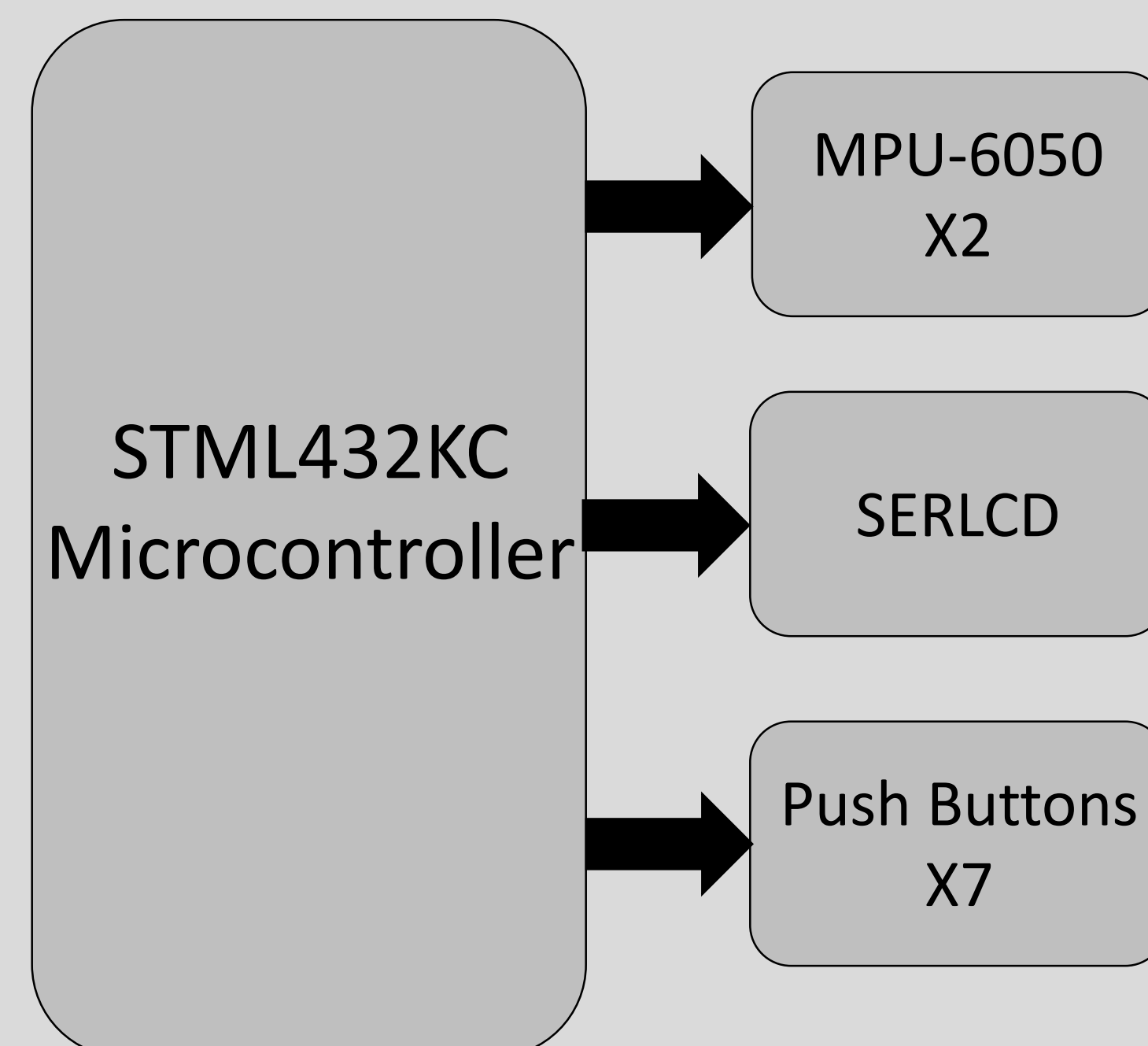
- User inputs total bar weight, presses start and begins lift
- L432KC waits for sensor values to pass threshold to start and stop timing
- Onboard mathematics are performed
- Results are displayed

Software:

- Written in C code
- I2C protocols to communicate between devices
- Required user input for total weight on bar
- Ability to rotate between 4 measurements
- Use of internal timer and sensor data to achieve all measurements