**MCMASTER UNIVERSITY**

**SFWRENG 4G06 / MECHTRON 4TB6**

**SOFTWARE ENGINEERING CAPSTONE**

**FITFORM: PROJECT DESCRIPTION AND GOALS**

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**Table of Revisions**

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| **Revision** | **Date** | **Description** |
| 0 | October 4th 2020 | Added project description and goals. |

Table 1: Table of Revisions

**Project Goals**

**Description**

Physical exercise is an activity that the majority of people partake in by various means such as weightlifting, yoga, jogging and other fitness-related activities. Unfortunately, many individuals perform exercises without initially learning proper form. Exercising without proper form leads to higher risk of immediate injury, joint damage, and slower fitness improvement over time. There are currently many solutions aimed to prevent this. For example, some games for non-portable console systems teach a user to use correct form while performing exercises. Some video games also allow a user to track exercise statistics. This project aims to provide a generalized portable solution to assist a user with applying proper form for exercises as well allow for exercise statistics tracking. This will allow individuals to have a safe and effective workout routine in their own homes or on the go.

**Goals**

1. Create wearable sensors that will track parameters of the wearer’s exercise form.
2. Allow a user to select an exercise to perform from a set of exercises.
3. Implement a program that processes sensor data to determine the user’s body posture while they perform the chosen exercise.
4. Return information to the user regarding the correctness of their form during their exercise.
5. Implement sensor controllers that communicate sensor readings to the data-processing program periodically.
   * The data-processing program will use the data to update the database of exercise statistics and produce feedback on the user’s form.
6. Create a database to store exercise statistics determined by the data-processing program.
7. Implement a GUI that allows the user to control modifiable parameters of the real-time data-processing program, view its results, and view contents of their exercise statistics from the database.
   * A minimal and intuitive interface will be created to appeal to the broad target market and make the application easily usable during and in between exercises.