#### Dev Shah

#### WEEK 14:

**Date:**4/15/22  
**Total hours:** 6  
**Description of design efforts:**  
This week I worked on implementing the free fall and impact detection software on the accelerometer. I decided to work on this because I found a useful guide that shows how the accelerometer’s registers can be written to detect these events. The accelerometer has a built-in register to detect a free fall, but it does not have one for detecting an impact. Instead, it is able to determine if the accelerometer has been tapped once or twice. The act of tapping the accelerometer would move it in a similar way as if it were moved by a fallen object, allowing this feature to act as a substitute. I began with implementing the tap feature. This requires certain bits to be set within the registers to determine the thresholds the accelerometer can move for it to be counted as a tap. Once a tap is identified, an interrupt will be called. All calculations are done by the accelerometer. Image 14.1 shows the status of the tap feature when it lays still on a table. The microcontroller currently always believes the interrupt is being called and the accelerometer is constantly being tapped, even though nobody touches it. I believe there are registers I have set incorrectly or need to bet set for this feature to work properly. Once the tapping feature works, I will easily be able to implement the free fall feature as it works similarly to this one.

A picture containing text

Description automatically generated

Image 14.1