2020 Princeton Start-Up Immersion Program

Applicant Challenge

Overview
Thank you for your interest in interning with Kinetic. As a part of the application process, we ask that you complete the following challenge. It should take approximately 3-4 hours and can be delivered in the form of a text file and source code.

About Kinetic
We are a New York City based start-up that works to reduce the number of unsafe postures and back breaking maneuvers in our workforce. We’ve found a lot of interest across various industries including shipping, manufacturing, construction, and even the insurance industry. Our main product is a device we call “the Reflex”: a wearable device that can automatically detect unsafe postures, and provides immediate feedback to workers when a high-risk motion occurs. The device clips onto one's belt, and statistically infers when unsafe postures occur using accelerometer and gyroscope readings.

Questions:

1. [~2-3 hrs] Let’s say someone lives in a possible flood zone. They want to put some sensors in their home to check the state of their home remotely in case they need to evacuate. Design the kind of sensor system they might need and possible communication options (what if power lines are down?). You don’t need to write any code but you should find some off-the-shelf hardware sensors, interfaces (Arduino, Raspberry Pi etc.), and communication options. Where possible, stick with off-the-shelf components. Maximum 3 pages. Prefer images over text to convey your ideas.

2. [1-2 hrs] Let’s say the system works and now you are planning to sell it. What do you need to do take a DIY system to a sellable system? Think about the quality control, manufacturing etc. Maximum 2 pages.