TrueStep
A step in the right direction
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Abstract
The goal of this project is to create an app which will help speed up the recovery of people with foot related injuries. There is not currently a device such as this for this type of market for sell. TrueStep was created to solve this problem. Originally a pressure sensor and module using a traffic light configuration to tell your progress. It has evolved and is a mobile application created to speed up recovery of lower body injuries by allowing a patient to see in real time how much stress or weight they are putting on their injuries. TrueStep works through an insole sensor connected to the three main pressure point on your foot, the lateral, medial and heel. The pressure map uses the information from these sensors to show how much pressure is being put on each section of the foot. A load bar will tell the patient the level of weight being put on the leg, ranging from an alright amount of weight to an overload of weight. The pressure map will be autonomously collecting data from the three pressure sensors via a single bluetooth device. The bluetooth device will be sending out continual information to the application which will eliminate the constant need for connecting to bluetooth devices. The load bar will function in the same manner, with the level constantly updating to fit the amount of pressure placed on the sensors. The main point of this app is to allow the patient to view in real time, the amount of pressure and weight they are placing on their leg in order to help them gauge what activities will be harmful to them and what will be helpful.

Goals
Everyday, people with foot injuries struggle to properly apply the correct amount of weight for optimal healing. Creating an app which will help solve this problem is the goal of this project. Specifically, an app that can be easily downloaded onto an iPad where it will continuously connect to a sensor via Bluetooth. This app will displays in a user friendly format information about the amount of pressure they are placing on their injured foot allowing for smoother and quicker recovery.

Impact
As of now, there is nothing on the market for this type of implant. Our sensor is going to be able to treat an injured person by allowing for the optimal weight to be distributed on their foot to allow for quick healing and more mobility. Patients will know how much weight is allowed on their foot for healing and they can also acclimate to their new weight percentage knowing that it will not cause further injury. They can be more comfortable walking around with their injured foot as opposed to being extremely cautious when going from place to place. This will simultaneously limit the possibility of re-injury and speed up recovery time.

Results
Bluetooth has been successfully connected through the app. The user will have to be conscious of when the device is needed to be on and realize that when it is off it will not read to the device. The pressure map was finished using Xcode libraries and is efficiently displaying the data given to it by Bluetooth. The load bar and interactive menu are also working up to par, using interactive buttons and sound.

App
The application will be downloaded onto a mobile device, where it will then be connected via bluetooth to a pressure sensor. The sensor will be placed in the sole of a shoe and the patient will go through a series of steps for calibration. The calibration is needed to set a benchmark weight for how much weight can be placed on the injured foot and the application will have a visual display of in the form of a pressure map on the mobile screen. The application will set a restriction on how much weight can be placed on the injured foot, and will give feedback if the patient is below the range, above the range, or within the range of weight that can be placed on the foot. The application will be downloaded onto a mobile device, where it will then be connected via bluetooth to a pressure sensor. The sensor will be placed in the sole of a shoe and the patient will go through a series of steps for calibration. The calibration is needed to set a benchmark weight for how much weight can be placed on the injured foot and the application will have a visual display of in the form of a pressure map on the mobile screen. The application will set a restriction on how much weight can be placed on the injured foot, and will give feedback if the patient is below the range, above the range, or within the range of weight that can be placed on the foot. Patients can also opt into having the phone vibrate when pressure is above the desired weight benchmark as they can have haptic feedback as opposed to visual. This also frees up the patient from needing to have the phone in hand and constantly switching focus from walking forward and the application feedback.