

Hunter

- Smart Digital Multimeter
 - Transmits measurements/data wirelessly to phone app via Bluetooth
 - User adjusts settings such as sampling rate via app
 - Data can be exported directly from app to Excel
- NFC geocaching

Travis

I originally thought of this for learning a dance from another person's movements (Because I like dance, don't judge me)

A way of transferring the moves from one person to another to be learned through either sensing motion or real time motion tracking and comparing them to preloaded or prerecorded examples. This way accuracy and fluidity can be tracked and tested to the style of dance you wish to achieve. I would personally recommend a combination of strategically placed sensors, such as on each arm, each leg, and one on the chest and head. This in combination with a camera or sensor that would be either wirelessly connected via Bluetooth or WI-FI, or even a sensor that can be pinpointed precisely by the camera. The recorded base subject and the student's dance can be compared to measure spatial accuracy and timing of movement to log their performance. Frames can be taken from footage to further promote comparative learning. Although this application may initially thought for dance, it has many other applications as well such as sports like baseball swings, golf swings, boxing stances and strikes. This could even be useful in the medical field, comparing patients going through rehabilitation can be accurately compared to healthy individuals to track progress and allow care takers to prescribe more accurate exercises for quicker recovery. Users could potentially wear IR transmitters and be recorded by an array of IR receivers as well as a camera recording with motion tracking technology. The constraints with IR is the lack of object penetration, however this tracking system does require portable use, so with it's cheaper cost and higher accuracy I believe this would be the most efficient way of providing quality information to the user.

Gaston

My project idea for senior design is a system that analyzes the skin of patients to find out if they have any skin diseases, burns, allergies. The goal of the system is to find out which part of the skin has anomalies. How the system accomplishes this is by scanning the surface of the patient's skin and observing for any changes that it deems "not healthy". This means that they will be a threshold for what is acceptable healthy skin. The system will have scanning mechanism that maps the skin and looks for anomalies by comparing normal skin from unhealthy skin. The system will come with default data set of what is good skin and compare scanned skin with what

is in the data set. After analyzing it should be able inform the user (in this case a doctor) about the type of skin that the patient has and what disease they have. The output will be 3D image of the patient's skin. This idea is not limited to just patient's skin but for now will focus on the skin.

Hardware

- MSP 430
- PCB board
- Camera for visual mapping
- Lighting peripheral for proper capture of the skin
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Software

- The software platform will be based on an embedded system MSP 430
- The software will have image processing application mechanism to capture the surface of the skin
- 3D graphics for mapping the skin surface an in depth
- database or data set for what is good skin and compare this with what is being scanned by the device.
- AI algorithm for making best assessment for what is bad skin. As the system collect more data it should be able to get smarter, thus minimizing the error for mistakes.