The Pediatric Mobility Lab, Lee Lab, is prototyping a generalized microcontroller system for use with rehabilitation based technologies that have high-speed computing and real-time feedback requirements. In particular, the Lee Lab is developing cutting edge rehabilitation devices that utilize Functional Electrical Stimulation to enhance activity in children that have impaired movement ability due to Cerebral Palsy. It is our desire to develop a modular system that can receive multiple biometric based signals for real-time stimulator feedback control and data logging. This system will use the cutting edge Texas Instruments multimedia processor, OMAP5432 EVM, as a platform for a closed-loop control unit. High-tech sensors such as Inertial Measurement Units (IMUs) and exercise performance devices using the Ant+ communication protocol will be implemented as real-time feedback signals for therapeutic and rehabilitation based applications. We have identified several project areas that we seek assistance in developing:

1. Streaming a gyroscope sensor data into an Arduino (Atmel based microcontroller) and plotting the data on a LCD.

2. Stochastic signal generator using C++ designed for use on a pc or any preferred hardware.

3. Designing standalone software in C++ for monitoring heart rate streamed using the Ant+ protocol for use on a pc or any preferred hardware.

4. Designing and implementing a simple 2 channel stimulator using the OMAP5432 EVM.

5. Designing a simple Graphical user interface system for plotting any biometric based or performance data using the OMAP5432 EVM.

Our Lab is looking for engineering undergraduate students to help design and implement the aforementioned projects. Students with experience in, C++, microcontroller programming, Matlab or Labview are highly preferred.

The positions are credit/volunteer/pay.

To learn more Lee Lab, please visit Dr. Lee's webpage. http://www.udel.edu/PT/lee/research.html

If you are interested or have any questions, please contact us by email: Ahad (ahadbeh@udel.edu) or you can visit us in the Pediatric Mobility Lab at STAR campus.