



Sensing, Processing, and Actuation of Biomedical Smart Textiles for Deep Venous Thrombosis Prevention

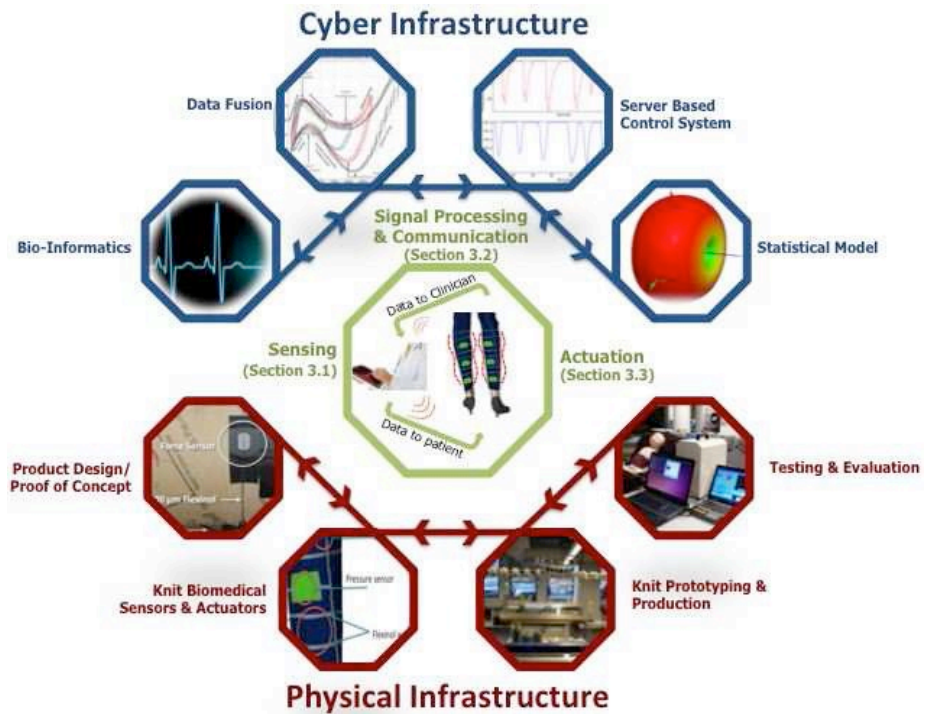
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Description

Integrate smart fabric sensors and actuators into comfortable garment devices providing unobtrusive prevention options for deep venous thrombosis (DVT)

Goals of This Project:

- Develop biomedical smart textile sensing systems to identify patients at high risk for developing CVI/DVT
- Develop a real-time, predictive data-driven control system is robust to non-deterministic changes during operation.
- Create new technologies enabling medical assistive devices based on the mechanical stimulation of tissues in the body

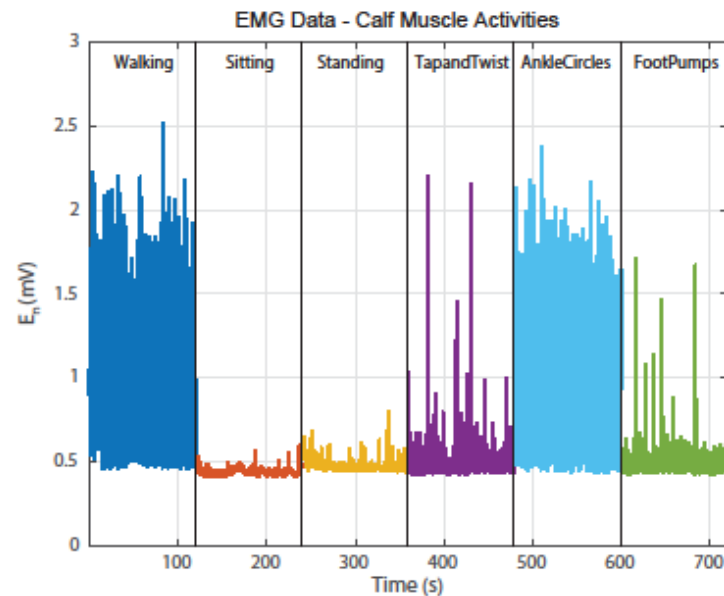
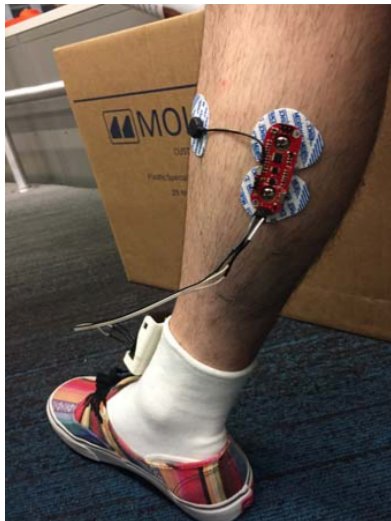


Overview of Research Activities



Findings

- Developed knitted RFID antenna sensors and characterized their performance
 - Developed a system to integrate tags into a wireless channel emulator for characterization
- Development of new materials and actuation-force waveforms for therapeutic massage
- Detection of movement carried out with integrated accelerometer mounted in fabric
 - Neural network classifier trained to recognize activities that have a high level of calf muscle activity
 - This classifier was trained on data gathered as part of a human trial
- Conducted usability, adoption, and form factor research and additional focus groups with “look-like” and “work-like” prototypes



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