Columbia University Biomedical Elective: Summer Session
Tutorial with Andrew Laine PhD, and John Pile-Spellman, MD

The Problem:
Strokes and heart attacks are huge problems. Endovascular treatment of strokes and heart attacks are standard care - Critical triaging of patients is almost always made primarily on physiological information, and this is also the major determinant of the patient’s outcome.
A huge drawback is that during the endovascular treatment only anatomical information is monitored - whereas key decisions would, if possible, be informed by real time physiological information.

The Opportunity/ Solution:
Key physiological measurements can be derived from routine data collected during an endovascular procedure that use a new device.

Goals of the Tutorial:
Develop the basic framework for computational model to understand the limits and implications of the physiological measurements collected in this manner.
Develop initial data that can be used to support and NIH-SBIR application in September.
During this tutorial it is expected the student will learn
Key cerebral vascular parameters, their measurements, and derivations.
Modeling of data derived from embedded controls

1) Pre-requests of this tutorial include
Interest in device development, vascular patho-physiology, modeling, and embedded systems
Interest and skills with graphic solutions, and calculus, used in model development

2) Long term
It is hoped that thru this interaction, a long term project and relationship will be developed.

The Course Plan
Meet with Advisors three times a week- by video conference.
The tutorial will consist of: a) Review of pertinent background, b) Problem definition, c) Development of candidate strategies, d) Criteria for acceptance decision, e) Development of model f) Use of model to create initial data

The Next Step
Contact Andrew Laine, and John Pile-Spellman and arrange an initial meeting.