MAE MS or Meng Project CV Modeling – Fall 2016

Cardiovascular Modeling under Artificial Gravity combined with Exercise

Artificial gravity has been suggested as a multisystem countermeasure against the negative effects of weightlessness. However, many questions regarding the appropriate configuration are still unanswered, including optimal g-level, angular velocity, gravity gradient, and exercise protocol. The objective of this project is to participate in the further development of a lumped-parameter model of the cardiovascular system to simulate the short-term transient hemodynamic response to artificial gravity exposure combined with exercise.
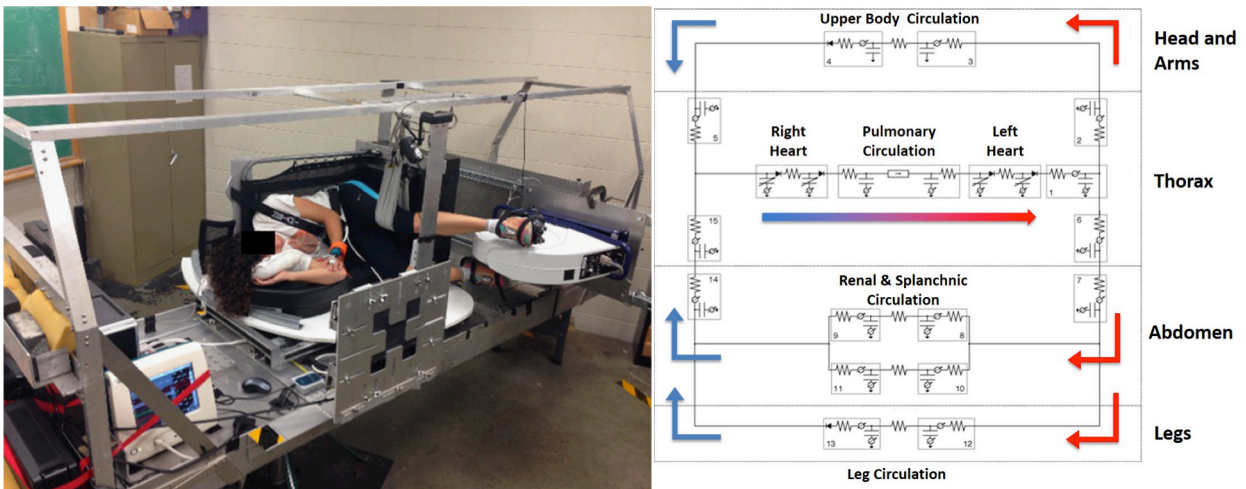

Figure 1 – Left: subject on the MIT short-radius centrifuge, ready to perform cycling exercise while being rotated. Right: lumped-parameter model of the cardiovascular system.

Desired qualifications
- Interest in bioastronautics and space physiology
- Excellent programing skills (Matlab & Simulink)
- Ability to work autonomously and in a team.
- Applicants should have good leadership, organizational and communication skills, as well as a proactive attitude towards solving problems.

Application Instructions
- E-mail Dr. Diaz Artiles (ad877@cornell.edu) with the following material:
   - Updated CV
   - Unofficial transcript
   - Short paragraph indicating your motivation
   - Level of effort (number of credits desired)