

Seminar Announcement
Biomedical Engineering
Thursday, Feb. 18, 2016 at 11:00 AM
Bioengineering Building, Room 2220

Title: **Traumatic brain injury in contact sports**
Speaker: Dr. Songbai Ji, Thayer School of Engineering, Dartmouth College

Abstract:

Traumatic brain injury (TBI) remains a major socioeconomic public health problem in the United States and the entire world. Recently, there is heightened public awareness of sports-related concussion, which presents significant, unique challenges for effective clinical management. In this talk, we will illustrate how a computational model of the human head could link important aspects of TBI, including sports-related concussion, to facilitate injury diagnosis. We will discuss how a pre-computation strategy could enable real-time estimation of brain tissue-level mechanical responses (vs. hours otherwise). We will then discuss potential avenues to further enhance the sophistication in brain injury analysis in order to improve injury prediction performance. Next, we will discuss how a sophisticated, yet efficient modeling scheme could enable future brain injury studies to focus on tissue responses from repetitive head impacts on an individual basis to identify a spectrum of concussive/sub-concussive injuries, as opposed to current approaches that largely rely on empirically-driven, kinematics-based criteria to predict a binary brain injury status on a population basis. Further, we will show how these efforts could potentially lead to an improved concussion management strategy in contact sports for more effective “return-to-play” decision-making. Finally, we will share thoughts on how these efforts could be extended to other areas of injury biomechanics research.