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Engineering human swallowing and gait functions

Abstract: A human body comprises of several physiological systems that carry out specific functions necessary for daily living. Traumatic injuries, diseases and aging negatively impact human functions, which can cause a decreased quality of life and many other socio-economical and medical issues. Accurate models of human functions are needed to propose interventions and treatments that can restore deteriorated human functions. Therefore, our research aims to develop novel data analytics and instrumentation approaches that can accurately assess swallowing and gait functional losses due to aging and neurological disorders. More than 30 million of Americans will have some sort of swallowing and/or gait issues in the near future. The current-state-of-art approaches do not provide reliable answers how to properly assess and manage these functional losses in daily lives. This is a critical issue, as health costs associated with swallowing and gait functional losses outpace other aging-related health issues. In this talk, I will present our recent contributions dealing with both engineering and clinical aspects of our work aimed at addressing current knowledge gaps. Lastly, I will also present our future research and educational goals and our strategy to achieve these goals.