Department of Biomedical Engineering
Graduate Seminar

Date	Location	Time
Friday, November 22nd	Central King Building (CKB 303)	11:45 AM

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Subject-specific Control and Dynamics Used During Turns

Abstract:
Turns are an essential skill in daily ambulation and in athletic movements. However, from a mechanics perspective, turning tasks often present conflicting mechanical demands on a bipedal system. During turns, the body must simultaneously manage translation, rotation, and balance maintenance goals. These goals conflict in specific ways. For instance, to maintain balance, the center of mass should be directly above the base of support during single limb stance. However, to generate rotation about a vertical axis, ground reaction forces should be applied at a distance between the base of support and center of mass. Due to these conflicting mechanical challenges, many people with neuromuscular deficits struggle to turn effectively within a few footfalls without balance loss. At the other end of the movement performance spectrum, elite dancers can achieve multiple revolutions while supported by a small and moving base of support, essentially “turning on a dime”. Dr. Zaferiou’s seminar at New Jersey Institute of Technology will focus on how dancers and fall-risk older adults perform different turning tasks using subject-specific strategies.

Light refreshments will be served.