

JOINT AEROSPACE/RÜZGEM SEMINARS

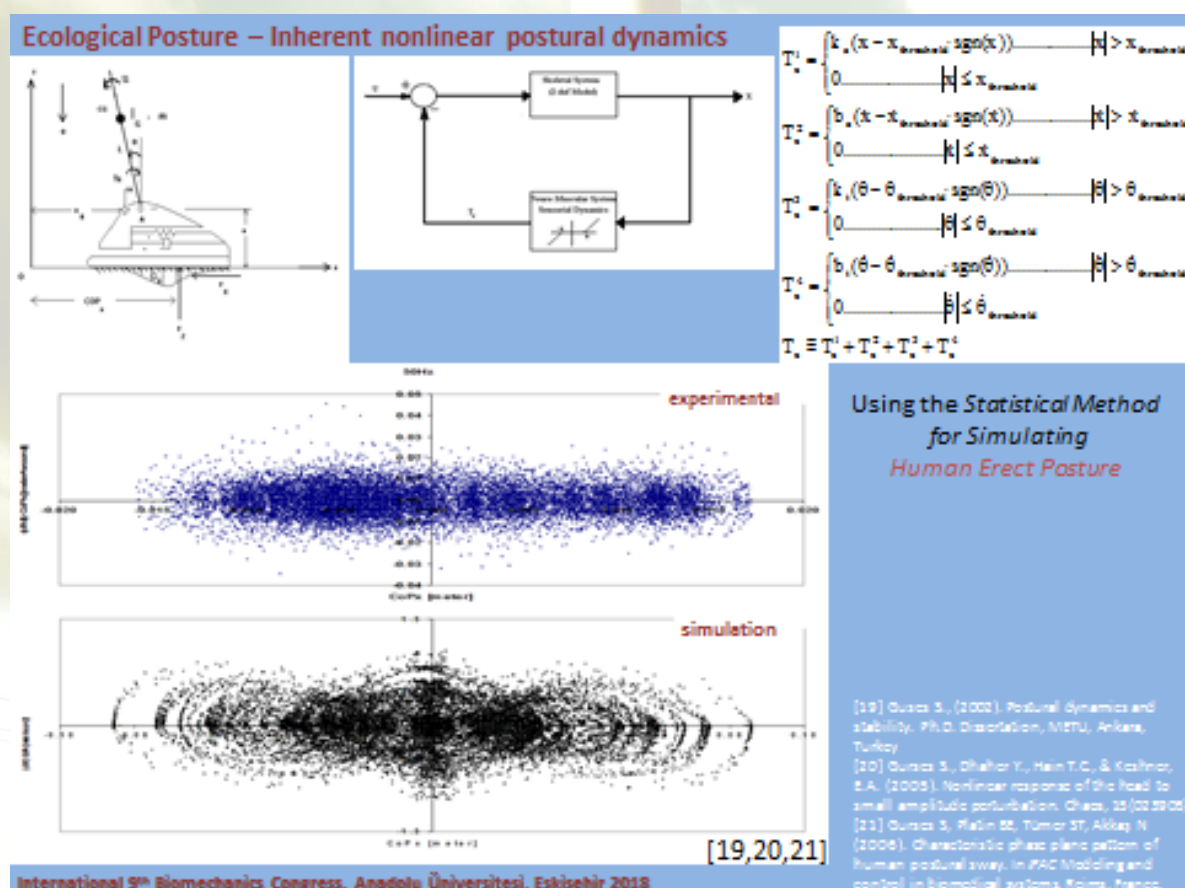
Human Erect Posture and its Eco-Dynamic Equilibrium (Balance)

Assoc. Prof. Dr. Senih Gürses

Department of Engineering Science
Middle East Technical University

December 05, 2018, Wednesday, 13:00
Auditorium

Human biped stance can be defined as a dynamical-mean to control the human daily motor-tasks against the earth's gravitational force-field while maintaining balance, which is gained and spatio-temporarily developed through learning and adaptable neuro-mechanical physiological processes carrying language-like patterns (information) in its socio-ecological interactions. It has long been explored through Newtonian laws of motion (classical mechanics) to understand the (sensory-motor) control algorithms (neuro-physiological mechanisms) of the nervous system on the body through the muscles, known as the science of motor control. However, as the main actuator of the control is realized by the cross-bridge mechanisms in the muscles, where our understanding of the statistical nature of the muscle contraction and the generation of the muscle force (in the Newtonian sense) is in a rapid-progress today; it has found a better established analytical basis (thermodynamically based Boltzmanian approach) hoping to supply an insight (by having a probabilistic approach) to its informative context. The methodology of the two main approaches (Newtonian versus Boltzmanian) will be reviewed in the context of motor control theories by introducing physiological (postural sway) and pathological (vestibular loss patients' sway) data, where imprints of ecological semantics is to be pursued in their individual motor behavior (via postural nonlinear dynamics).



Supported by

TR-M | TR MOTOR
PROPULSION SYSTEMS