Department of Computer Science
University of Houston

FACULTY SEMINAR SERIES – SPRING 2013

WHEN: MONDAY, MARCH 04, 2013
WHERE: PGH 232
TIME: 11:00 AM

SPEAKER: Dr. Ioannis Pavlidis, University of Houston

Host: Dr. Christoph Eick

TITLE: Fast by Nature – How Stress Patterns Define Human Experience
and Performance in Dexterous Tasks

ABSTRACT:
I will present results from a study where we quantified stress by measuring transient perspiratory responses on the perinasal area using thermal imaging. These responses prove to be sympathetically driven and hence, a likely indicator of stress processes in the brain. Armed with the unobtrusive measurement methodology we developed, we were able to monitor stress responses in the context of surgical training, the quintessence of human dexterity. We show that in dexterous tasking under critical conditions, novices attempt to perform a task's step equally fast with experienced individuals. We further show that while fast behavior in experienced individuals is afforded by skill, fast behavior in novices is likely instigated by high stress levels, at the expense of accuracy. Humans avoid adjusting speed to skill and rather grow their skill to a predetermined speed level, likely defined by neurophysiological latency. The outcome of this research not only brings to the fore a curious aspect of human nature well hidden heretofore, but it also implicitly invalidates the training models in a number of critical professions where dexterity is key.

The article upon which this talk is based has been recently published in Nature's *Scientific Reports* and can be downloaded from:
http://www.nature.com/srep/2012/120306/srep00305/full/srep00305.html

Short Biography

Dr. Pavlidis is the Eckhard-Pfeiffer Professor of Computer Science and Director of the Computational Physiology Laboratory at the University of Houston. His research is funded by multiple federal agencies including the National Science Foundation and the Department of Defense, as well as corporate sources and medical institutions. He has written many journal articles and books on the topics of computational physiology and psychology as well as computer vision and human-computer interaction. He is well known for his work on stress quantification, which appeared in a series of articles in *Nature* and *Lancet*.