Department of Computer Science
University of Houston

NSF Ethics in Science

TITLE: "Identifying potential pitfalls in the quantitative appraisal systems for scientific careers"

Professor Alexander M. Petersen

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11:00 A.M. - 12:30 P.M.
232 Philip G. Hoffman Hall

Quantitative measures are becoming increasingly prevalent in the scientific appraisal of countries, universities, departments, and notably, individuals. In this talk I will discuss the potential pitfalls arising from the appraisal of individual careers based on citation metrics, a proceeding which is likely to occur at several stages of an academic career, from postdoctoral and faculty appointments to career achievement awards. Using longitudinal career data for 450 scientists, ranging from assistant professors to Nobel laureates and Fields medal winners, I will demonstrate a graphically intuitive method for visualizing an individual's publication profile. While much ado has been made about the h-index, a metric intended to measure simultaneously the productivity and impact of a scientist, I will argue for the careful use of this and related quantitative measures. With the remaining time, I will illustrate the complex dichotomy of competition and collaboration in science.

About Professor Alexander Petersen

I am currently an assistant professor at the IMT Institute for Advanced Studies Lucca as a member of the Economics and Institutional Change division. Before joining the IMT Lucca, I spent my doctoral years at Boston University where I received a PhD in Physics using concepts and methods from statistical physics to quantify dynamic phenomena in the social and economic sciences. I am currently involved in analyzing "big data" comprising (i) high-frequency Trades and Quotes (TAQ) financial data, (ii) Google n-gram language data, and (iii) measures for longevity, success, productivity and innovation in science and also generalizing the findings to professional sports. In the broadest sense, I search for statistical regularities in empirical data, which can be used to better understand patterns of growth in diverse complex systems.