What first drew me to the newly established Info-Metrics Institute was the possibility of extending our understanding of entropy by exploring its application to subjects totally disconnected from my own field, physics. Some background might be useful: throughout most of the 20th century the two main methods of inference—Bayesian and Entropic—flourished side by side quite independently of each other. The connection between them had been a source of controversy and even their compatibility had been repeatedly brought into question. Recent developments in entropic inference have, however, culminated in their complete unification. Indeed, the new entropic methods include the old MaxEnt, all Bayesian methods, and the general subject of large deviations as special cases.

The consequences of these developments are potentially enormous both for statistics and for science in general. In physics, for example, the new understanding of entropic principles can be used not just as the foundation of thermodynamics and statistical mechanics, but also as the foundation for other fundamental laws such as Newton’s $F = ma$ in classical mechanics, and the Schroedinger equation in quantum mechanics. From this perspective – the laws of physics are not regarded as fundamental laws of nature, but rather as highly effective rules to process information about the world – just like any other science, including economics. In collaboration with Amos Golan we have recently developed an entropic framework to model economies from the point of view of an external observer who has very limited access to information about the individual agents. The framework, which relies purely on macroscopically accessible information, avoids the usual rationality assumptions and leads to a different perspective on the nature of economic equilibrium.

-Ariel Caticha, member

Starting an Institute is exciting but sustaining the initial enthusiasm and activity is the test of whether the organization can be counted as successful. By this measure, the Info-Metrics Institute passes with flying colors. After the extraordinary 2011-2012 Academic Year, the Institute has maintained and even accelerated the momentum for staging conferences, seminars, research visits, and many other venues for sharing ideas and testing empirical and theoretical findings. Especially satisfying is the degree to which scholars in information theory and empirics are increasingly proud to affiliate with and to promote their research through the Institute. Under the tremendous leadership of Amos Golan, the Institute has established a genuine network of peers serious about advancing an interdisciplinary field. The research that 25 of our affiliates are producing and the range of outlets they are reaching illustrate the vitality of a field spurred on by the Institute. Teaching and research collaborations with PhD students are other major successes of the Institute. In the past year alone, the Institute has included graduate students in conferences, staged a two-day tutorial on Info-Metrics, has encouraged interactions between graduate students
and visiting fellows, and sponsored seven graduate students to participate in Purdue University’s Science of Information Summer School.

The partnerships emerging through the Institute are exciting, as scholars from a variety of disciplines and sub-fields work together to generate new insights and to diffuse the emerging knowledge. The Visiting Scholar program allows participants sufficient time for the type of in-depth interactions that can yield serious contributions to the field. We greatly appreciate the many scholars who have generously devoted their time and initiative to helping the Institute become the go-to place for Info-Metrics and, more broadly, to raising the visibility of info-metrics. Last but certainly not least, we thank the Office of the Comptroller of the Currency (OCC) for its critical and ongoing support for the Institute. The Institute’s success could not have been possible without the OCC and other sponsors.

- Robert Lerman, Chair

The Info-Metrics Institute, through its workshops, conferences and courses provides us with an excellent forum for an exchange of views and the transplantation of ideas across fields and disciplines. Its focus is timely and much appreciated by many of us who see the future of economics in the analysis of large, multi-dimensional data sets, with the help of insights from many disciplines in order to bring about better and more informed private and public decisions. I saw this interdisciplinary process in action when I attended the Institute’s spring 2012 workshop on info-metrics and social networks.

My current research on testing for and modeling of cross-sectional dependence in large dynamical systems fits well within the scope of the Institute. At the spring 2012 workshop, I benefited from listening to mathematicians, physicists and biologists.

Over the past decade, I have continued my theoretical econometric research as well as my applied analysis of interactions in the world economy, which fits well within the Institute’s research program. My research in the area of global modeling began in 1998, in the aftermath of the Asian Financial Crisis. As a consultant, I was asked how to quantify the effects of a major market down turn in one part of the globe, such as the one that had just occurred in Asia in 1997, on the loss distribution of a loan portfolio of a major bank in another country, specifically Germany. This led me to the development of a global macro-econometric model, known as the GVAR, which is now used by many researchers and financial institutions for stress testing, shock scenario analysis, and forecasting. Seventeen of such applications are published in a GVAR Handbook by Oxford University Press.

The GVAR modeling approach can be used in network analysis, spatiotemporal modeling, analysis of disease diffusion, and financial risk diffusion. I see all these areas to be complementary to what is being done at the Institute and I am happy to be a part of it.

- M. Hashem Pesaran, member