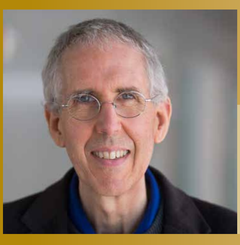
ISTeC
The Information Science and Technology Center

Colorado State University

Distinguished Lectures
Fall 2016



Colorado State University's Information Science and Technology Center (ISTeC) ***presents two lectures by***

Dr. Alfred O. Hero III

John H. Holland Distinguished University Professor
Department of Electrical Engineering and Computer Science
University of Michigan
Co-Director of Michigan Institute of Data Science

ISTeC Distinguished Lecture

In conjunction with the Department of Electrical and Computer Engineering, Department of Mathematics, and Department of Computer Science Seminar Series

"Towards a Science of Complex Data"

Monday, Oct. 17, 2016
Reception with refreshments: 10:30 a.m.
Lecture: 11:00 a.m.-12:00 noon
Morgan Library Event Hall

Department of Electrical and Computer Engineering,
Department of Mathematics, and Department of Computer Science
Special Seminar *Sponsored by ISTeC*

"Continuum Limits of Shortest Paths"

Monday, Oct. 17, 2016
Lecture: 2:00-3:00 p.m.
Clark A204

Abstracts

Towards a Science of Complex Data

We are seeing an emergence of a unified science of data for scientific discovery, social good, and commerce. Data science is at the nexus of thriving communities in mathematics, engineering, statistics, information science, physics, and computer science. This talk will provide perspectives on how data science may have profound effects on personalized health, transportation, social sciences, and education.

Continuum Limits of Shortest Paths

Many applications involve computing minimal paths over the nodes of a graph relative to a measure of pairwise node dissimilarity. These include minimal spanning trees in computer vision, shortest paths in image databases, or non-dominated anti-chains in multi-objective database search. When the nodes are random vectors and the dissimilarity is an increasing function of Euclidean distance these minimal paths can have continuum limits as the number of nodes approaches infinity. Such continuum limits can lead to low complexity diffusion approximations to the solution of the combinatorial minimal path problem.

Speaker Biography

Alfred O. Hero III received the B.S. (summa cum laude) from Boston University (1980) and the Ph.D from Princeton University (1984), both in Electrical Engineering. Since 1984 he has been with the University of Michigan, Ann Arbor, where he is the John H. Holland Distinguished University Professor of Electrical Engineering and Computer Science and the R. Jamison and Betty Williams Professor of Engineering. He is also the Co-Director of the University's Michigan Institute for Data Science (MIDAS) . His primary appointment is in the Department of Electrical Engineering and Computer Science and he also has appointments, by courtesy, in the Department of Biomedical Engineering and the Department of Statistics. From 2008 to 2013 he held the Digiteo Chaire d'Excellence, sponsored by Digiteo Research Park in Paris, located at the Ecole Superieure d'Electricite, Gif-sur-Yvette, France. He has held other visiting positions at LIDS Massachusetts Institute of Technology (2006), Boston University (2006), I3S University of Nice, Sophia-Antipolis, France (2001), Ecole Normale Sup\'erieure de Lyon (1999), Ecole Nationale Sup\'erieure des T\'el\'ecommunications, Paris (1999), Lucent Bell Laboratories (1999), Scientific Research Labs of the Ford Motor Company, Dearborn, Michigan (1993), Ecole Nationale Superieure des Techniques Avancees (ENSTA), Ecole Superieure d'Electricite, Paris (1990), and M.I.T. Lincoln Laboratory (1987 - 1989).

Alfred Hero is a Fellow of the Institute of Electrical and Electronics Engineers (IEEE). He received the University of Michigan Distinguished Faculty Achievement Award (2011). He has been plenary and keynote speaker at several workshops and conferences. He has received several best paper awards including: an IEEE Signal Processing Society Best Paper Award (1998), a Best Original Paper Award from the Journal of Flow Cytometry (2008), a Best Magazine Paper Award from the IEEE Signal Processing Society (2010), a SPIE Best Student Paper Award (2011), an IEEE ICASSP Best Student Paper Award (2011), an AISTATS Notable Paper Award (2013), and an IEEE ICIP Best Paper Award (2013). He received an IEEE Signal Processing Society Meritorious Service Award (1998), an IEEE Third Millenium Medal (2000), an IEEE Signal Processing Society Distinguished Lecturership (2002), and an IEEE Signal Processing Society Technical Achievement Award (2014). He was President of the IEEE Signal Processing Society (2006-2007). He was a member of the IEEE TAB Society Review Committee (2009), the IEEE Awards Committee (2010-2011), and served on the Board of Directors of the IEEE (2009-2011) as Director of Division IX (Signals and Applications). He served on the IEEE TAB Nominations and Appointments Committee (2012-2014). Alfred Hero is currently a member of the Big Data Special Interest Group (SIG) of the IEEE Signal Processing Society. Since 2011 he has been a member of the Committee on Applied and Theoretical Statistics (CATS) of the US National Academies of Science. In 2015 he received the Society Award, which is the highest career award bestowed by the IEEE Signal Processing Society.

Alfred Hero's recent research interests are in the data science of high dimensional spatio-temporal data, statistical signal processing, and machine learning. Of particular interest are applications to networks, including social networks, multi-modal sensing and tracking, database indexing and retrieval, imaging, biomedical signal processing, and biomolecular signal processing.

To arrange a meeting with the speaker, please contact Prof. Louis Scharf, 970-491-6792, (Louis.Scharf@ColoState.EDU)

Upcoming Distinguished Lectures

October 24

"Machine Learning and Democracy: Some Problems in Collective Decision-Making"
11:00 am -12:00 noon

Morgan Library Event Hall

Dr. Sanjeev Kulkarni

December 5

"Quantitative Ethnography: Measuring Complex Thinking Using Grounded Data
11:00 am -12:00 noon

Morgan Library Event Hall

Dr. David Shaffer

ISTeC (Information Science and Technology Center) is a university-wide organization for promoting, facilitating, and enhancing CSU's research, education, and outreach activities pertaining to the design and innovative application of computer, communication, and information systems. For more information please see ISTeC.ColoState.edu.