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

Dr. David Goldberg
Jerry S. Dobrovolny Distinguished Professor,
University of Illinois at Urbana-Champaign

ISTeC Distinguished Lecture
in conjunction with the
Electrical and Computer Engineering Department and
Computer Science Department Seminar Series

"The Creativity Imperative and the Technology Professional of the Future"
Friday, October 3, 2008
Reception: 10:30 a.m.
Lecture: 11:00 – 12:00 noon
Location: CSU Lory Student Center Greyrock Room

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Computer Science Department Lecture
sponsored by ISTeC

"Not Your Grandmother's Genetic Algorithm"
Friday, October 3, 2008
Lecture: 9:00 – 10:00 a.m.
Location: CSU Lory Student Center Greyrock Room

ABSTRACTS

"The Creativity Imperative and the Technology Professional of the Future"

The world (1) is apparently flat, (2) is being given over to a rising creative class, and (3) requires a whole new mind, but a common conclusion drawn from authors such as Friedman, Florida, and Pink is that technology professionals in advanced economies must excel at creating new categories of product and service, as returns to routine engineering/technology labor are declining because of the ease with which these tasks may be outsourced. This talk starts by examining the setting after World War 2 that has largely shaped engineering and technology education of the recent era. It continues by discussing the techno-economic forces that have affected the intervening time, and it considers recent work by Price and others to understand the essential characteristics and habits of tech visionaries (TVs) who currently help major companies create value through the effective bootstrapping of entirely new product lines. The talk concludes by discussing the newly established Illinois Foundry for Innovation in Engineering Education, including crucial organizational, content, and delivery innovations designed to promote effective and viral curriculum reform.

"Not Your Grandmother's Genetic Algorithm"

Genetic algorithms (GAs)--search procedures inspired by the mechanics of natural selection and genetics-- have been increasingly applied across the spectrum of human endeavor. Genetic algorithms were also a primary ingredient in the rise in interest in the study of complex adaptive and emergent systems. Despite these salutary effects, some persist in thinking of evolutionary processes--and algorithms that rely upon them-- as inherently slow, unreliable, and ad hoc, without much theoretical support. This talk briefly introduces GAs, but quickly shifts to a line of work that has succeeded in supporting GA mechanics with bounding design theory that has been used to demonstrate GA scalability, speed, and range of reliable applicability. Key elements of this theory are discussed to give insight into this accomplishment and to make the point that fast, scalable GAs may also be viewed as first-order models of human innovative or inventive processes. The talk highlights recent results in breaking the billion-variable optimization barrier for the first time. It also discusses recent experience with GA-inspired creativity or innovation support systems.

SPEAKER BIOGRAPHY

David E. Goldberg (http://www.illigal.uiuc.edu/web/deg/vita), a leader in the field of genetic algorithms, is the Jerry S. Dobrovolny Distinguished Professor in Entrepreneurial Engineering at the University of Illinois at Urbana-Champaign. He is also co-founder and chief scientist of ShareThis Inc., a web2.0 startup company. Trained as a civil engineer at the University of Michigan, where he earned his B.S.E. and took his Ph.D. in 1983, Dr. Goldberg has held positions at Michigan, Alabama, and Illinois. He is co-chair of the inaugural and 2nd Workshop on Philosophy and Engineering (TU Delft & the Royal Academy of Engineering), and he was recently named co-director of the Illinois Foundation for Innovation in Engineering Education. Among many honors, he is the recipient of a National Science Foundation Presidential Young Investigator Award, a Wickenden Award presented by the American Society for Engineering Education, and an Outstanding Instructor Award presented by the National Technological University. In addition to articles in professional journals, he is the author of two books on genetic algorithms, the widely-cited Genetic Algorithms in Search, Organization, and Machine Learning (1989) and The Design of Innovation (2002), and, most recently, The Entrepreneurial Engineer, which was published in 2006 by Wiley.

To arrange a meeting with the speaker, please contact Sharon Van Gorder at (970) 491-5862 or vangord@cs.colostate.edu.

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