

## Plenary Talk

# Parallel Programming Challenges for Internet-Scale Computing (Entropyia)

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For the past three years, the largest computing systems in the world have been based on “distributed computing” — the assembly of large numbers of PC’s over the Internet. These “grid” systems sustain multiple teraflops continuously by aggregating hundreds of thousands to millions of machines, and demonstrate the utility of such resources for solving a surprisingly wide range of large-scale computational problems in data mining, molecular interaction, financial modeling, etc. Such systems are now achieving widespread adoption within the enterprises to solve their largest computing problems.

While the massive resources available thru megascale distributed computing present new opportunities for computational scientists, they also present significant challenges in programming, management, and reliability. New models and approaches may well be required to program such systems effectively. We will describe how these opportunities and challenges differ from traditional parallel computing systems, highlighting both current solutions and open problems.

### **Biographical Information:**

ANDREW A. CHIEN is the Chief Technology Officer, Chairman of the Board, and co-Founder of Entropia, Inc. Dr. Chien’s research and technology expertise includes distributed computing, networks, communication software, distributed systems, middleware, operating systems, compilers and computer architecture. Andrew is also the Science Applications International Corporation (SAIC) Chair Professor in the Department of Computer Science and Engineering at the University of California, San Diego (UCSD). His previous affiliations include the University of Illinois, the National Center for Supercomputing Applications (NCSA), and the Massachusetts Institute of Technology. He received his S.B., S.M., and Sc.D. degrees all from M.I.T. He has received numerous awards and recognitions for his research.

### **About Entropia:**

Entropia, Inc. is a leading provider of distributed computing technologies which enable enterprises to capture the idle time of their desktop PCs, converting them into a flexible aggregate computing resource. Entropia’s innovative technologies support leading-edge drug discovery, financial modelling, Monte Carlo simulation, and other critical business applications. Entropia is a privately held company headquartered in San Diego. For additional information, visit [www.entropia.com](http://www.entropia.com).