Electrical & Computer ENGINEERING
in collaboration with
School of Computer Science

SEMINAR
DISTINGUISHED LECTURER SERIES

FRIDAY
APRIL 30, 2004

Newell-Simon Hall
Room 3305

1:30 PM
Refreshments—1:00 PM

CELL TALK

Freeman Dyson, in his 1985 Tarner Lectures, asked: "Is Life one thing or two things? Is there a logical connection between metabolism and replication?" What are their connections to genome evolution? How did life originate and which kind of life dominates the process? Are there unifying principles in biology that may have emerged from these processes?

We will discuss computational tools that we are developing to answer questions of this kind, and much more. We also discuss the challenges in systems biology, algorithm design and mathematical modeling that make these problems interesting to biologists, computer scientists and applied mathematicians.

This talk introduces the concept of algebraic model checking systems to reason about biological processes, and how we use them to interpret experimental data modulated by regulatory, metabolic and inter-cellular signaling processes.

Bud Mishra

COURANT INSTITUTE, NYU AND WATSON SCHOOL OF BIOLOGICAL SCIENCES, CSHL

Prof. Bud Mishra is a professor of computer science and mathematics at NYU's Courant Institute and Professor at Cold Spring Harbor Laboratory. His most recent research work is at the interface of computer science and biology. He has developed several sophisticated algorithms and statistical analysis tools to attack biological problems that range from deciphering the genome of pathogens (optical maps of E. coli, P. falciparum, etc.) to understanding chromosomal aberrations that are implicated in cancer. This work will eventually lead to diagnostics, therapy, vaccines and drugs for various infectious and genetic diseases. His most recent focus has been on a bioinformatics environment that will make it easier for biologists to develop their own computational tools. This environment, dubbed Valis, includes tools for sophisticated visualization of biological information design and simulation of in silico experiments and storage and communication of biological information.

Prof. Mishra has a degree in Physics from Utkal University, in Electronics and Communication Engineering from IIT, Kharagpur, MS and PhD degrees in Computer Science from Carnegie-Mellon University. He has industrial experience in Computer Science (Tartan Laboratories) and Finance (Tudor Investment and PRF, LLC) and is a founder of a biotechnology company, Opgen, Madison, Wisconsin. His research has ranged from compilers, algorithms and complexity, logic, and algebra to robotics, finance and biology.

For more information:
http://www.ece.cmu.edu/seminar

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