

SIGEVO Plenary Lecture

Dr. Stephanie
Forrest

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Denver

Sunday
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11:10am

Grand
Mesa
Ballroom
DEF



The Biology of Software

Biological design principles and large dynamic software systems

with Stephanie Forrest

Regents Distinguished Professor
University of New Mexico, USA

A University of Michigan alum and doctoral student of John Holland, Professor Stephanie Forrest is renowned for her work in adaptive systems, including genetic algorithms, computational immunology, biological modeling, automated software repair, and computer security. Her research accomplishments include developing the first practical anomaly intrusion-detection system; designing automated responses to cyberattacks; and recently, work on automated repair of security vulnerabilities.

Biological design principles can potentially change the way we study, engineer, maintain, and develop large dynamic software systems. Because software is subject to constraints similar to those faced by evolving biological systems, we have much to gain by viewing software through the lens of biology.

This talk will highlight how abstractions of biological processes can lead to new computational algorithms and engineering principles using examples from Dr. Forrest's own research.



The lecture is dedicated to John H. Holland, whose lifelong study of the mechanisms that produce adaptive behavior in complex systems left an intellectual legacy that will guide research in intelligent and complex systems for many years to come.