Errin Fulp

Professor of Computer Science at Wake Forest University
Winston-Salem, NC, US

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Biography

Errin Fulp is an expert in cyber security and computer networks. As cyber attacks become an increasing concern to national security and personal privacy, Fulp has focused his research on issues related to the next generation of high-speed and QoS-enabled networks and prediction methods for critical computer failures.

Recently, his research group developed a genetically inspired algorithm that leverages the concept of "survival of the fittest" to fighting the continual evolution of viruses, worms and malware. Fulp's team aims to improve defense mechanisms of computing infrastructures with minimal human interaction by developing the first-ever automated computer configurations that adjust as quickly as the threats.

In an ongoing project with scientists at Pacific Northwest National Laboratory (PNNL), Fulp is training an army of "digital ants" to turn loose into the power grid to seek out computer viruses trying to wreak havoc on the system. The project has received national attention, leading one of the graduate students under Fulp's mentorship to be named one of the "nation's top new inventors" by Inventor's Digest magazine.

And in a National Science Foundation (NSF) sponsored research project, Fulp and William Turkett, an assistant professor of computer science, are investigating how the usage and intent of Internet users can be discerned based on interaction patterns. The method is inspired by techniques initially developed for bioinformatics, and can be used to better manage network resources and enforce network security policies.

Fulp is also currently leading an interdisciplinary group of faculty in creating an academic center dedicated to the study and teaching of bio-inspiration and biomimicry, a discipline that applies nature's design principles to develop innovative new ways of thinking.

In addition to NSF and PNNL, many prominent national agencies, foundations, and corporations – including AFOSR, DARPA, Lawrence Livermore National Laboratory, NEC C&CRL USA, Shively Family Fellowship, and U.S. Department of Energy – have sponsored his research.

Areas of Expertise

Cyber Security, Computer Networks, Computer Configurations, Bio-Inspiration and Biomimicry, Moving Target Defense, Multimedia Systems, Simulation, Programming Languages, Deploying "Digital Ants" on the Power Grid, Genetically Inspired Computer Configurations to Fight Cyber Threats, Determining Network Usage and Intent Based on Interaction Patterns, Quality of Service (QoS) Management and Related Security Issues, Dynamic Resource Allocation, Peer-to-Peer Systems, Failure Prediction and Management, Network Pricing and Auctions

Affiliations

GreatWall Systems Winston-Salem N.C. – A Wake Forest University spin-off company based on the research of Fulp's research group

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Education

North Carolina State University
Ph.D. Computer Science

North Carolina State University
M.S. Computer Science

North Carolina State University
B.A. Computer Science
