New UCF Research Aims to Improve Scalability, Security of Cloud Computing.

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The U.S. National Science Foundation has awarded University of Central Florida more than $555,000 to use towards a new project geared toward improving the scalability and security of cloud computing. The award is part of a more than $1.2 million four-year project that also includes researchers North Carolina State University. The researchers aim to advance serverless computing, a new paradigm that is still limited in performance, scalability, and security.

The main goal is to improve and progress the technology around cloud computing and serverless computing, which only started about 15 years ago and is rapidly growing, but is limited in the realms of reliability and workload.

“The success of this project will help the economic competitiveness of the nation and improve the quality of life of many people whose productivity and security are enhanced by applications that utilize cloud computing,” says lead investigator Yan Solihin, the Charles N. Millican Chair Professor of Computer Science at UCF and the Director of the Cybersecurity and Privacy Cluster.

The next steps involved is for the team, led by Professor Solihin, to create ideas on how to improve serverless functions by using specific hardware traits and enhance the memory for automated optimization, which will be based off of workload features such as location and demands for processing. These ideas and practices will lead to the multilayer process of adding programming languages, systems, architecture and security to an integrated platform.

“If this project is successful, it will greatly expand the utility of serverless computing to performance-demanding applications at higher efficiency and scalability, while also improving their reliability,” Solihin says. “These outcomes enable new applications and new functionalities to be provided in the cloud, at lower cost and higher security.”

Solihin is a professor of Computer Science and Director of the Cybersecurity and Privacy Cluster. He received B.S. in Computer Science from Institut Teknologi Bandung, his B.S. in Mathematics from Universitas Terbuka,his M.A.Sc in computer engineering from Nanyang Technological University, and his Ph.D. in computer science from the University of Illinois at Urbana-Champaign. Solihin created the “architecture research for performance, reliability, and security” research group which focuses on research obtaining computer architecture and modeling to support concerns regarding performance, security and reliability within computers and programs.

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