

# THE DEPARTMENT OF ELECTRICAL & COMPUTER ENGINEERING SPEAKER SERIES

**PRESENTS**

## ***From Cumulus to Kubernetes: Unleashing the Power of Cloud Computing with Sustainable Data Centers***



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**Colorado State university, Fort Collins, USA**

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Room: **Zoom** (Meeting ID# 976-269-9678; Passcode: K91Bwy  
<https://zoom.us/j/9762699678?pwd=RUUp5ZmN3cHUyQ1FvUExVQjVsc1hVUT09>)

### **LECTURE ABSTRACT**

Cloud computing forms the backbone of modern ubiquitous computing services that we utilize on a daily basis across our many smart and connected devices. Today, general-purpose chat-bots, social media, online gaming, recommendation engines, and billions of Internet-of-Things (IoT) devices rely heavily on cloud computing platforms. These platforms consist of data centers that can have hundreds of thousands of compute servers, as well as extensive networking and storage support to meet the growing performance needs of contemporary cloud applications. Over time, these data centers have become one of the largest energy consumers in the world, consuming up to 2% of the global energy supply, with experts estimating a rise to 13% by 2030. In the past, data center energy consumption was simply considered a cost burden to be minimized to increase profits for providers. However, with the increasing concern about climate change, and the rising CO2 emissions and water use associated with energy production and data center operation, data centers are now seen as one of the biggest problems in achieving the goal of limiting global warming. In this talk, I will present my vision of how we can hope to achieve environmentally sustainable cloud computing. I will discuss the evolution of cloud computing, promising green computing approaches that are emerging, and the difficult open problems that must be addressed to meet climate goals in the future.

### **SPEAKER BIOSKETCH**

**Dr. Sudeep Pasricha** is the Aram and Helga Budak Endowed Professor in the Department of Electrical and Computer Engineering, the Department of Computer Science, and the Department of Systems Engineering at Colorado State University. He

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is Director of the Embedded, High Performance, and Intelligent Computing (EPIC) Laboratory and the Chair of Computer Engineering. He received the B.E. degree in Electronics and Communication Engineering from Delhi Institute of Technology, India, in 2000, and his Ph.D. in Computer Science from the University of California, Irvine in 2008. He joined Colorado State University (CSU) in 2008. Prior to joining CSU, he spent several years working in STMicroelectronics and Conexant Inc. His research focuses on the design and application of innovative software algorithms (particularly AI and machine learning), hardware architectures, and hardware-software co-design techniques for energy-efficient, fault-tolerant, real-time, and secure computing. He has co-authored seven books, multiple patents, and published more than 300 research articles in peer-reviewed journals and conferences, workshops, and books. His research has been funded by various sponsors including NSF, SRC, AFOSR, DOE, ORNL, DoD, Fiat-Chrysler, HPE, and NASA. He has served as General Chair and Program Committee Chair for multiple IEEE and ACM conferences, and also served in the Editorial board of multiple IEEE and ACM journals. He has received 17 Best Paper Awards and Nominations at various IEEE and ACM conferences. Other notable awards include: 2024 IEEE CEDA Distinguished Lecturer, 2024 ECE Excellence in Teaching Award, 2022 ACM Distinguished Speaker, 2019 George T. Abell Outstanding Research Faculty Award, the 2016-2018 University Distinguished Monfort Professorship, 2016-2019 Walter Scott Jr. College of Engineering Rockwell-Anderson Professorship, 2018 IEEE-CS/TCVLSI mid-career research Achievement Award, the 2015 IEEE/TCSC Award for Excellence for a mid-career researcher, the 2014 George T. Abell Outstanding Mid-career Faculty Award, and the 2013 AFOSR Young Investigator Award. For professional service, he has received the 2019 ACM SIGDA Distinguished Service Award, the 2015 ACM SIGDA Service Award, and the 2012 ACM SIGDA Technical Leadership Award. He is a Fellow of the IEEE, Fellow of AAIA, Fellow of AIIA, Distinguished Member of the ACM, an IEEE CEDA Distinguished Lecturer, and an ACM Distinguished Speaker.