

EduPar-22 Keynote

“Crosscutting Themes in Computer Science: Where Does PDC Education Fit?”

Rajendra K. Raj, Rochester Institute of Technology

Abstract

Since 1968, ACM and IEEE Computer Society have jointly led the development of curricular guidelines in various computing disciplines, starting with Computer Science (CS). The last major release of the undergraduate CS Curriculum Guidelines (CS2013) recognized 18 knowledge areas underpinning the discipline; the next decennial release is also likely to have the same number of knowledge areas. Viewing these knowledge areas as distinct silos does disservice to their interconnected nature, especially as crosscutting or recurring themes run across them and help to unify fundamental concepts in the CS discipline.

In this talk, I will discuss crosscutting themes as providing an orthogonal view of the CS discipline, a view girded by knowledge and experience gained over the past 50 years. Providing explicit instruction in the presence and variety of crosscutting themes in CS will help students see each area not just in a silo of insular ideas, but also as part of the ethos of the discipline. I will use examples from the different knowledge areas to show where Parallel and Distributed Computing could fit into CS.

Biography

Rajendra K. Raj is a Professor of Computer Science at Rochester Institute of Technology. His research focuses on the nexus of distributed systems, data science, and cybersecurity, as applied to critical infrastructure protection. As a pre-doctoral research assistant, he worked on two early distributed object-based systems, Eden and Emerald, at the University of Washington. Later, as a software developer, manager, and architect, at a New York City financial services company, Dr. Raj put this distributed systems background into practical use by designing, implementing, and deploying high-performance private-cloud infrastructures that supported globally distributed financial applications.

In recent years, Dr. Raj has been interested in degree program development, quality, and accreditation across computing disciplines, including computer science, cybersecurity, data science, and information technology. He serves as the 2021-22 Chair of ABET's Computing Accreditation Commission (CAC). Previously, from 2016 to 2018, he chaired CAC's Criteria Committee, which substantially revamped ABET's accreditation criteria for computing programs, and created new accreditation criteria for cybersecurity. Dr. Raj currently serves as the IEEE-Computer Society Co-Chair of the Joint Task Force of the ACM/IEEE-Computer Society/AAAI, which is developing the decennial update to the Computer Science Curricular Guidelines (csed.acm.org).