S. N. Bose National Centre for Basic Sciences
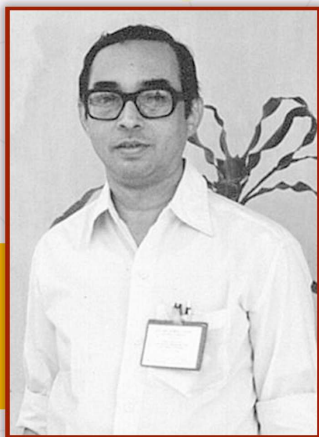
17th C K MAJUMDAR MEMORIAL LECTURE

Date	Time	Venue
17th January 2025	04:00 PM	Silver Jubilee Hall

TITLE

How to Keep the Cloud Running: Systematic Concurrency Exploration for Distributed Services

ABSTRACT

Large-scale distributed services lie at the core of much of our digital infrastructure. These systems are complex, geographically distributed, and require many subtle algorithms to coordinate and work correctly.

In this talk, I will outline a number of techniques that can help verify correctness properties of these large systems, based on systematic exploration of concurrency. While traditionally verification focused on safety and liveness properties of these systems, I will discuss how we can also reason about performance and availability. Along the way, I will draw some analogies between the study of particles in physics and the techniques that we use to analyze the behavior of distributed systems.

SPEAKER

Rupak Majumdar
Max Planck Institute for Software Systems

Rupak Majumdar is a Scientific Director at the Max Planck Institute for Software Systems. His research interests are in the verification and control of reactive, real-time, hybrid, and probabilistic systems, software verification and programming languages, logic, and automata theory. Dr. Majumdar received the President's Gold Medal from IIT Kanpur, the Leon O. Chua award from UC Berkeley, an NSF CAREER award, a Sloan Foundation Fellowship, an ERC Synergy award, a Distinguished Alumnus Award from IIT Kanpur, "Most Influential Paper" awards from PLDI and POPL, and several best paper awards. He received the B.Tech. degree in Computer Science from the Indian Institute of Technology at Kanpur and the Ph.D. degree in Computer Science from the University of California at Berkeley.

visit us : bose.res.in