Special Issue

Advances in Scalability of Queueing Models for Large-Scale Complex Systems

Message from the Guest Editors

Queueing systems are integral to various service sectors like communication, transportation, and manufacturing. These systems are analyzed using queueing theory, which focuses on understanding delays experienced by users, a key performance measure. Service providers aim to minimize delays while keeping resource use profitable. For over a century, researchers from engineering, mathematics, and operations research have developed numerous models, ranging from theoretical to computational approaches. Despite their success in small systems, a major limitation of traditional models is their lack of scalability to large, complex systems. When faced with large systems, approximations or simulations are often used, but they oversimplify the system, leading to less accurate results. The Special Issue invites researchers to explore non-conventional or extended queueing models that are scalable and accurate, addressing the limitations of current approaches. Advancing scalable models for large systems is a crucial step forward in queueing theory.

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The journal *Mathematics* publishes high-quality, refereed papers that treat both pure and applied mathematics. The journal highlights articles devoted to the mathematical treatment of questions arising in physics, chemistry, biology, statistics, finance, computer science, engineering and sociology, particularly those that stress analytical/algebraic aspects and novel problems and their solutions. One of the missions of the journal is to serve mathematicians and scientists through the prompt publication of significant advances in any branch of science and technology, and to provide a forum for the discussion of new scientific developments.

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