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## Performance Analysis of IoT-based Healthcare Heterogeneous Delay-sensitive Multi-Server Priority Queuing System

### Abstract:



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Previous studies have considered scheduling schemes for Internet of Things (IoT)-based healthcare systems like First Come First Served (FCFS), and Shortest Job First (SJF). However, these scheduling schemes have limitations that range from large requests starving short requests, process starvation that results in long time to complete if short processes are continuously added, and performing poorly under overloaded conditions. To address the mentioned challenges, this paper proposes an analytical model of a prioritized scheme that provides service differentiation in terms of delay sensitive packets receiving service before delay tolerant packets and also in terms of packet size with the short packets being serviced before large packets. The numerical results obtained from the derived models show that the prioritized scheme offers better performance than FCFS and SJF scheduling schemes for both short and large packets, except the shortest short packets that perform better under SJF than the prioritized scheme in terms of mean slowdown metric. It is also observed that the prioritized scheme performs better than FCFS and SJF for all considered large packets and the difference in performance is more pronounced for the shortest large packets. It is further observed that reduction in packet thresholds leads to decrease in mean slowdown and the decrease is more pronounced for the short packets with larger sizes and large packets with shorter sizes.

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**Time:**

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