Table 4. Comparison of Prioritized GA-PSO with GA and Round-Robin

| Parameter | with GA | with Round-Robin | Impact |
|---|---|---|---|
| Average CPU Utilization | +0.54% | +12.51% | Improvement |
| Execution Delay | -8.73% | -3.90% | Improvement |
| Average Waiting Time | -22.65% | -21.99% | Improvement |
| Energy Consumption | -17.81% | -1.68% | Improvement |

From the result analysis, it is clear that the proposed algorithm allocates the resources to tasks in fog environment in efficient and effective manner, so as to minimize the delay, waiting time and energy consumption and maximize the CPU utilization. Hence, the proposed algorithm achieves the objective of allocating best and suitable resources to the client requests immediately in optimal and efficient way.

## 5. Conclusion

Fog computing is an emerging paradigm that offers storage and computation facility resources at the proximity of end devices. With the increasing prevalence of fog computing, the resource allocation to end user requests has become a relevant research issue. It aims for achieving the minimized resource wastage, execution delay, waiting time as well to save energy. Thus, a hybrid P-GA-PSO resource allocation algorithm has been proposed. The quantitative results of proposed algorithm were compared with Round-Robin and GA algorithms. The task allocation done using proposed algorithm showed reduced delay, waiting time and energy consumption by 8.73%, 22.65% and 17.81% respectively as well as improved resource utilization by 0.54% in comparison to GA. Similarly, the proposed algorithm when compared with Round Robin algorithm showed reduced delay, waiting time and energy consumption by 3.90%, 21.99% and 1.68% respectively as well as improving resource utilization by 12.51%. Further, a quantitative analysis presented in this work showed improved performance of proposed P-GA-PSO.

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