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An Enhanced Job Scheduling Policy for the Cloud Environment to Achieve Optimal Solution for Low Task Low Resource Classification

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Abstract: *Cloud computing assumes an imperative job in all fields of the present business. The key test for the referenced server ranches is to give an ideal scheduling approach to process the computational employments in the cloud. Many scheduling arrangements were presented and sent by the current approaches so as to assemble an ideal cloud condition. The current methodologies of the heuristic calculations, for example, meta-heuristic and hyper-heuristic methodologies were most every now and again utilized planning calculations for as far back as years. These methodologies function admirably just in the restricted sorts of tasks and resources in the cloud environment. In the proposed framework, an optimal task strategies have been proposed by improving the hyper-heuristic methodology for low task and low resources in the cloud environment. The consequences of the proposed methodology are contrasted and the current methodologies and the exhibition assessment of the proposed methodology is additionally done. Subsequently, the proposed improved hyper-heuristic methodology performs well in the cloud environment.*

Key words: *Cloud Environment, hyper-heuristic, ideal cloud condition, low task, low resource*

INTRODUCTION AND RELATED WORKS

An enormous number of the issues, for instance, job scheduling issues related to looking and issues related to upgrade are settled by the meta-heuristic and hyper-heuristic approaches [1]. Heuristics ID and creation in the improvement issues are comprehended by Hyper-heuristic procedure [2]. The sufficiency of meta-heuristic strategies for clarifying the activity booking issues in the preparing condition are inspected [3]. Underground creepy crawly area improvement estimation was used to make work booking game plan for the system condition [4].

Traditional creepy crawly settlement computation got together with the League title and Bat figuring to understand the issues in the adjusting of the cloud condition [5]. To convey perfect response for work process arranging issues in distributed computing and the close to examination had done [6]. The examination on atom swarm streamlining was done to outline the objective work in a perfect way for the activity planning issue in the cloud condition [7]. An epic resource packing figuring named RDENP was proposed to handle the activity planning issues in the cloud condition [8]. The crossbreed estimation which is blend of inherited computation and cushy method of reasoning was used to deal with the activity booking issues in the cloud condition [9]. To restrain the movement cost on the cloud condition finish time driven hyper heuristic computation was proposed [10].

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The amalgamation of innate computation and neighborhood search count called memetic figuring was proposed to deal with the movement arranging issue in the cloud condition [11]. To convey a perfect execution evaluation system relentless Markov chain and Poisson process was solidified to make perfect plan [12].

LOW TASK LOW RESOURCES SCHEDULING POLICY

The term defined as Low task should be scheduled with the Low resources. The attained experimental results are displayed in the form of values through tables and graphs. The minimal task taken for this case is 69 and minimal resources taken for this case is 08, where the maximum task is 123 and maximum resource taken for this case is 51.

EVALUATION RESULTS AND DISCUSSIONS

The table 1 represents the Hybrid Invasive Weed Optimization (HIWO) result for this case. The 9 set of tasks ranging between 123 to 69 and 9 set of resources ranging between 51 to 08 have been used for this high task high resource case. The maximum Makespan 9.49248 for 123 tasks and minimum Makespan 1.592105 for 69 tasks are resulted for this low task and low resource case by Hybrid Invasive Weed Optimization. The detailed result is shown in the table 1 and figure 1.

Table 1: HIWO

Number of Tasks	Number of Resources	Makespan	Processing Speed in Cumulative Percentage
123	51	9.49248	19.16363
116	36	8.3421	36.00484
109	28	7.49624	51.13842
101	25	6.49812	64.25697
92	18	5.5	75.36049
87	16	4.5188	84.48314
81	13	3.50376	91.55661
76	15	2.59023	96.78582
69	08	1.592105	100

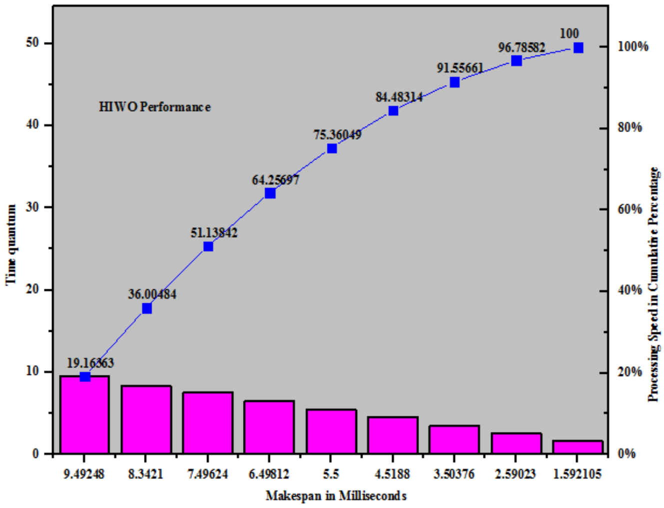

Figure 1: Makespan of HIWO for Low Task Low Resource

The table 2 represents the Hyper-Heuristic scheduling algorithm (HHSA) result for this case. The same range of tasks and resources will be used by all existing algorithms for the case low task low resource. The maximum makespan 9.47402 for 123 tasks and minimum makespan 1.405612 for 69 tasks are resulted for this low task and low resource case by Hyper-Heuristic scheduling algorithm. The detailed result is shown in the table 2 and figure 2.

Table 2: HHSA

Number of Tasks	Number of Resources	Makespan	Processing Speed in Cumulative Percentage
123	51	9.47402	19.35589
116	36	8.48498	36.69112
109	28	7.49166	51.99696
101	25	6.47702	65.22983
92	18	5.43501	76.33382
87	16	4.37472	85.27159
81	13	3.39054	92.19863
76	15	2.41288	97.12827
69	08	1.405612	100

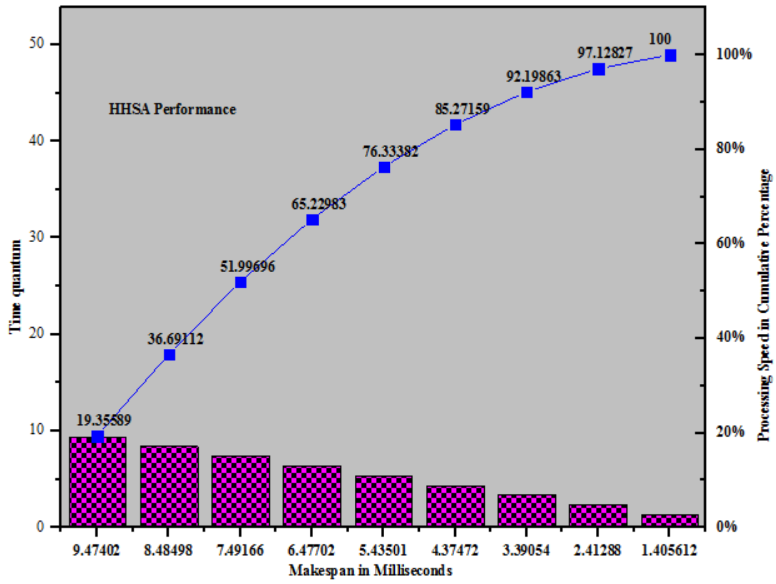

Figure 2: Makespan of HHSA for Low Task Low Resource

The table 3 represents the Completion Time Driven Hyper-Heuristic approach (CTDHH) result for this case. The same range of tasks and resources will be used by all existing algorithms for the case low task low resource. The maximum makespan 9.44949 for 123 tasks and minimum makespan 1.684261 for 69 tasks are resulted for this low task and low resource case by Hyper-Heuristic scheduling algorithm. The detailed result is shown in the table 3 and figure 4.

Table 3: CTDHH

Number of Tasks	Number of Resources	Makespan	Processing Speed in Cumulative Percentage
123	51	9.44949	18.9934
116	36	8.44456	35.96689
109	28	7.50527	51.05242
101	25	6.52288	64.16335
92	18	5.51678	75.25204
87	16	4.52754	84.35235
81	13	3.54477	91.47731
76	15	2.5559	96.61465
69	08	1.684261	100

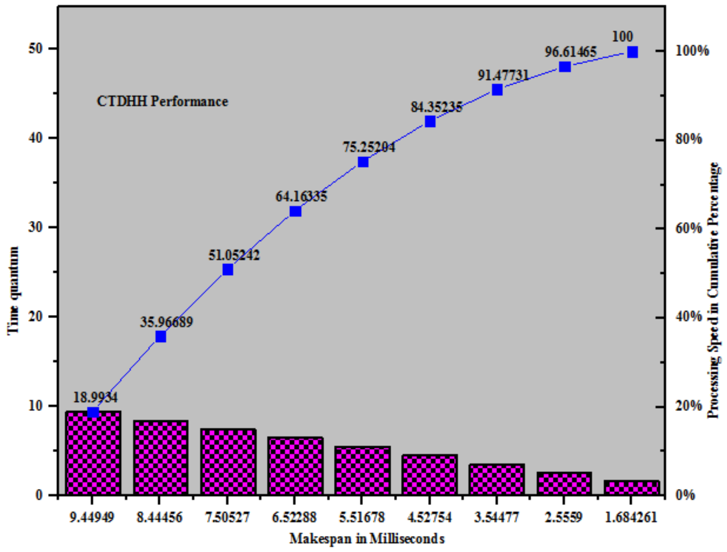

Figure 3: Makespan of CTDHH for Low Task Low Resource

The table 4 represents the Invasive Weed optimization (IWO) result for this case. The same range of tasks and resources will be used by all existing algorithms for the case low task low resource. The maximum makespan 9.46378 for 123 tasks and minimum makespan 1.65009 for 69 tasks are resulted for this low task and low resource case by Hyper-Heuristic scheduling algorithm. The detailed result is shown in the table 4 and figure 4.

Table 4: IWO

Number of Tasks	**Number of Resources**	**Makespan**	**Processing Speed in Cumulative Percentage**
123	51	9.46378	19.019
116	36	8.47747	36.05586
109	28	7.47133	51.07071
101	25	6.5056	64.14477
92	18	5.51548	75.22902
87	16	4.56032	84.39373
81	13	3.54347	91.5149
76	15	2.57206	96.68388
69	08	1.65009	100

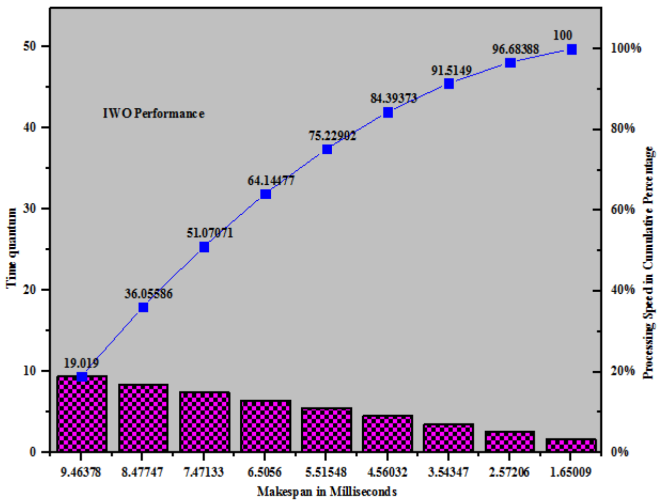

Figure 4: Makespan of IWO for Low Task Low Resource

The table 5 represents the Merge-the-Minimal-Queue Scheduling (MMQS) result for this case. The same range of tasks and resources will be used by this proposed approach, which was used by all the existing algorithms for the case low task low resource. This shows the comparison between the proposed and existing algorithms. The maximum makespan 9.40745 for 123 tasks and minimum makespan 1.56318 for 69 tasks are resulted for this Low task and Low resource case by Enhanced Hyper-Heuristic scheduling algorithm. The detailed result is shown in the table 5 and figure 5.

Table 5: MMQS

Number of Tasks	Number of Resources	Makespan	Processing Speed in Cumulative Percentage
123	51	9.40745	19.21973
116	36	8.40356	36.38848
109	28	7.49419	51.69935
101	25	6.32176	64.61491
92	18	5.47843	75.80753
87	16	4.48732	84.97527
81	13	3.43265	91.98828
76	15	2.3583	96.80637
69	08	1.56318	100

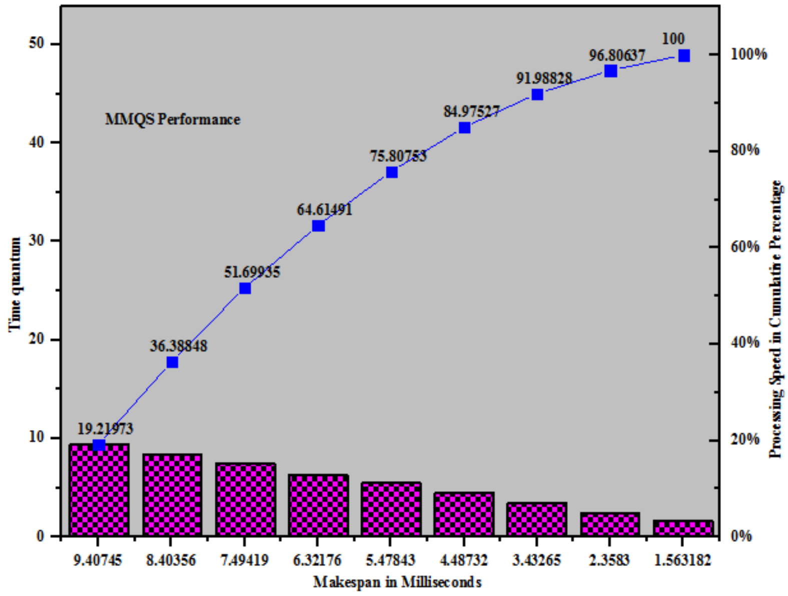

Figure 5: Makespan of MMQS for Low Task Low Resource

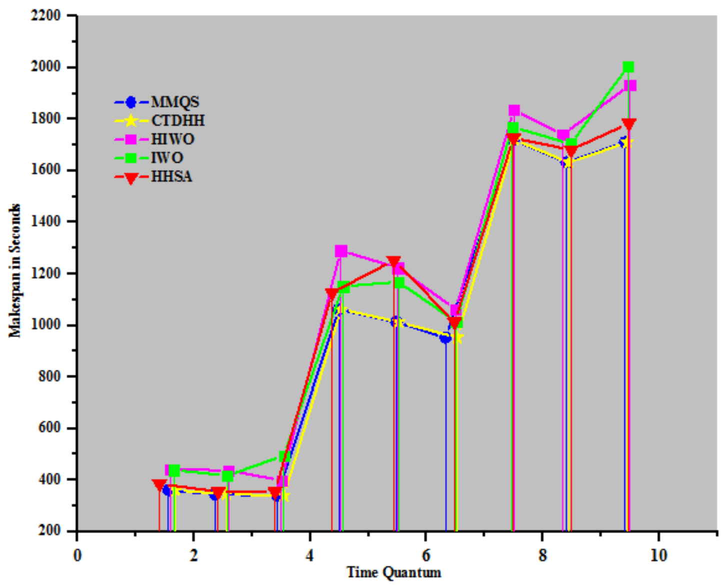

Figure 6: Proposed approach vs Existing approaches

The experimental results of the existing systems IWO, CTDHH, HHSA and HIWO for scheduling the Low task with Low resources are mentioned above along with the proposed approach MMQS results in Figure 6. It is clearly noted that the proposed approach performs well by resulting in minimum Makespan. For an instance, for 123 tasks the makespan produced by the proposed approach MMQS is 9.40745 as the existing systems HIWO produced 9.49248, HHSA produced 9.47402, CTDHH produced 9.44949 and IWO produced 9.46378.

CONCLUSION

The standard objective of this assessment work is to convey the perfect response for the activity booking issues in the cloud arrange. There are four classes in the advantages and the assignments, for instance, low task high resource, high endeavor low resource, low task low resource and high task high resource. The proposed strategy developed a computation named UBS calculation to make the perfect plan in the cloud condition. Standing out from the present approach proposed approach performs well and makes the perfect response for the cloud organize. Further it is needed to make perfect response for all the sort of endeavors and resources by working up a viable computation for entire disseminated registering.

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