

# Evaluating Distance Based Pareto Genetic Algorithm for Task-Offloading in Edge-Fog-Cloud Systems - Configuration Manual

MSc Research Project Cloud Computing

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## Evaluating Distance Based Pareto Genetic Algorithm for Task-Offloading in Edge-Fog-Cloud Systems -Configuration Manual

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#### 1 Introduction

The steps to replicate the implementation of Distance Based Pareto Genetic Algorithm are as follows.

#### 2 Software Requirements

- Java version 1.8 or newer Oracle Corporation (2023)
- Eclipse Version: 2023-06 (4.28.0) Eclipse Foundation (2023)

### **3** Project Setup and Execution

• Go to the repository page https://github.com/Murali1700/DBPGA.git click on the code and copy the HTTPS link. This repo was created using the fogworkflowsim repo Liu et al. (2019).

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• Select 'Projects from Git (with smart import) -> Clone Uri'

Paste the copied repository link in the '**URI**' and click on '**Next**'. It will clone the repository and show the files.

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Connection			
Protocol: https			
Port:			
Authentication			
User:			
Password:			
Store in Secure Store			
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• Expand 'src -> org.fog.test.perfeval -> MainUI.java' and run the 'MainUI.java'. It should open the UI for simulation.

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• Select Offloading Strategy as 'Simple', Select GA and DBPGA in Scheduling Algorithm. Click 'Algorithms Setting - > GA' and enter the below configuration.

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• Now click on '**Compare**' and it will run the simulation and you get the result in the console.

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	3	SUCCESS	f–0	1	10.38	25.44	35.82	1	4.98	20,
	4	SUCCESS	f-0	1	10.35	35.82	46.18	1	4.97	20,
	5	SUCCESS	f-0	1	8.31	46.18	54.49	2	3.99	0,
	6	SUCCESS	f-0	1	8.13	54.49	62.62	2	3.90	1,0,
	9	SUCCESS	f-0	1	8.15	62.62	70.76	2	3.91	2,
	7	SUCCESS	f-0	1	8.07	70.76	78.83	2	3.87	3,0,
	8	SUCCESS	f–0	1	8.09	78.83	86.92	2	3.88	3,1,
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ļ.	15	SUCCESS	f-0	1	8.22	122.31	130.53	5	3.94	2,11,
5	16	SUCCESS	f-0	1	8.38	130.53	138.91	5	4.02	3,11,
5	17	SUCCESS	m-0-0	2	1.48	138.91	140.39	6	0.00	15,14,13,12
7	18	SUCCESS	cloud	0	1.50	140.39	141.89	7	1.44	16,
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### 4 Result

The simulation was run for all the datasets with all number of rows.



Figure 1: DBPGA vs GA for Montage



Figure 2: DBPGA vs GA for Cybershake



Figure 3: DBPGA vs GA for Epigenomics



Figure 4: DBPGA vs GA for Inspiral



Figure 5: DBPGA vs GA for Sipht



Figure 6: DBPGA vs GA plotted for all datasets

#### References

- Eclipse Foundation (2023). Eclipse ide 2023-06 r, https://www.eclipse.org/ downloads/packages/release/2023-06/r.
- Liu, X., Fan, L., Xu, J., Li, X., Gong, L., Grundy, J. and Yang, Y. (2019). Fogworkflowsim: An automated simulation toolkit for workflow performance evaluation in fog computing, 2019 34th IEEE/ACM International Conference on Automated Software Engineering (ASE), pp. 1114–1117.
- Oracle Corporation (2023). Java se 8 archive downloads, https://www.oracle.com/ java/technologies/javase/javase8-archive-downloads.html. Accessed on [date of access].