DisChoco 2.0 manual
version 0.1

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Abstract

This is the first version the manual usage of DisChoco.
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Introduction
Chapter 1

How to use DisChoco for your experiments

After downloading the DisChoco.zip project, unzip it to a folder named DisChoco. You will have a folder like that in Figure 1.1.
Figure 1.1: DisChoco 2.0 contents
1.1 Generating benchmarks

You can follow Figures 1.2-1.9.
Figure 1.2: DisChoco 2.0 contents
You can select your benchmark from the Generators Menu, e.g., Distributed Sensor Networks.

**Figure 1.3:** DisChoco 2.0 contents
Now, you can configure the generator by choosing your parameters. Then, **Browse** to choose the directory where you want to store generated problems.

**Figure 1.4:** DisChoco 2.0 contents
You can create a folder where the instances will be generated, e.g., WSN.

Figure 1.5: DisChoco 2.0 contents
Now, choose the created folder (i.e., WSN) to be your experiments folder.

Figure 1.6: DisChoco 2.0 contents
The path where the instances will be generated is indicated by the console.

Configure your generator.

Generate your benchmark.

Figure 1.7: DisChoco 2.0 contents
The benchmark is generated successfully, you can find the generated files in specified directory (e.g., WSN).

Figure 1.8: DisChoco 2.0 contents
You can check the experiments' folder (e.g., WSN). There is the configuration file (e.g., experiments_2.xml) of your benchmark instances; each benchmark has a specific organization/hierarchy. This file is important, once it is configured, it will be used to run experiments.

Figure 1.9: DisChoco 2.0 contents

The generated files are within a specific subfolder (e.g., Kc_2-Kv_2).

You can check the experiments' folder (e.g., WSN). There is the configuration file (e.g., experiments_2.xml) of your benchmark instances; each benchmark has a specific organization/hierarchy. This file is important, once it is configured, it will be used to run experiments.

Figure 1.10: DisChoco 2.0 contents

This is the configuration file (e.g., experiments_2.xml).
1.2 Configure experimentations

You can follow Figures 1.11-1.18.
After generating our benchmark, we need now to configure the configuration file. To this end, we need to select the Configure experimentation submenu from the Experiments Menu.

Figure 1.11: DisChoco 2.0 contents
Load the configuration file (i.e., `experiments_2.xml`) to configure it. By (i) adding a list of algorithms to compare and (ii) a list of communication environments to simulate.

**Figure 1.12: DisChoco 2.0 contents**

Select the configuration file (i.e., `experiments_2.xml`) from the experiments directory (i.e., WSN).

**Figure 1.13: DisChoco 2.0 contents**
Once you uploaded the configuration file, you can add a list of algorithms to compare on a set of communication environments.

**Figure 1.14:** DisChoco 2.0 contents

The name of the algorithm.  
The initial agent ordering.  
Remove an algorithm from the list.

Add a new algorithm to the list.

**Figure 1.15:** DisChoco 2.0 contents
Add a new communication environment to the list.

Remove an communication environment from the list.

The name of the communication environment.

The type of the channel: FIFO or not FIFO.

The number of execution for each given instance.

The cutoff in \( n_{CCC} \).

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**Figure 1.16:** DisChoco 2.0 contents

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You should save your modifications on the configuration files by clicking on “Merge” button.

**Figure 1.17:** DisChoco 2.0 contents
After saving your configurations you will get the following message:

Figure 1.18: DisChoco 2.0 contents
1.3 Launch experimentations

You can follow Figures 1.19-1.27.
Now, after configuring the experimentations we can launch them from terminal or from the GUI. To launch experiments from the GUI, we have to load experiments file by chosen the menu item Load experiments file from the Experiments Menu.

To run the experiments click on the “Run” button.

**Figure 1.19:** DisChoco 2.0 contents

**Figure 1.20:** DisChoco 2.0 contents
The console will print the results of your experiments.

Figure 1.21: DisChoco 2.0 contents

The console is printing the obtained results.

Figure 1.22: DisChoco 2.0 contents
DisChoco creates with the experiments directory (e.g., WSN) a folder where all results will be stored (e.g., Results).

**Figure 1.23**: DisChoco 2.0 contents

Progressively, the files will be generated.

**Figure 1.24**: DisChoco 2.0 contents
Each benchmark has its own hierarchical organization. DisChoco organizes all the obtained results in different folders.

**Figure 1.25:** DisChoco 2.0 contents
When the experiment ends, DisChoco announce it by a message in the console: "Congratulations! your experiments were done successfully!"

**Figure 1.26: DisChoco 2.0 contents**
The results and plots are all generated. DisChoco generates a shell script (i.e., plot.sh) and a gnuplot script (i.e., myScript.gp) and the (.eps) figures.

Figure 1.27: DisChoco 2.0 contents
1.4 Plotting results using DisChoco

You can follow Figures 1.28-1.45.
**Figure 1.28**: DisChoco 2.0 contents

<table>
<thead>
<tr>
<th>Algorithm</th>
<th>Agent/Observer</th>
<th>Type of communication</th>
<th>Type of channel</th>
<th>Min Uniform Random Cost (C(C))</th>
<th>Max Uniform Random Cost (C(C))</th>
<th>Number ofnickname</th>
<th>Mean MCCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>MC-match</td>
<td>NotDomainObserver</td>
<td>Post_Communication</td>
<td>280</td>
<td>1,280</td>
<td>1,280</td>
<td>1,280</td>
<td>1,280</td>
</tr>
</tbody>
</table>

Complemented user experiments were done successfully.
Figure 1.29: DisChoco 2.0 contents

Figure 1.30: DisChoco 2.0 contents
Figure 1.31: DisChoco 2.0 contents

Figure 1.32: DisChoco 2.0 contents
Figure 1.33: DisChoco 2.0 contents

Figure 1.34: DisChoco 2.0 contents
Figure 1.35: DisChoco 2.0 contents

Figure 1.36: DisChoco 2.0 contents
Figure 1.37: DisChoco 2.0 contents

Figure 1.38: DisChoco 2.0 contents
Figure 1.39: DisChoco 2.0 contents

Figure 1.40: DisChoco 2.0 contents
Figure 1.41: DisChoco 2.0 contents

Figure 1.42: DisChoco 2.0 contents
**Figure 1.43:** DisChoco 2.0 contents

**Figure 1.44:** DisChoco 2.0 contents
<table>
<thead>
<tr>
<th>P</th>
<th>ATE Time</th>
<th>ATE irg</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1</td>
<td>1099</td>
<td>366</td>
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<td>371</td>
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<td>1027</td>
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<tr>
<td>1.5</td>
<td>213</td>
<td>342</td>
</tr>
</tbody>
</table>

Figure 1.45: DisChoco 2.0 contents
Chapter 2

How to use DisChoco for solving a problem

You can follow figures 1.27 and 1.28.
Conclusion