

DICE-FG Configuration Files

An example of XML configuration file is shown in the following screenshot

```
<?xml version="1.0" encoding="utf-8"?>
<DICE-FG>
  <verbose>1</verbose>
  <metric>
    <method>est-ci</method>
    <parameter name='startTime' value='1412773199998' />
    <parameter name='endTime' value='1412776799998' />
    <parameter name='Flags' value='numServers=1, warmUp=0' />
    <parameter name='ResourceDataFile' value='.\tests\hmr\hmr-resdata.json' />
    <parameter name='ResourceClassList' value='.\tests\hmr\hmr-resclasses.json' />
    <parameter name='GraphDataFile' value='.\tests\hmr\hmr-graphdata.json' />
    <parameter name='GraphClassList' value='.\tests\hmr\hmr-graphclasses.json' />
    <parameter name='ResourceList' value='.\tests\hmr\hmr-resources.json' />
    <parameter name='ClassName' value='class1' />
    <parameter name='ResourceName' value='resource2' />
    <parameter name='MetricName' value='tputAvg' />
    <parameter name='Confidence' value='mean' />
    <parameter name='Technology' value='agnostic' />
    <parameter name='TechnologyInfo' value='' />
    <parameter name='UMLParam' value='$redT' />
    <parameter name='UMLParamType' value='hostDemand' />
    <parameter name='UMLInput' value='.\tests\hmr\model.uml' />
    <parameter name='UMLOutput' value='.\tests\hmr\model.out' />
  </metric>
</DICE-FG>
```

The above example relies on several notions:

- *ResourceDataFile* contains the measurements that are used for estimation or fitting, collected at individual resources that compose the system.
- *GraphDataFile* contains the measurements that are used for estimation or fitting, collected at across a graph (network) of resources that compose the system. For example, the end-to-end response time is a property that typically depends on the traversal of multiple resources. This kind of data is therefore stored in this file, as opposed to *ResourceDataFile*, in order to add graph information about the network that defines the metrics.
- *ClassList* is a list of text labels that assign names to different classes of jobs for which properties have been measured separately (e.g., for a NoSQL DB response times have been distinguished in *ResourceDataFile* between read operations and write operations).
- *ResourceList* lists the resources at which the measurements have been collected.
- *ClassName* and *ResourceName* specify which class and which resource is associated to the UML parameter to be estimated, e.g., “write operations” at “database on VM 1”.

Table 1 describes in details the parameters presented in the above XML file and their allowed values.

Table 1: Input parameters of DICE-FG tool

Name	Description
<i>verbose</i>	Controls the verbose level of the tool, allowed values: <ul style="list-style-type: none">• 0: silent• 1: normal• 2: debug
<i>method</i>	Algorithm to be used for estimation or fitting.

	<p>Supported estimation algorithms are:</p> <ul style="list-style-type: none"> • est-ci: inference of average execution times from response time data. The method requires the logging for <i>all</i> jobs, as opposed to periodic sampling. • est-ubr: inference of average execution times from samples of average throughputs and average utilization in each sampling window. • est-qmle: inference of average execution times from queue-length data. • est-qbmr: inference of average memory usage from queue-length and aggregate memory data. • est-sys-jobs: inference of the mean population of jobs in the system • est-sys-extdelay: inference of the mean external delay between submission of successive jobs to the system <p>Supported fitting algorithms are:</p> <ul style="list-style-type: none"> • fit-norm: fit data to a normal distribution. • fit-gamma: fit data to a gamma distribution. • fit-exp: fit data to an exponential distribution. • fit-erl: fit data to an Erlang distribution. • fit-ph2: fit data to a 2-state PH distribution • fit-mmpp2: fit time series to a 2-state Markov modulated Poisson process
<i>startTime</i>	UNIX timestamp before which data is not considered
<i>endTime</i>	UNIX timestamp after which data is not considered
<i>Flags</i>	A string of text with method-specific options, e.g., “numServers=1,warmUp=0”
<i>ResourceDataFile</i>	Path to resource data provided in .mat or .json format.
<i>GraphDataFile</i>	Path to resource graph data provided in .mat or .json format.
<i>ResourceClassList</i>	Path to input class file in .mat or .json format. The list includes only classes in the <i>ResourceDataFile</i> .
<i>GraphClassList</i>	Path to input class file in .mat or .json format. The list includes only classes in the <i>GraphDataFile</i> .
<i>ClassName</i>	Class label, from those read in <i>ClassList</i> , associated to the parameter of interest.
<i>MetricName</i>	Metric label, used to indicate to DICE-FG which metric should be fitted. The parameter is not required by estimation algorithms. See the <i>Input Data Manual</i> for supported values (e.g., arvT for arrival times).
<i>ResourceList</i>	Path to input resource file in .mat or .json format.
<i>ResourceName</i>	Resource label, from those read in <i>ClassList</i> , associated to the parameter of interest.
<i>Confidence</i>	<p>Supported values:</p> <ul style="list-style-type: none"> • none: the returned value does not make use of confidence intervals. • upper: the returned value of the parameters is taken at the upper end of the confidence interval (95% significance). • lower: the returned value of the parameters is taken at the lower end of the confidence interval (95% significance).
<i>Technology</i>	<p>Supported values:</p> <ul style="list-style-type: none"> • agnostic: no technology-specific information is provided
<i>TechnologyInfo</i>	Path to a JSON file with technology-specific information.
<i>UMLParam</i>	Context parameter in the UML file to be estimated or fitted.
<i>UMLParamType</i>	<p>Supported values:</p> <ul style="list-style-type: none"> • hostDemand: UML MARTE tag for execution time
<i>UMLInput</i>	Path to input UML file.
<i>UMLOutput</i>	Path to output UML file. If this matches UMLInput, then the input file is overwritten.