

Detecting Concurrency Errors with JPF

<http://d3s.mff.cuni.cz>

Department of
Distributed and
Dependable
Systems



Pavel Parízek



CHARLES UNIVERSITY IN PRAGUE

faculty of mathematics and physics

Configurations

- Default JPF: exhaustive search (DFS)
 - Threads scheduled in the order given by their IDs

- Random search order

```
+cg.randomize_choices=VAR_SEED
```

- Preemption bounding

```
+vm.scheduler_factory.class=gov.nasa.jpf  
  .vm.ContextBoundingSchedulerFactory  
+cg.max_number_of_preemptions=<N>
```

Configurations

- **Breadth first search (BFS)**

```
+search.class=gov.nasa.jpf.search  
  .heuristic.BFSHeuristic  
+search.heuristic.queue_limit=-1
```

- **Maximize thread preemption**

```
+search.class=gov.nasa.jpf.search  
  .heuristic.Interleaving
```

- **Minimize preemption**

```
+search.class=gov.nasa.jpf.search  
  .heuristic.MinimizePreemption
```

- **Maximize blocked threads**

```
+search.class=gov.nasa.jpf.search  
  .heuristic.MostBlocked
```