

Online appendix for the paper  
*Using Sequential Runtime Distributions for the  
 Parallel Speedup Prediction of SAT Local Search*  
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## Appendix A

In this paper we consider a set of 369 instances from the SAT'11 competition (random category). Since our objective is to measure the performance improvement as the number of cores increases, we filtered out too easy and too hard instances by running Sparrow using 16 cores and used a subset of instances whose average runtime across 10 independent executions were between 2 and 3 minutes. This corresponds to about 30 minutes (average time) for the sequential algorithm. The following list contains the final set of 10 instances (denoted Rand-[1 to 10]) in this paper):

- Rand-1: unif-k3-r4.2-v30000-c126000-S1854039067-041-UNKNOWN
- Rand-2: unif-k3-r4.2-v35000-c147000-S970100151-015-UNKNOWN
- Rand-3: unif-k3-r4.2-v40000-c168000-S1184456903-078-UNKNOWN
- Rand-4: unif-k3-r4.2-v50000-c210000-S1170024351-015-UNKNOWN
- Rand-5: unif-k3-r4.2-v50000-c210000-S537193780-078-UNKNOWN
- Rand-6: unif-k3-r4.2-v50000-c210000-S957916968-041-UNKNOWN
- Rand-7: unif-k5-r20-v2000-c40000-S922811046-076-UNKNOWN
- Rand-8: unif-k5-r20-v1500-c30000-S976428817-077-UNKNOWN
- Rand-9: unif-k5-r20-v1250-c25000-S573815729-001-UNKNOWN
- Rand-10: unif-k5-r20-v2000-c40000-S1264065752-051-UNKNOWN

The second problem family consists of instances designed, either automatically or manually, to be difficult for SAT solvers. In particular we focus our attention on a set of 149 known SAT instances from the SAT'11 competition (crafted category). Again, we filtered out too easy and too hard instances by running in parallel 16 copies of Sparrow and selecting a subset of instances whose runtime across 10 independent executions were

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between 1 and 3 minutes. The following list includes the final set of 9 instances used in this paper (denoted crafted-[1 to 9] in this paper):

- crafted-1: srhd-sgi-m37-q505.75-n35-p15-s48276711
- crafted-2: srhd-sgi-m42-q585-n40-p15-s54275047
- crafted-3: srhd-sgi-m42-q663-n40-p15-s72490337
- crafted-4: srhd-sgi-m47-q742.5-n45-p15-s28972035
- crafted-5: em\_8\_4\_5\_fbc
- crafted-6: rbsat-v1150c84314g7
- crafted-7: rbsat-v1375c111739g4
- crafted-8: sgen3-n240-s78945233-sat
- crafted-9: sgen3-n260-s62321009-sat