

Table 1: Running CONJURE on benchmark problems.

Problem name	Models	Reference	Nb. abstract params ² and vars
Car Sequencing	128	(Gravel, Gagné, and Price 2005)	4 functions, 1 relation
Template Design	16	(Proll and Smith 1998)	2 function variables, 1 mapping msets to integers
Low Autocorellation Binary Sequences	4	(Gent and Smith 1999)	1 function
Golomb Ruler	81	(Smith, Stergiou, and Walsh 2000; Prestwich 2003)	1 set
All-interval series	8	(Choi and Lee 2002)	2 functions
Vessel loading	256	(Brown 1998)	9 functions, 1 mapping from a set
Perfect Square Placement	1024	(Cambazard and O’Sullivan 2010)	2 functions
Social Golfers	3	(Kiziltan and Hnich 2001; Hawkins, Lagoon, and Stuckey 2005)	multiset of partitions
Progressive Party	81	(Smith et al. 1995)	1 set, 1 set of functions
Schur’s Lemma	81	(Flener et al. 2002b) $\times 2$	1 partition
Traffic Lights	2	(Hower 1998)	1 set of functions mapping integers to tuples
Magic Squares	1	(Refalo 2004)	1 2-dimensional matrix
Bus Driver Scheduling	27	(Muller 1998)	1 set of sets, 1 partition
Magic Hexagon	1	Model from CSPLib 23	1 2-dimensional matrix
Langford’s Number Problem	32	(Hnich, Smith, and Walsh 2004)	1 function
Round Robin Tournament Scheduling	27	(Frisch, Jefferson, and Miguel 2004)	1 relation between 2 integers and 1 set
BIBD	16	(Petrie 2005)	1 relation between 2 unnamed types
Balanced Academic Curriculum Problem	512	(Hnich, Kiziltan, and Walsh 2002)	2 functions, 1 relations
Rack Configuration Problem	288	(Kiziltan and Hnich 2001)	7 functions, 1 mapping integers to sets
Maximum Density Still Life	1	(Smith 2006)	1 set of tuples
Word Design for DNA Computing	16	Model from CSPLib 33	1 set of functions
Warehouse Location Problem	16	(Van Hentenryck 1999)	3 functions, 1 mapping tuples to integers
Fixed Length Error Correcting Codes	16	(Frisch, Jefferson, and Miguel 2003)	2 functions, 1 mapping tuples to integers
Steel Mill	4	(Flener et al. 2002a)	3 functions, 1 from sets
N-Fractions Puzzle	16	(Frisch, Jefferson, and Miguel 2004)	1 function
Steiner Triple Systems	9	(Kiziltan and Hnich 2001; Hawkins, Lagoon, and Stuckey 2005)	1 set of sets
N-Queens Problem	4	(Hnich, Smith, and Walsh 2004) $\times 2$	1 function
Peaceably Co-existing Armies of Queens	1	(Smith, Petrie, and Gent 2004)	1 set of tuples
Maximum Clique Problem	81	(Regin 2003)	1 set, 1 set of sets
Graph Colouring	4	(Hao and Dorne 1996; Chang, Chen, and King 1997)	1 function
SONET Configuration	27	(Frisch et al. 2005b) ¹	1 mset of sets, 1 set of sets
Knapsack Problem	36	(Sellmann 2009)	2 functions, 1 set

[1] Some models in this paper have set variables, which CONJURE currently always refines.

[2] Since CONJURE operates at the problem class level, problem parameters need to be refined as well as decision variables.

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