

# The Fewer the Merrier: Pruning Preferred Operators with Novelty

Supplemental material

## **Bounding subset size**

We provide here the domain-wise coverage results comparing various configurations that bound the preferred operators subset size. These results elaborate on the results presented in Table 2 of the main submission. Rows where all compared configurations exhibit the same behavior are omitted. The column names are as follows. T stands for a selection of the top operators based on the novelty score. R stands for random selection. The rest of the notation is as in the main submission.

# Small bound, $k = 10$

Coverage	All		$\mathcal{PO}_{-3}$		$\mathcal{PO}_{-2}$		$\mathcal{PO}_{-1}$		$\mathcal{PO}_0$		$\mathcal{PO}_1$		$\mathcal{PO}_2$		$\mathcal{PO}_3$		$\mathcal{PO}_{\max}$
	$h_{\text{OB}}^{\text{FF}}$	R	T	R	T	R	T	R	T	R	T	R	T	R	T	R	R
agricola18 (20)	<b>12</b>	<b>12</b>	11	11	<b>12</b>	<b>12</b>	10	10	10	10	<b>12</b>	11.8	<b>12</b>	<b>12</b>	<b>12</b>	<b>12</b>	<b>12</b>
airport (50)	44	46	46	46	46	46	47	<b>48</b>	<b>48</b>	47	46	46	47	46	<b>48</b>	47	45
barman14 (20)	19	19	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>
childsnack14 (20)	1	1	1	1	3	3	3	3	0	0	<b>4</b>	<b>4</b>	3	3	3	3	2
data-network18 (20)	14	13	16	14	13	14.4	17	13.2	<b>19</b>	15	18	17	16	17	16	17	16
depot (22)	19	20	21	21	21	21.6	20	21	<b>22</b>	21	<b>22</b>	<b>22</b>	21	21	21	20	<b>22</b>
floortile11 (20)	7	7	7	7	7	7	<b>8</b>	<b>8</b>	<b>8</b>	<b>8</b>	7	7	6	6	6	6	7
floortile14 (20)	2	<b>3</b>	<b>3</b>	<b>3</b>	2	2	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	2	2	2	2	2	2	2
hiking14 (20)	<b>20</b>	19	<b>20</b>	19	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>
logistics98 (35)	33	31.6	33	31.8	31	31.8	33	33	33	33	<b>34</b>	<b>34</b>	<b>34</b>	<b>34</b>	<b>34</b>	<b>34</b>	<b>34</b>
nomystery11 (20)	<b>18</b>	<b>18</b>	<b>18</b>	<b>18</b>	17	17	16	16	15	15	17	17	17	17	17	17	15
openstacks (30)	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	29	<b>30</b>	28	<b>30</b>
organic-synth-sp18 (20)	12	11.2	13	12.6	<b>14</b>	<b>14</b>	12	12.8	12	12.6	<b>14</b>	12.6	13	12.6	13	12.8	12
parking14 (20)	9	8.8	8	9.2	9	9.2	8	9.2	9	10.0	8	10.2	10	8.8	10	9.8	<b>11.8</b>
pathways (30)	29	<b>30</b>	27	27	27	28	27	27	26	28	24	25	28	26	26	27	28
pipes-notankage (50)	43	43	43	43	44	44	44	44	46	46	<b>47</b>	<b>47</b>	46	46	45	45	44
pipes-tankage (50)	43	43	42	42	44	44	<b>46</b>	<b>46</b>	45	45.2	45	45	<b>46</b>	<b>46</b>	<b>46</b>	<b>46</b>	44
satellite (36)	29	30.2	28	30.6	28	31	28	31	27	32	27	30	27	30	28	30.2	<b>32.4</b>
scanalyzer08 (30)	29	29	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	29	29.6	<b>30</b>	29.2	28	28	29	28.2	<b>30</b>
scanalyzer11 (20)	19	19	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	19.8	19	19.2	18	18.2	18	18.4	<b>20</b>
snake18 (20)	6	6	6	6	6	6.2	6	6.4	8	8.2	8	7.6	<b>9</b>	8.6	7	7.2	7
spider18 (20)	16	16.8	19	19	19	<b>19.4</b>	19	<b>19.4</b>	19	19	18	18	18	18	16	17	17
storage (30)	26	29	28	28	27	28	29	28	28	28	<b>30</b>	29	28	28	29	28	28
termes18 (20)	13	13.2	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	14	14.4	15	15	<b>16</b>	<b>16</b>	15	15	15.4
tetris14 (20)	15	15.2	16	16.6	16	15.2	15	15.2	17	17.2	17	17.2	18	17.2	<b>19</b>	18.2	17
thoughtful14 (20)	<b>19</b>	<b>19</b>	18	18	17	17	18	18	17	17	16	16	17	17	17	17	18
tidybot11 (20)	17	17	17	17	17	17	17	17.2	<b>18</b>	<b>18</b>	17	17	<b>18</b>	<b>18</b>	17	17	<b>18</b>
transport11 (20)	14	14.2	17	15.4	18	16.8	19	18.0	16	17.2	17	17.2	19	18.6	19	<b>19.2</b>	17.6
transport14 (20)	8	6.6	8	8.6	8	7.4	8	10.2	9	<b>13.6</b>	10	10.0	10	8.2	11	10.2	8.2
trucks (30)	22	20.6	<b>24</b>	21.4	<b>24</b>	23.0	<b>24</b>	23.6	22	23.2	23	22.6	20	20	21	22	22.4
visitall14 (20)	18	17.8	18	18.6	18	18.4	<b>20</b>	18.2	<b>20</b>	19.2	19	18	17	19.0	18	18.6	<b>20</b>
woodworking11 (20)	19	19	19	19	19	19	<b>20</b>	19	<b>20</b>	19	<b>20</b>	19	<b>20</b>	19	<b>20</b>	19	<b>20</b>
<b>Sum (1816)</b>	1598	1601.2	1616	1612.8	1616	1621.4	1626	1627.4	1623	<b>1632.2</b>	1629	1628.6	1627	1623.2	1626	1624.8	1628.8

# Medium bound, $k = 100$

Coverage	All		$\mathcal{PO}_{-3}$		$\mathcal{PO}_{-2}$		$\mathcal{PO}_{-1}$		$\mathcal{PO}_0$		$\mathcal{PO}_1$		$\mathcal{PO}_2$		$\mathcal{PO}_3$		$\mathcal{PO}_{\max}$
	$h_{\text{OB}}^{\text{FF}}$	R	T	R	T	R	T	R	T	R	T	R	T	R	T	R	R
agricola18 (20)	<b>12</b>	<b>12</b>	11	11	<b>12</b>	<b>12</b>	10	10	11	10.2	<b>12</b>	<b>12</b>	<b>12</b>	<b>12</b>	<b>12</b>	<b>12</b>	<b>12</b>
airport (50)	<b>47</b>	<b>47</b>	<b>47</b>	<b>47</b>	<b>47</b>	<b>47</b>	<b>47</b>	<b>47</b>	46	46	<b>47</b>	<b>47</b>	<b>47</b>	<b>47</b>	<b>47</b>	<b>47</b>	45.2
barman14 (20)	19	19	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>
childsnack14 (20)	1	1	1	1	3	3	3	3	0	0	<b>4</b>	<b>4</b>	3	3	3	3	2
data-network18 (20)	14	13.4	14	14	14	14	16	15.2	16	16	<b>17</b>	16.8	<b>17</b>	<b>17</b>	<b>17</b>	<b>17</b>	15.4
depot (22)	19	19	20	20.2	21	21	21	21	21	21	<b>22</b>	<b>22</b>	21	21	21	21	<b>22</b>
floortile11 (20)	<b>8</b>	<b>8</b>	<b>8</b>	<b>8</b>	7	7	7	7	7	7	7	7	6	6	6	6	7
floortile14 (20)	<b>3</b>	<b>3</b>	2	2	2	2	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	2	2	2	2	2	2	2
logistics98 (35)	30	30	30	30	30	30	30	30	31	31	32	32	33	33	33	<b>34</b>	<b>34</b>
nomystery11 (20)	<b>18</b>	<b>18</b>	<b>18</b>	<b>18</b>	17	17	16	16	15	15	17	17	17	17	17	17	15
openstacks14 (20)	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	19	<b>20</b>	18	19.2	18	18.6	17	19	<b>20</b>
openstacks (30)	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	29	29	<b>30</b>
organic-synth-sp18 (20)	12	12	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>	13	13.2	<b>14</b>	13.2	<b>14</b>	<b>14</b>	13	13	13	13.4	12.4
parking11 (20)	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	19	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>
parking14 (20)	6	6.6	6	6.4	7	6.6	7	6.8	7	7.8	6	7.6	8	8.4	7	8.2	<b>9.2</b>
pathways (30)	28	28	27	27	26	26	27	27	26	26	25	25	26	26	27	27	<b>30</b>
pipes-notankage (50)	43	43	43	43	44	44	44	44.4	<b>47</b>	<b>47</b>	<b>47</b>	<b>47</b>	45	45	45	45	44
pipes-tankage (50)	43	43	42	42	44	44	<b>46</b>	<b>46</b>	45	45.2	45	45	<b>46</b>	45.2	<b>46</b>	<b>46</b>	44
satellite (36)	27	28	27	28	27	28	25	26	27	28	28	<b>29</b>	28	28.6	28	28.2	28.2
scanalyzer08 (30)	29	29	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	29.8	29	29.4	28	28	29	28.2	<b>30</b>
scanalyzer11 (20)	<b>20</b>	19.2	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	19.2	19	18	18	18.4	<b>20</b>
snake18 (20)	6	6.0	6	6.2	6	6.4	7	7	8	7.8	8	7.2	<b>9</b>	8.4	7	7	7
spider18 (20)	16	16	19	19	19	19	<b>20</b>	19.4	19	19	18	18	18	18	17	17	17
storage (30)	28	28	27	27	28	28	27	27	28	28	28	28	27	27	28	28	<b>30</b>
termes18 (20)	14	13.8	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	14	14	15	15	<b>16</b>	<b>16</b>	15	15	15.2
tetris14 (20)	15	15.2	16	16.4	15	15.4	16	16.2	17	17	18	17	17	17.2	18	<b>18.6</b>	17
thoughtful14 (20)	<b>19</b>	<b>19</b>	18	18	17	17	18	18	17	17	16	16	17	17	17	17	18
tidybot11 (20)	17	17	17	17	17	17	17	17	<b>18</b>	<b>18</b>	17	17	<b>18</b>	<b>18</b>	17	17.2	<b>18</b>
transport11 (20)	14	14.6	16	16.6	17	18.0	<b>19</b>	18.4	17	17.2	18	17.6	18	18	<b>19</b>	<b>19</b>	16.2
transport14 (20)	9	9.0	8	9.2	9	7.8	11	9.6	12	12.4	<b>13</b>	12.8	8	9.0	10	10.0	9.2
trucks (30)	21	21.2	23	<b>23.6</b>	23	22.6	23	23	22	22.0	21	21.4	21	20.8	20	20.2	22.8
visitall14 (20)	19	18.2	19	18.6	18	19.2	18	18.4	<b>20</b>	18.8	18	18.2	18	18.2	18	18.2	<b>20</b>
woodworking11 (20)	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	<b>20</b>
<b>Sum (1816)</b>	1599	1599.2	1607	1611.2	1612	1614.0	1619	1617.6	1619	1619.4	1624	1625.4	1617	1618.4	1615	1620.6	<b>1625.8</b>

# Large bound, $k = 1000$

Coverage	All		$\mathcal{PO}_{-3}$		$\mathcal{PO}_{-2}$		$\mathcal{PO}_{-1}$		$\mathcal{PO}_0$		$\mathcal{PO}_1$		$\mathcal{PO}_2$		$\mathcal{PO}_3$		$\mathcal{PO}_{\max}$
	$h_{\text{OB}}^{\text{FF}}$	R	T	R	T	R	T	R	T	R	T	R	T	R	T	R	R
agricola18 (20)	<b>12</b>	<b>12</b>	11	11	<b>12</b>	<b>12</b>	10	10	10	10.2	<b>12</b>	<b>12</b>	<b>12</b>	<b>12</b>	<b>12</b>	<b>12</b>	<b>12</b>
airport (50)	<b>47</b>	<b>47</b>	<b>47</b>	<b>47</b>	<b>47</b>	<b>47</b>	<b>47</b>	<b>47</b>	46	46	<b>47</b>	<b>47</b>	<b>47</b>	<b>47</b>	<b>47</b>	<b>47</b>	45
barman14 (20)	19	19	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>
childsnack14 (20)	1	1	1	1	3	3	3	3	0	0	<b>4</b>	<b>4</b>	3	3	3	3	2
data-network18 (20)	14	13.2	14	14	14	14	15	15	16	16	16	16.8	17	<b>17.2</b>	17	17	15.4
depot (22)	19	19	20	20	21	21	21	21	21	21	<b>22</b>	<b>22</b>	21	21	21	21	<b>22</b>
floortile11 (20)	<b>8</b>	<b>8</b>	<b>8</b>	<b>8</b>	7	7	7	7	7	7	7	7	6	6	6	6	7
floortile14 (20)	<b>3</b>	<b>3</b>	2	2	2	2	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	2	2	2	2	2	2	2
logistics98 (35)	30	30	30	30	30	30	30	30	31	31	32	32	33	33	<b>34</b>	<b>34</b>	<b>34</b>
nomystery11 (20)	<b>18</b>	17.8	<b>18</b>	<b>18</b>	17	17	16	16	15	15	17	17	17	17	17	17	15
openstacks11 (20)	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	19.8	18	18	18	18	<b>20</b>
openstacks14 (20)	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	18	17.2	15	14.6	14	13.8	<b>20</b>
openstacks (30)	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	28	28	<b>30</b>
organic-synth-sp18 (20)	12	12	<b>14</b>	13.8	<b>14</b>	<b>14</b>	13	13.2	13	13	<b>14</b>	<b>14</b>	13	13.2	13	13	12.6
parking14 (20)	7	6.8	6	6.4	6	6.6	7	6.6	7	7.2	9	7.0	9	8.8	7	7.4	<b>9.6</b>
pathways (30)	28	28	27	27	26	26	27	27	26	26	25	25	26	26	27	27	<b>30</b>
pipes-notankage (50)	43	43	43	43	44	44	44	44.2	<b>47</b>	<b>47</b>	<b>47</b>	<b>47</b>	45	45	45	45	44
pipes-tankage (50)	43	43	42	42	44	44	<b>46</b>	<b>46</b>	45	45.2	45	45.2	<b>46</b>	45.6	<b>46</b>	<b>46</b>	44
satellite (36)	28	28	28	28	27	28	26	26	28	28	<b>29</b>	28	28	28.2	28	28	28
scanalyzer08 (30)	29	29	<b>30</b>	29.8	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	29.8	<b>30</b>	29.4	28	28	29	28	<b>30</b>
scanalyzer11 (20)	19	19	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	19	19.8	<b>20</b>	19.0	19	18	19	18.2	<b>20</b>
snake18 (20)	6	6.2	6	6	6	6.2	7	6.8	7	8	8	7.2	<b>9</b>	8.6	7	7	7
spider18 (20)	16	16	19	19	19	<b>19.2</b>	19	19	19	19	18	18	18	18	17	17	17
storage (30)	28	28	27	27	28	28	27	27	28	28	28	28	27	27	28	28	<b>30</b>
termes18 (20)	14	13.6	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	14	14	15	15	<b>16</b>	<b>16</b>	15	15	15
tetris14 (20)	16	15.6	17	16	15	15.8	15	15	17	17.2	17	17.2	17	17.2	18	<b>18.4</b>	17
thoughtful14 (20)	<b>19</b>	<b>19</b>	18	18	17	17	18	18	17	17	16	16	17	17	17	17	18
tidybot11 (20)	17	17	17	17	17	17	17	17	<b>18</b>	<b>18</b>	17	17	<b>18</b>	<b>18</b>	17	17	<b>18</b>
transport11 (20)	13	14	17	16.2	18	18	18	17.4	17	17.6	17	17.6	18	18.6	<b>19</b>	<b>19</b>	15.6
transport14 (20)	9	9	8	9.2	8	7	11	9.2	11	<b>12.0</b>	12	<b>12.0</b>	8	9.4	10	10.4	9.8
trucks (30)	21	21.2	23	23.2	23	22.6	23	22.8	22	22.6	21	22.2	21	20.8	20	20.6	<b>23.6</b>
visitall14 (20)	19	18.2	18	18.2	18	19	18	18.4	19	19	18	17.6	18	18.8	18	18.2	<b>20</b>
woodworking11 (20)	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	<b>20</b>
<b>Sum (1816)</b>	1600	1598.6	1609	1608.8	1611	1613.4	1616	1613.6	1615	1619.6	1625	1621.2	1614	1615.0	1611	1611.0	<b>1626.6</b>