

Planners

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PUI (Planning in Artificial Intelligence)

IPC

International Planning Competition

- ▶ 1998, 2000, 2002, 2004, 2006, 2008, 2011, 2014,... 2017?
- ▶ <http://www.icaps-conference.org/index.php/Main/Competitions>

Planners

Sub-optimal / Satisficing

- ▶ FF (Fast Forward, 2001)
 - ▶ <http://fornix.felk.cvut.cz:5000/ff>
 - ▶ Forward-chaining heuristic state space search
 - ▶ Enforced hill-climbing / Breadth-first search
 - ▶ FF heuristic (relaxation)

Hoffmann, Jörg. "FF: The fast-forward planning system." AI magazine 22.3 (2001): 57.

Planners

Sub-optimal / Satisficing

- ▶ LAPKT (Lightweight Automated Planning ToolKit, 2014)
 - ▶ <http://fornix.felk.cvut.cz:5000/siw>
 - ▶ <http://lapkt.org> (Many configurations)
 - ▶ SIW
 - ▶ Sequence of iterated breadth-first searches using relaxed plans for pruning
 - ▶ Exploiting atomic goals

Lipovetzky, Nir, and Hector Geffner. "Width-based algorithms for classical planning: New results." Proceedings of the Twenty-first European Conference on Artificial Intelligence. IOS Press, 2014.

Planners

Sub-optimal / Satisficing

- ▶ Lama (2009,2011)
 - ▶ <http://fornix.felk.cvut.cz:5000/lama>
 - ▶ Iterated Weighted A*
 - ▶ Multi-heuristic search (FF, Landmarks)
 - ▶ (inadmissible)

Richter, Silvia, and Matthias Westphal. "The LAMA planner: Guiding cost-based anytime planning with landmarks." Journal of Artificial Intelligence Research 39.1 (2010): 127-177.

Planners

Sub-optimal / Satisficing

- ▶ PROBE (2011)
 - ▶ <http://fornix.felk.cvut.cz:5000/probe>
 - ▶ GBFS + relaxation heuristic (h_{add})
 - ▶ From each state a greedy probes with highly informed heuristics

Lipovetzky, Nir, and Hector Geffner. "Searching for Plans with Carefully Designed Probes." ICAPS. 2011.

Planners

Sub-optimal / Satisficing

▶ Mercury (2014)

- ▶ <http://fornix.felk.cvut.cz:5000/mercury>
- ▶ GBFS + Red-black relaxation heuristic

Katz, Michael, and Joerg Hoffmann. "Mercury planner: Pushing the limits of partial delete relaxation." Proceedings of the 8th International Planning Competition (IPC-2014) (2014).

Planners

Sub-optimal / Satisficing

▶ yahsp3 (2014)

- ▶ <http://fornix.felk.cvut.cz:5000/yahsp3>
- ▶ Heuristic search with lookahead using relaxed plans
- ▶ Not on FD codebase

Vidal, Vincent. "YAHSP3 and YAHSP3-MT in the 8th international planning competition." Proceedings of the 8th International Planning Competition (IPC-2014) (2014): 64-65.

Planners

Optimal

- ▶ FD-ms (2011)
 - ▶ <http://fornix.felk.cvut.cz:5000/ms>
 - ▶ A*
 - ▶ Merge&Shrink abstraction heuristic

*Nissim, Raz, Jörg Hoffmann, and Malte Helmert.
"Computing perfect heuristics in polynomial time: On
bisimulation and merge-and-shrink abstraction in optimal
planning." 22nd International Joint Conference on
Artificial Intelligence (IJCAI'11). 2011.*

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Optimal

- ▶ FD-lmcut (2011)
 - ▶ <http://fornix.felk.cvut.cz:5000/lmcut>
 - ▶ A*
 - ▶ LM-Cut landmark heuristic

Helmert, Malte, and Carmel Domshlak. "Landmarks, critical paths and abstractions: What's the difference anyway?." Dagstuhl Seminar Proceedings. Schloss Dagstuhl-Leibniz-Zentrum für Informatik, 2010.

Helmert, Malte, and Carmel Domshlak. "LM-Cut: Optimal planning with the landmark-cut heuristic." Seventh international planning competition (IPC 2011), deterministic part (2011): 103-105.

Planners

Optimal

- ▶ SymBA* (2014)
 - ▶ <http://fornix.felk.cvut.cz:5000/symba>
 - ▶ A* in BDD (binary decision diagram) representation
 - ▶ Perimeter-based abstraction heuristic (built from goal)

*Edelkamp, Stefan, Peter Kissmann, and Alvaro Torralba.
"BDDs Strike Back (in AI Planning)." AAI. 2015.*

Planners

Temporal

▶ OPTIC (2012)

- ▶ <http://temporal-solver.herokuapp.com>
- ▶ <https://nms.kcl.ac.uk/planning/software/optic.html>

*Benton, J., Amanda Jane Coles, and Andrew Coles.
"Temporal Planning with Preferences and
Time-Dependent Continuous Costs." ICAPS. Vol. 77.
2012.*

Planners

Temporal

- ▶ Temporal Fast-Downward (2009)
 - ▶ TBA

*Eyerich, Patrick, and Robert Mattmüller Gabriele Röger.
"Temporal Fast Downward." (2009).*