

Publication

Additive Pattern Databases for Decoupled Search

ConferencePaper (Artikel, die in Tagungsbänden erschienen sind)**ID** 4653020**Author(s)** Sievers, Silvan; Gnad, Daniel; Torralba, Álvaro**Author(s) at UniBasel** [Sievers, Silvan](#) ;**Year** 2022**Title** Additive Pattern Databases for Decoupled Search**Book title (Conference Proceedings)** Proceedings of the 15th International Symposium on Combinatorial Search**Volume** 15**Place of Conference** Vienna, Austria**Publisher** AAAI Press**Pages** 180-189**ISSN/ISBN** 1-57735-873-2

Abstraction heuristics are the state of the art in optimal classical planning as heuristic search. Despite their success for explicit-state search, though, abstraction heuristics are not available for decoupled state-space search, an orthogonal reduction technique that can lead to exponential savings by decomposing planning tasks. In this paper, we show how to compute pattern database (PDB) heuristics for decoupled states. The main challenge lies in how to additively employ multiple patterns, which is crucial for strong search guidance of the heuristics. We show that in the general case, for arbitrary collections of PDBs, computing the heuristic for a decoupled state is exponential in the number of leaf components of decoupled search. We derive several variants of decoupled PDB heuristics that allow to additively combine PDBs avoiding this blow-up and evaluate them empirically.

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