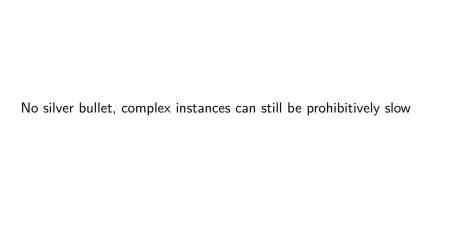
#### Declarative Heuristics for ASP

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Answer Set Programming (ASP) has been used successfully to
model and solve combinatorial search problems in industrial

domains



No silver bullet, complex instances can still be prohibitively slow  Use Heuristics! (Gebser et al. 2013)

```
Modern ASP solvers use some variation of the CDCL algorithm
if (unitPropagation(,) == conflict):
    return UNSAT
while not all variables assigned:
    (x, v) ← decide(,)
    dl ← dl + 1
    ← {(x,v)}
```

if (<0):

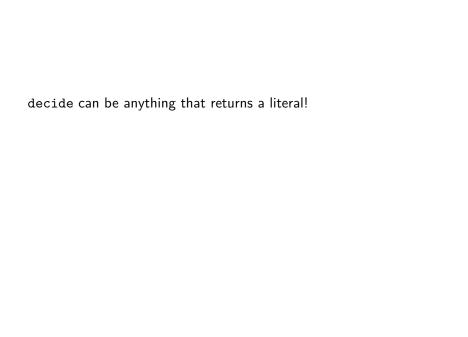
d] ←

else:

return SAT

return UNSAT

backtrack(..)



General purpose heuristics are available



General purpose heuristics are available

VSIDS

▶ VMTF

General purpose heuristics are available

- VSIDS
- ▶ VMTF
- ▶ BerkMin

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General purpose heuristics do not always perform well
→ Use <i>domain specific heuristics</i> instead

General purpose heuristics do not always perform well
$ ightarrow$ Use $\emph{domain specific heuristics}$ instead
The ASP solver needs to support the use of special heuristics

### Related Work

Clingo Domain Heuristics

quux

bar

# **HWasp**

▶ foo

bar

## **HWasp**

- ▶ foo
- ▶ bar

# Procedural Heuristics with Clingo

#### Declarative Heuristics

Gebser, Martin, Benjamin Kaufmann, Javier Romero, Ramón Otero, Torsten Schaub, and Philipp Wanko. 2013. "Domain-Specific Heuristics in Answer Set Programming." In *AAAI*. Citeseer. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1. 1.447.8848&rep=rep1&type=pdf.