Three Myths and One Question on Optimal Planning Research

Carmel Domshlak

Festivus 2008

Rao's call to invite yourself to the panel of plaintiffs

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Rao to me	OK ...

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me to Rao	May I speak?
Rao to me	OK ...
me to my wife	whauu, I am "up-and-coming" !!!

Rao's call to invite yourself to the panel of plaintiffs

my wife looked at me ... and suggested to re-read Rao's call

Rao's call to invite yourself to the panel of plaintiffs

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Heuristic-Search Workshop ICAPS'07

Some claims

Malte & Gabi In planning, good admissible heuristics are insufficient for efficient optimal planning

Audience Why should we care in AI about optimal planning?

$\rightsquigarrow$ I looked for the roots of that question, and distilled for you some urban myths

Myth n. 1

In many papers:

If you do optimal heuristic-search planning, then you need an admissible heuristic

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For me, "admissible" $\approx$ "can say something concrete about"

- clear notion of improving heuristics (empirical/formal)
- clear sense of composing heuristics (max/add/opt-add)
- usability in search-space learning (a la LRTA*)
- ...

Myth n. 2

In many papers:

If no optimality is required, then better go with inadmissible heuristics because they are more informative

Problem: Where this really comes from?

- no theoretical justification (to say the least)
- no (real) empirical justification
- based on (???)
  1. HSP's h_{add} vs. h_{max}
  2. the glory of FF
  3. slow progress in admissible heuristics until very recently

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  $\rightsquigarrow$ hmm ... some of the basic algorithms in CS should be announced "inefficient"
- if exponential number of open nodes, then who cares if the heuristic computation is fast?
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  $\rightsquigarrow$ pray for hardware technology guys :)

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Candidates

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My answer to myself

ALL because all help to develop new mathematical and engineering ideas

NONE because our customers (remember Rao's talk last year?) need something else
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Want to know why? Buy me a beer!

Three Myths and One Question

Myth I	admissible heuristics are only for optimal planning
Myth II	inadmissible heuristics are more informative
Myth III	heuristic computation should be of low polynomial time
Question	what kind of planning is most important?