Linköping University

Automated Planning

1. Course Introduction

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About Us…

- Lecturer:
  - **Jonas Kvarnström** (jonkv@ida.liu.se)
  - Computer Science (C program) in Linköping 1992-1996
  - PhD, now assistant professor (*universitetslektor*)
  - Leader of the *Automated Planning* group
- Lab Assistants:
  - **Mikael Nilsson** (mikni) – Ph.D. student
- Administration:
  - Director of Undergraduate Studies: **Peter Dalenius** (petda)
  - Course Secretary: **Anna Grabska Eklund** (annek)

About the Lectures…

Please interrupt!

*Questions and comments are welcome – start a **dialog**!*

About the Course Topic…

computing

Planning is **thinking ahead**

Not just reacting to what happens!

*Using knowledge about possible **actions** and their **results**, generating a **plan** that describes what to do and when, in order to **achieve a goal***

Course Contents

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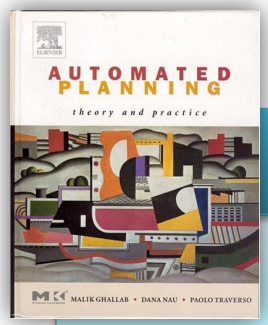


Lectures+Book

What is planning?
How do we *model*
and *specify* planning problems?

How do *planning algorithms* work?
How do they relate to and benefit from
different plan *structures*?
How can planners benefit from
our own deeper *domain knowledge*?
How can we handle *uncertainty*?

Labs (start 8/4)

Practical *experience* in
modeling / solving planning problems
using well-known planners

Deeper understanding of
abilities and limitations

Written Exam

Hand-ins

Labs

- **Rapid progress** in planning research!
  - Labs based on state of the art *research prototypes*
  - Dozens of planners are available
    - Some ”recommended”, others available as a bonus

Sequential satisficing
acoplan
acoplan2
arvand
brt
cbp
cbp2
cpt4
dae_yahsp
fd-autotune-1
fd-autotune-2
fdss-1
fdss-2
forkuniform
lama-2008
lama-2011
lamar
lprpgp
madagascar
madagascar-p
popf2
probe
randward
roamer
satplanlm-c
sharaabi
yahsp2
yahsp2-mt

Seq. sat. multi-core
acoplan
arvandherd
ayalsoplan
madagascar
madagascar-p
phsff
roamer-p
yahsp2-mt

Seq. optimizing
bjolp
cpt4
fd-autotune
fdss-1
fdss-2
forkinit
gamer
iforkinit
lmcut
lmfork
merge-and-shrink
selmax

Temporal satisficing
cpt4
dae_yahsp
lmtd
popf2
sharaabi
tlp-gp
yahsp2
yahsp2-mt

Older planners
IPP
FF

Specialized planners
SHOP2

Labs

- Work by yourselves or in pairs
  - Working in pairs ➔ must work **together**!
  - Register in WebReg – deadline 2013-04-15
- Lab assistants are available:
  - Physically, during **scheduled lab hours**
    - Twice (almost) every week
    - **Be there** – even though you *can* work at home!
  - By e-mail, during the entire course (up to 24/5)
    - Will answer as soon as they can

- If you have a problem:
  - First try to solve it yourself
  - Then **ask us**! Without feedback **we can't help you**!

Labs: Recommended Deadlines

- Five labs – **recommended** deadlines:
  - 17/4
  - 24/4
  - 3/5
  - 15/5
  - 24/5

Aim to finish earlier ➔
leave margins for problems

Later ➔ speed up!

Labs: Absolute Deadlines

General policy: For all IDA courses having computer lab assignments
there will be **one deadline** during or at the end of the course.
If you fail to make the deadline, you must **retake the possibly new lab course**
the next time the course is given.

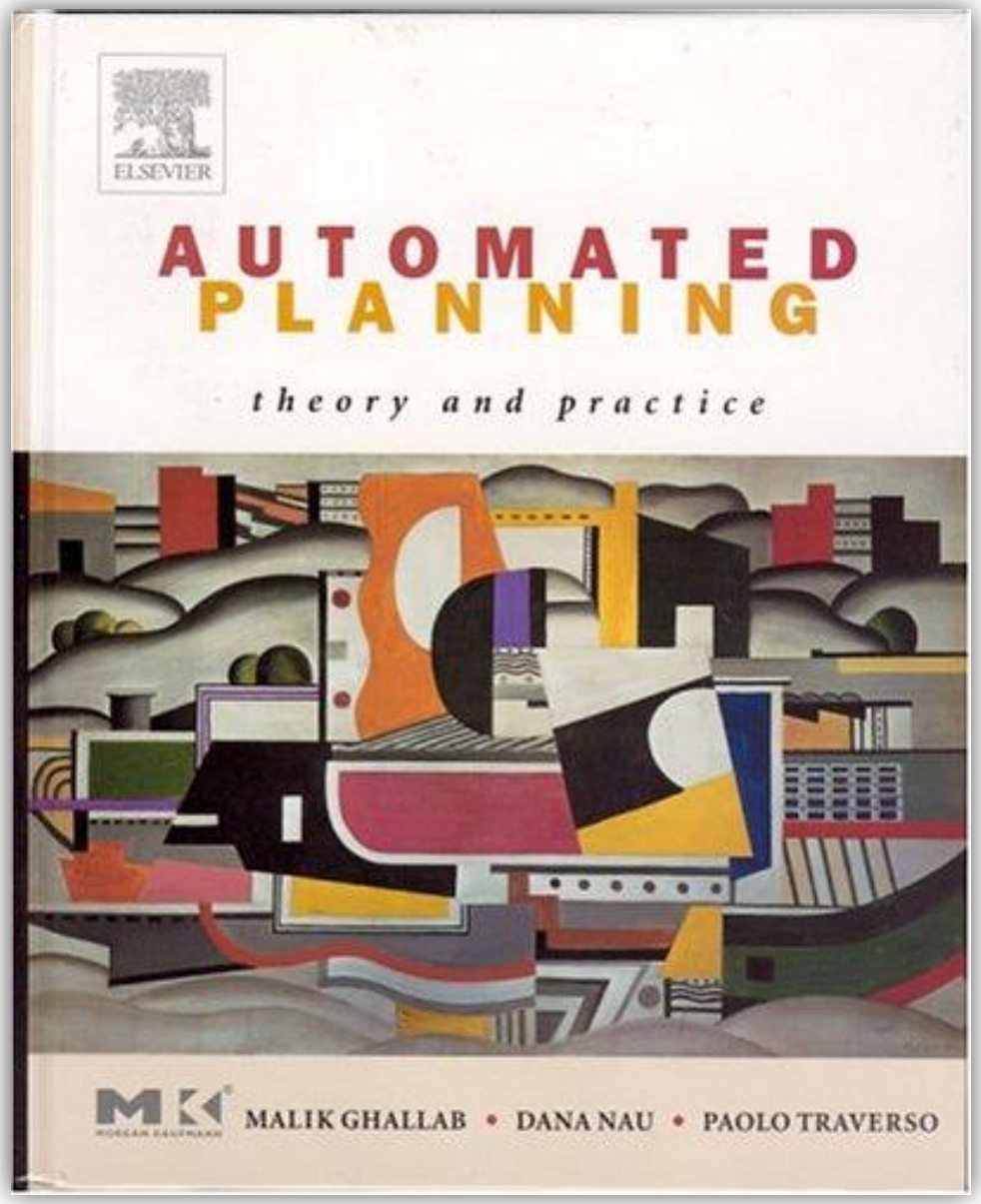
- For this course:
  - "Final deadline" is Friday 24/5
    - Until then lab assistants will answer quickly, grade labs
  - "Catch-up time" until Tuesday 4/6
    - Lab assistants will answer relatively quickly
  - Additional catch-up time, until the end of the year
    - Will answer or grade labs **if** and **when** there are no more urgent duties
    - Can take days, weeks or **months**
  - Next year: Retake the lab course during the scheduled period!

Exam

- Written exam:
  - Saturday 1/6
  - If you need the course points:
    - Study in advance!
    - Next chance: 22/8, 24/10, then next year.
    - Can **only** re-take the exam later if you are physically **here**.

Course Materials

- Main course book
  - **Essential**:
    Lectures are a **complement**,
    not a replacement
  - Reading instructions
    are on the web
    - About 40% of the book
      is not part of the course



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Questions?