Knowledge Representation & Reasoning

(Group C)

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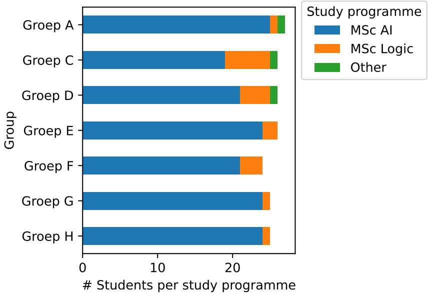
Welcome

You:



Me:

- Anna
- *n*th year MSc AI
- Thesis about Logic & Interpretability

$n = 4$

Workgroups, logistics

- For working on exercises (and homework)
- Not mandatory
- Also not mandatory to [find a partner [from the same group]]

Important dates

Homework is due on Tuesdays:

- Homework 1: February 21, 23:59
- Homework 2: February 28, 23:59
- Homework 3: March 7, 23:59

Last week

Answers for Exercise Sheet 1 are online

Today: automatic SAT solving, knowledge representation

- Ex1, DPLL
- Ex2, Understanding Tseytin
- Ex3, Knowledge Representation using SAT
- Ex4, DPLL + Conflict Analysis

Today: automatic SAT solving, knowledge representation

- Ex1, DPLL (Useful for HW1-Exercise 1)
- Ex2, Understanding Tseytin
- Ex3, Knowledge Representation using SAT (Useful for HW1-Exercise 3)
- Ex4, DPLL + Conflict Analysis (Useful for HW1-Exercise 1)

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  If you know: $a \vee b$

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- You can end up with duplicates in your resolvent, but $a \vee a \vee b \vee b \equiv a \vee b$, you may simply remove them
- You can end up (in general) with empty disjunction: e.g. a and $\neg a$ resolves to $\perp$

Related: Implication and CNF

- A useful equivalence for manually constructing CNF formulas is:

$$a \rightarrow b \equiv \neg a \vee b$$

- So, "if a, then b" can be written as a clause in the CNF formula

Exercise 3

It's good to think about this with pen&paper, but to try it out/get some hints you may use the notebook (`.ipynb`) uploaded to Canvas.
(If you don't have a local python installation, `https://colab.research.google.com` will work after installing the dependency)