

Automated Reasoning and Formal Verification

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intro

Slides will be on his webpage along with the recordings.

The exam will consist of a script and an oral exam on the topics of the whole course.

boolean/propositional logic

A propositional **formula** can be:

- \top, \perp
- Propositional **atoms** A_1, A_2, \dots, A_n
- A combination of other formulas. If ϕ_1 and ϕ_2 are formulas, so are:
 - $\neg\phi_1$
 - $\phi_1 \wedge \phi_2$
 - $\phi_1 \vee \phi_2$
 - $\phi_1 \rightarrow \phi_2$
 - $\phi_1 \leftarrow \phi_2$
 - $\phi_1 \leftrightarrow \phi_2$
 - $\phi_1 \oplus \phi_2$

We define a function $Atoms(\phi)$ representing the set $\{A_1, \dots, A_n\}$ of atoms in ϕ

A **clause** is a disjunction of literals $\bigvee_j l_j$ or $(A_1 \vee \neg A_2 \vee \dots)$

A **cube** is a conjunction of literals $\bigwedge_j l_j$ or $(A_1 \wedge \neg A_2 \wedge \dots)$

trees and DAGS

A tree is a natural representation of a