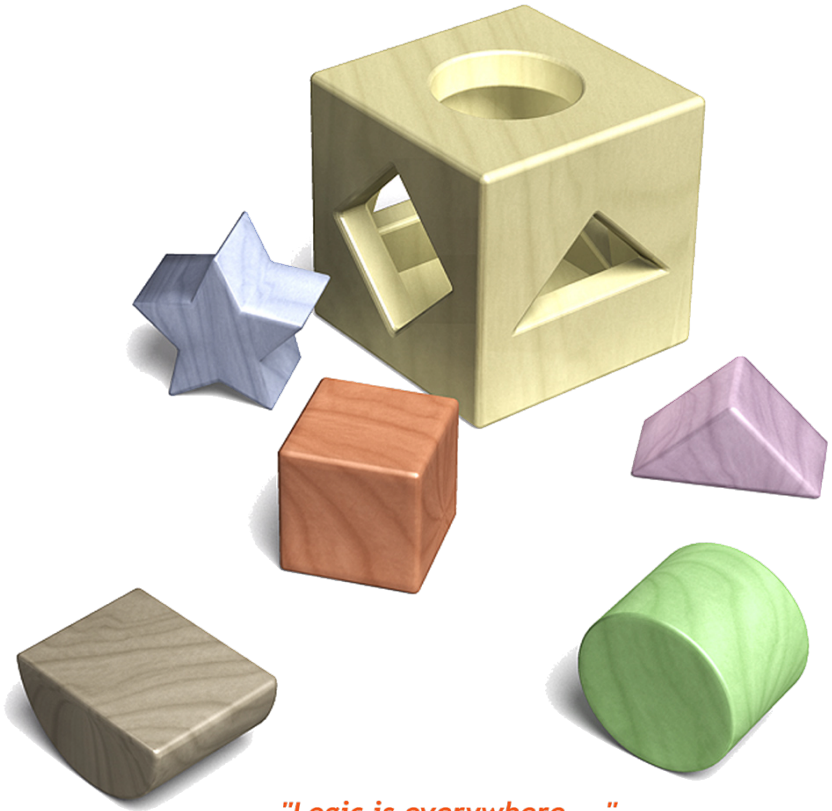
Science of Computational Logic – Introduction

Steffen Hölldobler
International Center for Computational Logic
Technische Universität Dresden
Germany

- **Overview**
- **Content**
- **Literature**



"Logic is everywhere ..."

Overview

non-monotonic logics
fuzzy logics
intuitionistic logics
temporal logics
modal logics
multi valued logics
higher order logic
equational logic
first order logic
propositional logic
algorithm = logic + control
complexity theory
tractability
decidability
automata theory
model theory
algebra
calculus
representation
abstract machines
search strategies
heuristics
automated theorem provers
interactive proof systems
SAT-solvers
specification and verification
program development
program analysis
program synthesis
program transformation
software engineering
theory of programming
functional programming
answer set programming
constraint programming
logic programming
systems design
cognitive robotics
general game playing
logic and agents
actions and causality
logic data bases
knowledge based systems
knowledge representation and reasoning
inductive logic programming
deduction
abduction
induction
reasoning by analogy
case based reasoning
evidential reasoning
legal reasoning
decision making
natural language understanding
machine learning
neural-symbolic integration
human reasoning
cognitive science

Content of Lecture

- Description Logics
- Equational Logic
- Actions and Causality
- Deduction, Abduction, and Induction
- Non-Monotonic Reasoning
- Machine Learning

Literature

- A manuscript is available
- In each chapter relevant secondary literature is specified.
- I expect you to study secondary literature.
- A web page for the literature will be generated.