Prolog: Introduction

Logic programming

Programmation en Logique, 1972

Course material for Prolog

- Handbook: PROLOG Programming for Artificial Intelligence, Ivan Bratko
  Addison Wesley, fourth edition 2012.
  ISBN 978-0-321-41746-6
- Lecture material: slides, SWISH notebooks
- Exercises and solutions
- SWI Prolog: http://www.swi-prolog.org/
  - Installed at the cs department / on your laptop
  - Online version: SWISH

Prolog Applications: Travelport Galileo

- Prolog to express “business logic”
- Used 24 x 7, up since june 2004
- 44.000 travel agents, 206 billion airline fare quotes per year
- Kernel: Prolog rules (basis, meta-)
- Saved $100 million dollars, better functionality and lower time-to-market

Prolog Applications: Watson IBM

Jeopardy: quiz in USA

contestants are presented with general knowledge clues in the form of answers, and must phrase their responses in question form

PALINDROMIC WORDS 200$

A simpler way of saying "more lobster-colored“

IBM Watson: wins in 2011 Jeopardy against former (human) champions!

Prolog Applications: Watson

Q: How much Prolog or Horn clause-type programming does Watson use?

A: Mainly we used Prolog for pattern matching over natural language parse trees.

- NLP Parsers + Pattern recognition + search in documents + judge correctness

Additional study material:
Online tutorials for Prolog

1. Online tutorial of P. Blackburn et al.

   available in book form, online version allows interaction with SWISH
   http://**www.learnprolognow.org/**

2. Online tutorial of Bartak
   http://kti.ms.mff.cuni.cz/~bartak/prolog/index.html

3. Online tutorial of Fisher
   http://www.cpp.edu/~jrfisher/www/prolog_tutorial/contents.html

More links

- “Drawing Prolog Search Trees”, J. Bos (arXiv:2001.08133)
- “Coding guidelines for Prolog” (arXiv:0911.2899) with *guidelines f*or writing Prolog programs,
  sections 2, 3 and 5 are definitely useful.
- Association of Logic Programming (ALP): http://www.cs.nmsu.edu/ALP/
- Theory and Practice of Logic Programming

Overview Prolog lectures

- Lecture 1
  - Introduction “Family database”: first Prolog program, Prolog queries, Prolog execution tree
- Lecture 2
  - Syntax and Meaning of Prolog Programs (Chapter 2)
- Lecture 3
  - Lists, Operators, Arithmetic (Chapter 3)
- Lecture 4
  - Example Programs (from Chapter 4)
  - Trees in Prolog (from Chapter 9)

Prolog overview

- Lecture 5
  - Controlling backtracking (Chapter 5)
  - Built-in Predicates (Chapter 6)
- Lecture 6
  - More Prolog programming (from Chapters 8 and 9)