Computational Pragmatics

WebPPL

Session 3

WebPPL

- probabilistic programming language
- built on top of JavaScript
  - executable in the browser
  - only a part of JS is available (e.g., no loops!, no variable reassignment!)
- use webppl.org for development
  - changes to code in problang.org is not saved!!!
- read the docs:
  - https://webppl.readthedocs.io/en/master/index.html

WebPPL: the deterministic basics

- follow this tutorial now (ca. 15-20 minutes)
  - http://probmods.org/chapters/appendix-js-basics.html
  - ask questions, poke around!
  - do exercises at the end if fast and bored
- make sure you capture the basics of the following:
  - Boolean operations, in particular the ternary operator `BOOL ? yes : no`
  - variable declarations with `var`
  - arrays & objects
  - function definitions
  - higher-order functions, in particular `map()` and `repeat()`

WebPPL: some tips and tricks

- remark: WebPPL uses the lodash library (formerly “Underscore”)
  - check https://lodash.com for many useful functions
  - caveat: don’t use lodash’s higher-order functions!
  - e.g., use WebPPL’s `map()`, not lodash’s `_.map()`
- output from code boxes
  - the return value of the final line of a code box is shown on screen
  - use `display()` or `print()` to show intermediate results
    - `display()` has nicer (higher-level/processed) output
    - `print()` (but doesn’t work the first time it’s invoked 😳)
- keyboard shortcuts in code boxes
  - TAB indents selected code or current line
  - CRTL-/ comments or uncomments selection or current line
  - CRTL-RET runs the code box

Probabilistic programming

- probability distributions are first-order objects
  - finite case: represented as object-value pairs
  - infinite case: represented as set of samples
- special functions to interact with probability distributions
  - construction with `Infer`
  - sampling with `sample`
  - fine-tune with `factor`
  - conditionalize with `condition` or `observe`
  - visualize with `viz`
- follow this tutorial now (ca. 30-40 minutes)
  - http://www.problang.org/chapters/app-06-intro-to-webppl.html