Past, Present And Future Of Prolog

Paul Tarau

University of North Texas

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The Past and the Present

- The Past: what makes Prolog a survivor in the turbulent sea of programming languages?
  - elegant foundations based on an executable, simplified subset of FOL: Horn Clauses
  - elegance of the unification algorithm: one inference step standing for an infinite set of ground inferences
  - AI applications, NLP (logic grammars), ILP, KR
  - natural fit for hosting CP extensions
- The Present
  - moving up on the Tiobe scale of programming languages
  - a chance to benefit from the "AI Spring" triggered by deep learning

The Future

- what would persist as Prolog evolves
  - unification, goal driven execution strategy
  - possible re-emergence of viable parallelization attempts
- what would be great to have (with help from the Prolog community)
  - a unified "eco-system" : of libraries and packages that are portable among widely used Prolog systems
  - automation of their online availability (versioning included) e.g., the pypi.org model
  - a coroutining mechanism: first-class logic engines - a full reflection of Prolog's execution mechanism (now present in SWI-Prolog)
  - stream processing (in particular lazy lists and declarative IO) would enable dealing with *evolving data and event streams*
  - significant research effort should focus on non-trivial neuro-symbolic systems
    - can SLD resolution steps interoperate with the fully differentiable learning stages of a neural network?