HARRISON PIELKE-LOMBARDO

PhD Researcher

harrison.pielke-lombardo@cuanschutz.edu | 720 209 6249 | Denver, CO | 12 May 1995
tuh8888 | tuh8888

"I am a Computational Bioscience graduate interested in developing software for artificial intelligence, health informatics, and game development. My work includes developing novel algorithms for symbolic AI and natural language processing. As a polyglot programmer, I enjoy turning difficult problems for people into easy solutions for computers."

EXPERIENCE

PhD Researcher

University of Colorado, Anschutz Medical Campus

2016 – 2022 | Aurora, CO

- Thesis title: Schematization of biological mechanisms using network alignment and computational analogy for hypothesizing about disease mechanisms and their interventions.
- Managed multiple, interconnected computational projects across different teams from planning to publication.
- Communicated with technical and non-technical audiences.
- Developed interpretable, symbolic artificial intelligence and machine learning methods for identifying drug-targets in text and performing inductive reasoning about drug-disease mechanisms.
- Maintained sustainable, open software development practices.

Knowledge graphs | Artificial intelligence | Biomedical data science

PROJECTS

Schematization of biological mechanisms using structural, semantic, and causal properties

- Developed algorithmic approaches in Clojure and Python for extending analogical reasoning of complex networks representing biological knowledge.
- Merged and harmonized large biomedical knowledge graphs.

Knowtator: Concept/relation annotation for Protégé

- Deployed a WYSIWYG plugin for ontology development and text annotation that includes interactive graph visualization for textual features.
- Incorporated user feedback in several feature updates.

Bootstrapped relation extraction using word embeddings and dependency paths

- Developed a novel bootstrapping relation extraction approach in Clojure that creates human-interpretable syntax patterns from dependency paths and word embeddings
- Performance optimized with GPU accelerated matrix operations.
- Evaluated the approach on a large corpus of biomedical text on its ability to identify drug-target relationships.

SKILLS

- Clojure(script) (6 years)
  - Reagent | Re-frame | Datascript/Datomic
- Python (10 years)
  - NumPy | Pandas | scikit-learn | NLTK
- Data visualization
  - Matplotlib | Vega | GraphViz | D3
- Communication
  - Jupyter(Lab) | LaTeX | RMarkdown
- Additional languages
  - Java (10 years) | JavaScript (6 years) | Bash | Common Lisp | C++ | R | MATLAB | HTML/CSS
- DevOps
  - Git | GitHub | CI/CD | AWS | Kubernetes
- Areas of expertise
  - Natural Language Processing | Statistics | Machine Learning | Semantic web | Artificial intelligence | Domain modelling
- Big data
  - SQL | SPARQL | RDF | BigQuery | Redis

EDUCATION

MS in Biomedical Sciences and Biotechnology

University of Colorado, Anschutz Medical Campus

2016 — 2022 | Aurora, CO

BS in Applied Mathematics

University of Colorado

2013 – 2016 | Boulder, CO

NOTE

References available upon request. Please see my GitHub page (@tuh8888) for my software projects as well as my contributions to various open-source projects.