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Ryan Spangler

Curriculum Vitae

Patterns in Connections

Education

2009–2012 **Master of Science, Systems Science**, *Portland State University*, Portland OR.
Computational Neuroscience, System Dynamics, Systems Modeling, Information Theory, Agent Based Systems

2002–2005 **Bachelor of the Arts**, *The Evergreen State College*, Olympia WA.
Math, Performance, Computer Science

1999–2001 **Undergraduate Study**, *Oberlin College*, Oberlin OH.
Cognitive Science, Computer Science

Technology

Languages Scala, Clojure, Python, JavaScript, C++, Java, Bash, SQL

Tools Titan, Kafka, Postgresql, Git, Docker, Unix, Emacs, GLSL

Areas Biological Modeling, Graph Databases, Network Science, Machine Learning, Data Visualization, Generative Music

Experience

2016–Present **Software Engineer**, *Computational Biology at OHSU*, Portland OR.
At OHSU I work with scientists and engineers to determine what infrastructure and analysis is needed to support all of the various research efforts at the University. My main focus is the development of a large graph database to collect and integrate all of the isolated biological data silos throughout the world and provide a means to query, analyze and visualize this data as a whole.
Achievements:

- Engineered a large graph database system that automatically transforms and integrates all incoming data into a single graph.
- Created a schema to encode queries themselves as data so they can be programmatically generated, optimized and processed.
- Translated a series of requirements from researchers and scientists into a working system that provided these analyses.
- Developed systems of statistical analysis for existing experiments and data.
- Created a visualization framework to pull together all of the various visualization methods into a general and reusable package.
- Working on a distributed event system to trigger pattern-discovery analyses as data streams into the system.

2014–2016 **Lead Developer**, *Little Bird Technologies*, Portland OR.

At Little Bird I take their mass of social network data and apply a variety of statistical, graph theoretical and machine learning approaches to find patterns and draw conclusions from that data.

Achievements:

- Used bayesian networks and decision trees to build a classification system for an initiative from the Gates Foundation.
- Built a 3d network visualization to explore and interact with vast amounds of network data.
- Migrated the flat document data model into a graph database oriented around the relationships between semantic terms and networks of people.
- Took a naive analysis algorithm and parallelized it to work over any sized cluster of independent workers.
- Instituted a workshop for collaboratively improving the whole team's coding and software development skills, starting by implementing well-known graph algorithms.

2007–2014 **Senior Developer**, *Instrument*, Portland OR.

I worked with the labs team to invent constantly — transforming concepts through code into practical applications.

Achievements:

- Created Caribou — an open source Clojure web ecosystem for building large high-performance web applications with great alacrity.
- Created Cyclops — a tool for interpolating data for use in programmatically driven animations: `http://weareinstrument.com/cyclops`
- Built Schmetterling — a browser-based debugger for inspecting running Clojure programs: `http://github.com/prismofeverything/schmetterling`
- Pioneered a weekly workshop for collaboratively learning 3D programming:

2006–2007 **Programmer**, *Performance Logic*, Portland OR.

I learned the fundamentals of real world development using C++ while simplifying and modularizing a large legacy code base.

Achievements:

- Built a variety of visualization methods for generating reports from large data sets
- Enhanced the custom scripting language with features from functional programming

Interests

Biology Molecular Biology, Cell Biology, Systems Biology: How does life work? How is this possible?

Music Piano Tuning, Music Theory, Performance: Exploring the space of all possible musical events and relationships.

Go The ancient game of life and death. I have learned many things about life from Go.

References

Name

- Patrick Roberts
  Professor OHSU BME
- Martin Linde
  Associate Creative Director at Apple

Contact

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