Tobin Yehle

Open Source Contributions

- Two patches to mypy, the Python type checker
- Type annotations for a Python package emulating Rust's `Result<T, E>` structure

Work Experience

2017-Now **3M HIS**
Data Science Lab
Software Developer
Built tools for distributed data analysis with spark in AWS

2015-2016 **University of Utah**
Research Assistant
Senior thesis research under Dr. Vivek Srikumar with funding from U of U Undergrad Research Opportunities program.

2014-2015 **University of Utah**
Teaching Assistant
Machine Learning & Intro to Computer Science.

2014 **Florida Institute of Technology**
Research Assistant
NSF funded Research Experience for Undergrads hosted by FIT resulting in 2 publications.

2012-2014 **Fusion-io**
Software Developer
Build automation and QA automation. Administered a Jenkins server for automating builds across many operating systems. Contributed to a refactor of the test infrastructure.

Education

2011 – 2016 **University of Utah**
Honors BS Computer Science
Magna cum Laude
Undergrad Research Scholar
Minors in Music & Astronomy
Completed Tracks for
- Programming Languages
- Artificial Intelligence
- Information in Data
- Theory

2006 – 2011 **West High School**

Languages

Fluent	Scala, Haskell, Python, Java
Conversational	Racket, C++, Rust, miniKanren, F#, C#, bash, LaTex, Elm

WHOAMI

Trumpet Player, Climber, Potter, Skier, Biker, Hiker

Projects

Parsing with Derivatives

Senior thesis project to extended the derivative parsing algorithm to English.
Goal: Caching parser for increased performance on large datasets.
Method: The derivative parser is left to right, producing a savable state after parsing each token. This state can then be loaded from a cache if a matching sentence prefix is seen in the future.
Results: The parser produced the correct parse trees, but the implementation needed optimization and benchmarking proved difficult.

Python Compiler

Project for the compilers class written in Racket.
Spec: Lex and parse all of Python 3. Implement two desugaring passes, eliminating most syntactic constructs.
Methods: The resulting syntax tree was ready for one more desugaring pass before code generation in assembly language.

Spatial Structure of Crime

Research Experience for Undergrads project at Florida Institute of Technology.
Goal: Use complex networks on police data to uncover structure in the timing and location of crimes.
Method: We built networks with links between spacial or temporally close crimes, and used network clustering algorithms to find interesting regions.
Results: Two publications, [White et al., Social Informatics, 2015] and [Oliveira et al., Complex Networks VI, 2015]. Allowed visualizations not available using heat maps.

Clustering of Suicide Cases

Project with the Department of Psychiatry at U of U.
Goal: Find familial groups in suicide cases. Find demographic or diagnostic attributes related to suicide. Possibly find genetic attributes related to suicide.
Method: I used network clustering algorithms to find familial groups of suicide cases.
Results: Some diagnostic abnormalities found. Research group is using the clusters for further analysis.

Other Projects

- Compiler targeting the λ-calculus
- Sherlock, a question answering system
- AIs for dominion, sudoku, wumpus world, etc.
- Sheet-music optical character recognition
- Genetic algorithm project
- Particle sims for charged particles and dynamical friction
- More on github and bitbucket

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