

TIKHON JELVIS

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EDUCATION

University of California, Berkeley: BS EECS

expected 2014

SKILLS

Languages Haskell, OCaml, Scheme (Racket), JavaScript, Python, Gosu, Java, C, Prolog

Topics Programming languages, program synthesis, functional programming, FRP

Tech Linux, Emacs, Git, SMT solvers, \LaTeX

ACHIEVEMENTS

StackOverflow	I'm in the top 20 for the Haskell tag and in the 99 th percentile overall	2010–Now
Math contests	AMC12: 100.5 (97.5 th percentile), AIME: 3	2010
Hackathon	Got 2 nd place at the Berkeley CSUA Hackathon	2011

EXPERIENCE

Berkeley ParLab Aug 2012–Now	Working on program synthesis—generating programs to some sort of specification <ul style="list-style-type: none">– Targeting GreenArrays, a very constrained, energy-efficient, stack-based architecture– Implemented two synthesizers, one in Racket and one in Haskell– Used Microsoft's Z3 SMT solver and some simple machine learning algorithms
MixRank Dec 2012–Now	Working part-time at MixRank, a YC startup in San Francisco <ul style="list-style-type: none">– Developing a simple aggregation framework for processing web crawler data– Using Python and PostgreSQL
Ashima Arts May 2012–Aug 2012	Worked on gloc, a utility for creating and linking modules for GLSL <ul style="list-style-type: none">– Worked on the tool itself in OCaml– Embedded it in a browser extension, using <code>js_of_ocaml</code>– Wrote a small open-source library for semantic version numbers: <code>ocaml-semver</code>
Copilot Labs Sep 2011–May 2012	Worked part-time at Copilot, a San Francisco startup targeting restaurants Did a bit of everything: <ul style="list-style-type: none">– Backend work with Python and Django, including some simple machine learning– Frontend work with JavaScript, jQuery and Raphael.js– Ops, setting up automated testing and Jenkins CI
Guidewire May 2011–Jul 2011	Guidewire is an enterprise software company serving P&C insurance companies Worked on the internal tools team developing a tool to monitor the company's servers <ul style="list-style-type: none">– Wrote the backend and monitoring daemon in Gosu, Guidewire's own language– Built the frontend with JavaScript, jQuery and jQuery UI

PERSONAL PROJECTS

Semantic Diff

jelv.is/cow

Working on a semantic diff and merge tool in Haskell codenamed cow that

- Compares programs by diffing and analyzing the parse trees
- Finds matching subtrees to robustly detect moved blocks of code
 - can detect blocks of code that are both modified and moved *simultaneously*
- Does scope analysis to find renamed variables
- Can do three-way merges with more extensive, semantically aware conflict resolution

TPL

jelv.is/tpl

Designed and implemented (in Haskell) a dynamically typed scripting language, TPL

- Influenced by Self, JavaScript, Lua, Scheme and Haskell
- Has some interesting features:
 - “Laziness on demand”—fine control over what gets evaluated when
 - A unified system for variable scope and object-oriented programming
- Some silly features as well, like being able to change operator precedence at runtime

Functional Reactive Programming

jelv.is/frp

A survey of techniques for Functional Reactive Programming (FRP).

- Did a 20-minute presentation teaching people about FRP, with some slides
 - jelv.is/frp/slides.html
 - Slides do not work in all browsers, unfortunately
 - Goes into both using FRP in practice and the theory behind it
- Wrote a simple applet for John Conway’s game of life.
- Primarily didactic: simple code used to demonstrate basic FRP concepts.
- UI code is short and declarative, using the Reactive Banana FRP framework

More

I have more projects at my website <<http://jelv.is/projects.html>> and on my GitHub account <<http://github.com/TikhonJelvis>>.