

# TIKHON JELVIS

🌐 <http://jelv.is>  
🌐 <http://github.com/TikhonJelvis>

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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,  $\text{\LaTeX}$

## ACHIEVEMENTS

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

## EXPERIENCE

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

## 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](http://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>>.