Jakob Hain

jakobeha.github.io | github.com/jakobeha   jakobeha@gmail.com | Winthrop, MA 02152

Education

Northeastern University - *Khoury College of Computer Sciences*   **Sept 2017**
    exp. Dec 2019

Seeking:	Bachelor of Science in Computer Science
GPA:	<u>3.981 / 4</u>. Member of the Honors College
Classes:	CS4100 Programming Languages, CS4620 Building Extensible Systems
Clubs:	NU Hacks, Game Dev Club, Club Running

Technical Knowledge

Languages:	Haskell, TypeScript, Rust, C++, Bash, Swift, Scala, OCaml, Racket, R, Java
APIs / Tools:	React, Node.js, Lex & Yacc, UIKit & SpriteKit, Play Framework
Collaboration:	Git (+ GitHub), SSH and Linux OS (for remote servers)
Graphic Design:	UI, logos, presentations. **Tools:** Pixelmator, Sketch, Keynote, Powerpoint
Area of Focus:	Design patterns, programming language design, category theory

Personal Projects

TreeScript - *DSL to analyze & transform other languages' source code*   **Dec 2018**
- Can refactor, transpile, optimize, etc.. Particularly useful for refactors too complicated or specialized for IDEs, like renaming all functions from camel case to snake case
- Compiler in Haskell, interpreter in Rust
- Finalist at Northeastern's RISE 2019

Descript - *Simple language which transforms its own code (2 versions)*   **Feb 2018**
- To perform refactors like renaming symbols & adding fields to structures, simply run one Descript file on another file, and it will transform it in place
- IDE (VS Code) extension which highlights errors and renames symbols (old version)
- Interpreter in OCaml (new version), interpreter in Haskell (old version)

Squarejitsu - *Tile-based platforming game*   **Jan 2015**
- Swipe to move & throw objects, dodge obstacles, destroy turrets
- Built-in level editor, custom physics engine, tile system, and resource-loading system
- Profiled using Instruments. Realized processing offscreen tiles caused lag. Then implemented "closest corner" algorithm so tiles aren't processed until near on-screen
- For iOS, code in Objective-C & Swift, textures made with Pixelmator

Work Experience / Community Service

RIR Research Assistant - *Northeastern PRL*   **Jan 2019 - May 2019**
- Figuring out how to optimize an R compiler using static analysis and SSA form
- Collaborating with others using GitHub, giving and receiving code reviews

Hackathon Volunteer - *MakeMIT, Virtually Reality, WHACK*   **Nov 2018, Jan 2019**
- Mentored participants, stocked food, picked up T-shirts

Fundamentals I Teaching Assistant - *Northeastern CCIS*   **Sept 2018 - Dec 2018**
- Graded homework & exams, attended tutoring sessions, gave advice

Freelance Developer - *RemoG, Remote*   **Jan 2018**
- Built an iOS app to show sensor data (e.g. speed, temperature, pressure) for a car

Counselor - *Parks and Recreation, Winthrop MA*   **July - Aug 2016**
- Collaborated with other counselors, set up and ran a bouncy house & slip-n-slide

Sempai - *Cervizzi's Martial Arts Academy, Winthrop MA*   **Apr 2015, Oct 2016**
- Taught young children Karate moves and techniques, held out punching bags

Other: Running (10mi. in 1:05:49), Piano (Sweet Child O' Mine), Karate (1st degree black belt)