Pierce Darragh

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pdarragh.github.io

Education

	University of Maryland	**College Park, MD, USA**
2021–Present	*PhD in Computer Science, advised by Dr. David Van Horn*	

Specializing in the usability of programming languages.
Selected coursework: program analysis (using Coq), randomized testing and verification.

	University of Utah	**Salt Lake City, UT, USA**
2012–2018	*BS/MS in Computer Science, Minor in Linguistics*	GPA: 3.3/4

Selected coursework: operational semantics, compilers, advanced OS, NLP, phonetics and phonology.

Research and Industrial Experience

University of Maryland   **College Park, MD, USA**
2021–Present   *Graduate Teaching Assistant*   CMSC 330 (Programming Languages)
- Hold office hours, teach weekly discussion, and help write and grade student quizzes and exams.

University of Utah   **Salt Lake City, UT, USA**
2020–2021   *Research Associate*   PI: Matthew Flatt
Contributed to research on SweetPea: a Python DSL for specifying factorial experimental designs and automatically generating trial sequences according to given constraints using SAT sampling.
- Translated back-end from Haskell to Python, improving robustness to reduce possible errors.
- Expanded expressive capabilities and improved user interface to match.
- Implemented automated continuous integration with GitHub Actions.

2019–2020   *Research Associate*   PI: Eric Eide
Contributed to research on Xsmith: a Racket DSL for creating random generators of semantically valid programs for any language. Xsmith is a spiritual successor to Csmith.
- Implemented Xsmith's Python language specification.
- Implemented a dedicated library to improve Xsmith's capabilities for exploring state spaces (Clotho).
- Published and presented *Clotho: A Racket Library for Parametric Randomness*.

2018–2019   *Research Associate*   PI: Michael D. Adams
- Published and presented *Parsing with Zippers*, a new general parsing algorithm.

Apple, Inc.   **Cupertino, CA, USA**
Summer 2017   *Software Engineer Intern*   Apple Information Security
- Designed, built, and presented a secure framework for creating proxy servers for penetration testing.

University of Utah   **Salt Lake City, UT, USA**
2016–2018   *Research Assistant*   PIs: Matt Might, Michael D. Adams
Contributed to research on JAAM: a whole-program static analyzer written in Scala built for identifying potential side-channel vulnerabilities in compiled Java applications.
- Twice selected as one of three student lab members sent to DARPA competition for evaluating JAAM.
- Initiated Viper project to self-direct research in programming languages.
- Worked through half of *Types and Programming Languages* to learn foundations of PL research.

Publications

ICFP 2020	*Parsing with Zippers (Functional Pearl).*	pdarragh.github.io/p/icfp20
	Pierce Darragh and Michael D. Adams.	
Scheme 2020	*Clotho: A Racket Library for Parametric Randomness.*	pdarragh.github.io/p/scheme20
	Pierce Darragh, William Gallard Hatch, and Eric Eide.	

Projects

λ_{vc}	A lambda calculus with variadic functions and automatic currying.
Swift PwZ	A Swift implementation of *Parsing with Zippers*.
Viper	A statically typed programming language implemented in Python.

Awards, Leadership, and Service

2021–Present	Recipient of the Dean's Fellowship, sponsored by the University of Maryland's CS department.
2020–Present	Community manager for Dr. Jean Yang's #PLTalk Twitch stream and Discord server.
2019–2021	Organizer of weekly Programming Languages Reading Group at the University of Utah.
2014–2015	Men's Team Captain, University of Utah Club Swim Team.
2013, 2014	Volunteer judge for elementary student projects at Salt Lake Valley Science and Engineering Fair.
2012–2016	Recipient of the National Merit Scholarship, sponsored by E*TRADE.
2012–2013	Recipient of the Merit Scholarship with Presidential Honors, sponsored by the University of Utah.