Zachary Yedidia

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zyedidia.github.io, github.com/zyedidia

EDUCATION

Stanford University　　　　　　　　　　　　　　　　　　　Stanford, CA
Ph.D. candidate in Computer Science　　　　　　　　　　　　　*Sep. 2021 –*

Coursework: Formal Methods for Computer Systems (CS357s)

Harvard University　　　　　　　　　　　　　　　　　　　Cambridge, MA
S.M. in Computer Science　　　　　　　　　　　　　　*Sep. 2020 – May 2021*

Harvard College　　　　　　　　　　　　　　　　　　　Cambridge, MA
A.B. Magna cum laude with highest honors in Computer Science　*Aug. 2017 – May 2021*

Selected coursework:

- Programming Languages (CS152)
- Research Topics in Operating Systems (CS261)
- Systems Security (CS263)
- Computational Linguistics and NLP (CS187)
- Senior Thesis Research (CS91r)
- Research Topics in Computer Architecture (CS247r)
- Big Data Systems (CS265)
- Introduction to Semantics (Ling106)
- Advanced Computer Architecture (CS246)
- Special Topics in Edge Computing (CS249r)
- Probabilistic Analysis and Algorithms (CS223)
- Data Systems (CS165)
- Data Structures and Algorithms (CS124)
- Computational Neuroscience (MCB131)
- Electromagnetism and Statistical Physics (Physics15b)
- Compilers (CS153)
- Theory of Computation (CS121)
- Optimization: Methods and Models (AM121)
- Circuits, Devices, and Transduction (ES152)
- Operating Systems (CS161)
- Design of VLSI Circuits and Systems (CS148)
- Discrete Mathematics (CS20)
- Systems Programming and Machine Org. (CS61)
- Computing Hardware (CS141)
- Scientific Computing (AM111)
- Mathematical logic (Phil140)
- Linear Algebra and Differential Equations (Math21b)

PUBLICATIONS

Zachary Yedidia and Stephen Chong. "Fast Incremental PEG Parsing" (2021). Proceedings of the 14th ACM SIGPLAN International Conference on Software Language Engineering (SLE), October 2021. PDF, Slides.

Maximilian Lam, Zachary Yedidia, Colby Banbury, Vijay Janapa Reddi. "Precision Batching: Bitserial Decomposition for Efficient Neural Network Inference on GPUs" (2021). Proceedings of the 30th International Conference on Parallel Architectures and Compilation Techniques (PACT), September 2021. PDF.

WRITING

Zachary Yedidia. "Incremental PEG Parsing" (2021). Senior thesis, advised by Prof. Stephen Chong. PDF.

Zachary Yedidia, "SystemVerilog Guide." Course materials for CS 141 (Spring 2020) at Harvard. PDF.

OPEN SOURCE PROJECTS

Micro Text Editor　　　　　　　　　　　　　　　　Website, GitHub Project

I created and launched a text editor called Micro in April 2016. Micro is a Go project with over 17,000 stars on GitHub, more than 500,000 downloads, and 100+ contributors. It aims to be a successor to Nano as a simple to use terminal-based text editor. Micro was the subject of multiple news articles and has been featured on the front page of Hacker news multiple times. Micro is available in many package managers such as: Homebrew, Apt (for Ubuntu Focal and Debian Buster), Snap, AUR, Chocolatey and more.

GPeg Publication, Thesis, Slides, GitHub Project

Library for PEG parsing, as part of my senior thesis research with Professor Stephen Chong. GPeg uses a parsing virtual machine for dynamic parser generation, and implements a novel algorithm for efficient incremental parsing.

Perforator GitHub Project

Perforator is a tool for recording Linux "perf" metrics like cache misses, branch mispredictions, CPU cycles, etc. . . for certain parts of a program like functions or source code regions (as opposed to `perf stat` which only records over entire program lifetimes). It works by using `ptrace` and inserting software breakpoints to enable and disable profiling (Perforator reads the ELF symbol table and possibly DWARF debugging information to determine where to place breakpoints). Perforator supports position-independent ELF executables and multithreaded programs (with limitations).

Literate Programming Tool Website, GitHub Project

A tool for compiling Literate programs written in any programming language. Featured on the front page of Hacker News in September 2015. The article "Write your Own Virtual Machine" was written using Literate. Website.

Eget GitHub Project

A tool for automatically installing pre-built binaries distributed in GitHub releases.

SFML.jl, Chipmunk.jl Talk, GitHub Project

Graphics and physics libraries presented at JuliaCon 2015 at MIT.

EXPERIENCE

Zero Asic	Virtual
Intern	*Summer 2021*
Harvard University	Cambridge, MA
HCRP Research Fellow (Advisor: Prof. Stratos Idreos)	*Summer 2020*
Raytheon Company	Tucson, AZ
Internal Research and Development Intern	*July – August Summer 2019*
Advanced Missile Systems	
Princeton University	Princeton, NJ
Research Assistant (Advisor: Prof. Naveen Verma)	*May – June Summer 2019*
Harvard University	Cambridge, MA
PRISE Research Fellow (Advisor: Prof. Eddie Kohler)	*Summer 2018*

TEACHING

Using Bits to Control Atoms (CS49n) Stanford

Course Assistant for Prof. Dawson Engler *Autumn 2021*

- Helped with a lab-based introductory seminar where students use bare-metal Raspberry Pi programming to control various devices and sensors.

Systems Programming and Machine Organization (CS61) Harvard

Teaching Fellow for Profs Eddie Kohler and Minlan Yu *Fall 2020*

- Teaching evaluations: 4.9/5.0, Derek Bok Center teaching award.

Computing Hardware (CS141) Harvard

Teaching Fellow for Profs David Brooks and Vijay Reddi *Spring 2019, Spring 2020*

- Revamped course materials significantly with new FPGA boards and tools (updating to use Xilinx Vivado and SystemVerilog).
- Teaching evaluations: 4.8/5.0, Derek Bok Center teaching award (2019). No evaluations in 2020 due to COVID.

Compilers (CS153) Harvard

Teaching Fellow for Prof. Stephen Chong *Fall 2019*

- Teaching evaluations: 5.0/5.0.

Programming Skills

Primary Interests:	Computer Systems, Hardware/Architecture, Compilers.
Languages:	C/C++, Go, SystemVerilog, Python, Java, D, OCaml, Matlab, Julia, Lua, Perl.
Tools:	Vim, Git, Xilinx Vivado, PyTorch, LaTeX.