Maxwell Levatich

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EDUCATION

Graduate – Columbia University	**2020 - Present**

PhD in Computer Science

Undergraduate / Masters – Yale University	**2016 - 2020**

B.S. and M.S. in Computer Science, 3.67 GPA

PUBLICATIONS

Supercharging Plant Configurations Using Z3	**CPAIOR 2021**

Nikolaj Bjorner, Maxwell Levatich, Nuno P. Lopes, Andrey Rybalchenko, Chandrasekar Vuppalapati

Solving LIA* Using Approximations	**VMCAI 2020**

Maxwell Levatich, Nikolaj Bjorner, Ruzica Piskac, Sharon Shoham
Artifact: https://github.com/mlevatich/sls-reachability

WORK EXPERIENCE

Teaching Assistant – COMS 4995, COMS 4115	**Fall 2021**

I help teach Parallel Functional Programming and Programming Languages and Translators at Columbia.

SWE Intern – Microsoft Research	**Summer 2020**

I worked with Nikolaj Bjørner on a Unicode theory for Z3 and a plant configuration constraint solver.

PL Researcher - Yale ROSE Group	**Summer 2019**

I worked with Ruzica Piskac on a language-agnostic program synthesis engine, and a new semi-linear set reachability algorithm that iteratively calls Z3 to lazily construct a satisfying Hilbert basis. The algorithm optimizes a decision procedure for multisets, among other applications.

Head Teaching Assistant – CS50 and CS112	**Fall 2017 – Fall 2019**

I joined and lead the staff of CS50 and 112, classes that introduce 400+ students to CS each year – I taught section, held office hours, planned staff meetings, and managed the course with the professor.

Kernel Development Intern - Oracle Corporation	**Summer 2018**

On the kernel maintainers team, I pushed changes to Oracle's Linux kernel, wrote a dev tool with a REST API, web UI, and CLI that tracks upstream commits, and dockerized some internal legacy software.

FELLOWSHIPS & AWARDS

VMCAI '20 Winter School Student Fellowship	**Fall 2019**
CAV '19 Student Fellowship	**Summer 2019**
Yale College Dean's Research Fellowship	**Spring 2019**

PROJECTS (hosted on github)

Mini Dafny	**Fall 2018**

Verification condition generator for a toy language – paired with Z3, proves programs satisfy their specs.

Satis-C	**Fall 2018**

DPLL SAT-solver augmented with clause learning that won a class competition for correctness / speed.

Guy Battle	**Summer 2019**

Fighting game of about 3 KLoC written in C using SDL's rendering API.

Shadow Hunters	**Spring 2019**

Online port of the same board game, 5 KLoC, made by a team of 5. I worked on the Python backend and wrote a socket protocol that syncs state and deploys locks to be robust against concurrency bugs.

SKILLS

Languages: C, C++, LLVM, smt-lib2, Python, Haskell, Dafny, C#, Lua, SuperCollider, x86, Racket, SQL
Tools / Libraries: LiquidHaskell, OpenMPI, Docker, LÖVE, SDL2, WebGL, Flask, SocketIO, AngularJS