

# Yousef Alhessi

PHD STUDENT · PROGSYS GROUP @ UNIVERSITY OF CALIFORNIA SAN DIEGO

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## About Me

Computer Science Researcher with expertise in programming languages, software engineering, and machine learning. My work focuses on creating tools that merge theoretical principles for robust code generation with advanced machine learning to automate and simplify challenging development processes.

## Education

### University of California San Diego

PHD IN COMPUTER SCIENCE AND ENGINEERING

- Advisor: Professor Sorin Lerner

San Diego, California

Sep 2018 - Present

### Swarthmore College

BA IN COMPUTER SCIENCE & MINOR IN ENGINEERING

Swarthmore, Pennsylvania

Sep 2012 - June 2016

## Publications

### Lemmanaid: Neuro-Symbolic Lemma Conjecturing

COLM 2025

YOUSEF ALHESSI, SÓLRÚN HALLA EINARSDÓTTIR, GEORGE GRANBERRY, EMILY FIRST, MOA JOHANSSON, SORIN LERNER, NICHOLAS SMALLBONE

### On Lemma Conjecturing using Neural, Symbolic and Neuro-symbolic approaches

AITP 2024

SÓLRÚN HALLA EINARSDÓTTIR, YOUSEF ALHESSI, EMILY FIRST, AND MOA JOHANSSON

### Course experience report: full-class compiler collaboration

SPLASH-E 2021

JOE GIBBS POLITZ, YOUSEF ALHESSI

### Trust but verify: SFI safety for native-compiled Wasm

NDSS 2021

EVAN JOHNSON, DAVID THIEN, YOUSEF ALHESSI, SHRAVAN NARAYAN, FRASER BROWN, SORIN LERNER, TYLER McMULLEN, STEFAN SAVAGE, DEIAN STEFAN

### Generating correctness proofs with neural networks

MAPL 2020

ALEX SANCHEZ-STERN, YOUSEF ALHESSI, LAWRENCE SAUL, SORIN LERNER

### Swatac: A sentiment analyzer using one-vs-rest logistic regression

SemEval 2015

YOUSEF ALHESSI, RICHARD WICENTOWSKI

## Teaching Experience

### Graduate Co-instructor

CSE231: GRADUATE COMPILERS

Winter 2021, Spring 2022

- Co-designed a new course on compilers for graduate students. In the first half of the course, students iteratively developed a Python-to-WebAssembly compiler. In the second half, students collaboratively contributed to a public compiler to enhance it with advanced features.
- Awarded distinguished teaching assistant by the department for both offerings.

### Graduate Teaching Assistant

CSE231: ADVANCED COMPILER DESIGN, CSE130: PROGRAMMING LANGUAGES, CSE8A: INTRO TO PROGRAMMING, CSE11:

ACCELERATED INTRO TO PROGRAMMING, CSE12: BASIC DATA STRUCTURED AND OBJECT-ORIENTED DESIGN

2020-2025

- Supported instruction and student learning in a range of undergraduate and graduate computer science courses.

## Work Experience

## Graduate Research Assistant

PROGSYS GROUP, UNIVERSITY OF CALIFORNIA SAN DIEGO

- Maintained a C high-frequency trading platform with data feeds to all major stock markets in the US and Japan.
- Introduced a kernel bypass mechanism to the trading platform, eliminating UDP packet drops.
- Implemented low-latency trading strategies, backtesting them with recorded historical data.

San Diego, California

Aug 2018 - Present

## Software Developer

SUMMIT SECURITIES GROUP, LLC

- Maintained a C high-frequency trading platform with data feeds to all major stock markets in the US and Japan.
- Introduced a kernel bypass mechanism to the trading platform, eliminating UDP packet drops.
- Implemented low-latency trading strategies, backtesting them with recorded historical data.

New York, New York

Aug 2016 - Aug 2018

## Software Engineering Intern

GAMETIME UNITED

- Managed the ETL process to ensure efficient data flow between PostgreSQL DB, NoSQL DB, Memcache, and mobile applications.
- Integrated tools into the system to improve customer growth, including Twilio for text messaging, and gift cards.
- Helped design a statistical model to dynamically price tickets by collecting data from user apps and analyzing them in R.

San Francisco, California

Jun 2015 - Aug 2015

## Software Engineering Intern

VALETANYWHERE

- Implemented an end-to-end on-demand valet parking service.
- Developed hybrid mobile customer and valet apps using HTML5, AngularJS, and Ionic Framework.
- Built a server app using Python to handle requests between front-end and MySQL DB.

New York, New York

Jun 2014 - Sep 2014

## Engineering Technical Assistant

SWARTHMORE COLLEGE

- Restored a 12-inch refracting telescope first mounted in 1897 to near-original cosmetic and mechanical condition.
- Upgraded the telescope with unobtrusive modern observing convenience, like a compact digital camera (CDC).

Swarthmore, Pennsylvania

Jun 2013 - Aug 2013