Emmanuel Suárez Acevedo

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Research Interests

Programming languages, type systems, proof assistants, functional programming

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Education

University of Pennsylvania School of Engineering and Applied Science   **Philadelphia, PA**
Candidate for an MSE in Computer and Information Science   *May 2024*

University of Pennsylvania School of Engineering and Applied Science   **Philadelphia, PA**
BSE with Honors in Computer and Information Science   *May 2019*
Courses: Advanced Topics in Programming Languages, Computer Aided Verification, Compilers and Interpreters, Operating Systems, Computer Graphics, Software Foundations, Analysis of Algorithms, Computer Architecture

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Experience

Graduate Researcher   **Philadelphia, PA**
University of Pennsylvania   *August 2022 – Present*

* Studied the duality of effects and coeffects in call-by-push-value. Formalized properties of type-and-effect system in Agda. (arXiv preprint, submitted for review to OOPSLA 2024)
* Developed a proof by logical relations that can be used for teaching the technique of logical relations with a proof assistant (arXiv preprint)
* Wrote an online tutorial for normalization-by-evaluation (NbE) in literate Agda. Formalized correctness of NbE for the simply-typed lambda calculus.
* Formalized a type system and semantics for DeFINE, a programming language for the network data plane

Senior Software Engineer   **San Francisco, CA**
Strava   *August 2019 – July 2022*

* Led the design and implementation of core system for modeling types of activities
* Mentored junior engineers in microservice architecture and Scala programming
* Used Apache Spark to build a geospatial data export tool for city planners
* Built tools to verify and ensure correctness of internal route data
* Developed a Scala microservice to serve all static maps in product

Undergraduate Researcher   **Philadelphia, PA**
University of Pennsylvania   *January 2017 – May 2017*

* Worked on a proposal for an extension to the Glasgow Haskell Compiler to allow binding existential type variables to data constructors in patterns

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Teaching

Mentor   **University of Pennsylvania**
CIS 5520: Advanced Programming   *Nov 2023 – Dec 2023*

* Advise student groups on a final project of their choosing in Haskell showcasing the material covered over the course of the semester

Teaching Assistant   **Heights Philadelphia**
Introduction to Computer Science   *July 2023 – August 2023*

* Introduce computer science to middle school students from underrepresented backgrounds in STEM using various in-class exercises

Teaching Assistant   **University of Pennsylvania**
CIS 5520: Advanced Programming   *August 2022 – December 2022*
  * Assist with in-class discussion and cooperative exercises centered around functional programming patterns in the Haskell programming language
  * Advise student groups on a final project of their choosing in Haskell showcasing the material covered over the course of the semester

Head Teaching Assistant   **University of Pennsylvania**
CIS 120: Programming Languages & Techniques I   *August 2016 – May 2019*
  * Co-lead and prepare a weekly recitation to review course material on core programming languages and techniques, taught in OCaml and then Java
  * Hire and train new teaching assistants

Diversity, Equity, and Inclusion

Anti-racism Lead   **San Francisco, CA**
Tech Brand and Diversity Group, Strava   *September 2020 – June 2022*
  * Lead a group in the technology organization focused on initiatives that could be taken to support diversity, equity, and inclusion, and anti-racism

Co-founder and Director of Finance   **San Francisco, CA**
The Percentage Project, Inc.   *November 2019 – June 2020*
  * Kickstarted financial and accounting systems for nonprofit organization dedicated to helping every person of every background embrace their diversity and feel a sense of belonging in the field that they pursue

CIS Diversity Summit Organizer   **Philadelphia, PA**
University of Pennsylvania   *Aug 2018 – May 2019*
  * Collaborate in organizing a summit bringing together all members of the computer and information science community to determine how to work together to create a more diverse, inclusive, and supportive environment

VP of Finance   **Philadelphia, PA**
Society of Hispanic Professional Engineers, University of Pennsylvania Chapter   *May 2016 – May 2019*
  * Fundraise and organize bringing student members to the SHPE National Convention

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Skills

Languages: Agda, Haskell, Scala, OCaml, Java, Coq, Ruby, C/C++, Javascript
General: Git, LaTeX, Rails, React, Fluent in Spanish

Awards

SHPE 2023 National Convention Funding, University of Pennsylvania SHPE Chapter (2023)
PLMW @ ICFP 2023 Funding, ACM SIGPLAN (2023)
Dean's Master's Scholarship, University of Pennsylvania School of Engineering and Applied Sciences (2022)