

Brent Pappas

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Portfolio: <https://www.pappasbrent.com>

GitHub: <https://www.github.com/PappasBrent>

EDUCATION

PhD - Computer Science; GPA: 3.983

University of Central Florida (UCF)

August 2021 - Present

Orlando, Florida

Courses: Analysis of Algorithms, Complexity Theory, Computer Architecture, and Compiler Construction

Bachelor of Science - Computer Science; GPA: 3.849

UCF

August 2017 - May 2021

Orlando, Florida

Courses: Data structures and algorithms, Systems software, Programming languages, and Discrete structures

SKILLS SUMMARY

Languages: Python3, C/C++, Bash, and HTML/CSS/JavaScript

Tools: Git, GitHub, and LLVM/Clang

Platforms: Linux, Web, and Windows

Soft Skills: Leadership, Writing, Communication, and Time management

WORK EXPERIENCE

Graduate Teaching Assistant

UCF

August 2023 - April 2024

Orlando, Florida

- **Teaching:** Led weekly labs on the Linux command line, the Linux C programming interface, git, make, and compiler design with ANTLR
- **Exam Proctoring:** Answered student questions during exams and monitored students to prevent cheating.
- **Performance Evaluations:** [Link](#)

Software Engineering Intern

Trail of Bits

May 2023 - August 2023, and December 2023 - January 2024

Remote

- **C Language Toolsmithing:** Created Macroni, a C static analysis tool that combines Trail of Bits' tools PASTA and VAST to lower C preprocessor macros down to MLIR. Macroni is available at <https://github.com/trailofbits/macroni>.
- **Peer-reviewed Development:** Leveraged GitHub to push changes to company repos, submit code for code review, and finally merge changes into mainline branches.
- **Research Discussion:** Exhibited research results and Macroni to team members and company CEO, Dan Guido, for advice and criticism.

Graduate Research Assistant

UCF

July 2021 - July 2023, and May 2025 - Present

Orlando, Florida

- **Programming Language Research:** Stay up-to-date on the latest academic developments in programming languages.
- **Software Engineering:** Implement research ideas in languages such as C++.
- **Conduct Experiments:** Write Python and Bash scripts to automate running experiments.

Quality Assurance Coordinator

SP+

September 2019 - July 2021

Orlando, Florida

- **Agile Software Development:** Engaged in agile software development methods within a small team to QA test software before moving on to later phases of development.
- **Testing Automation:** Refactored and wrote Python scripts to automate testing of various online user applications.
- **Mobile Application Development:** Tested company Android apps for compatibility with various versions of Android.

- **Led Tutoring Sessions:** Led Computer Science 1 and Object Oriented Programming tutoring sessions involving Socratic learning methods.
- **Faculty Collaboration:** Collaborated with UCF teaching staff to enhance tutoring session quality.
- **Tutor Mentoring:** Observed other tutors' sessions and provided feedback as to how they may improve their communication and tutoring skills.

PROJECTS

Macroni: A C static analysis tool that combines Trail of Bits' tools PASTA and VAST to lower C preprocessor macros down to MLIR. Macroni is available at <https://github.com/trailofbits/macroni>.

Maki: C++ Clang plugin that analyzes hows C preprocessor macros affect the C AST. Maki provides language porting tools information they can use to port macros to target languages in a way that preserves not just macro behavior, but also macro abstractions. Maki is the tool associated with 2024 ICSE paper, Semantic Analysis of Macro Usage for Portability, for which I am the lead-author.

PUBLICATIONS

Semantic Anaysis of Macro Usage for Portability: by Brent Pappas, and Paul Gazzillo. International Conference on Software Engineering (ICSE). Acceptance rate of 22.26% (234 / 1051). <https://dl.acm.org/doi/10.1145/3597503.3623323>.

Holy Macroni! A recipe for progressive language enhancement: by Brent Pappas. Blog post written for Trail of Bits. <https://blog.trailofbits.com/2023/09/11/holy-macroni-a-recipe-for-progressive-language-enhancement/>.

SugarC: Scalable Desugaring of Real-World Preprocessor Usage into Pure C: by Zach Patterson, Zenong Zhang, Brent Pappas, Shiyi Wei, and Paul Gazzillo. ICSE. Acceptance rate of 28.51% (197 / 691). <https://dl.acm.org/doi/10.1145/3510003.3512763>.

PRESENTATIONS

Invited Talk - The PhD Life: Guest lecture on graduate student life presented to Dr. Suzanne Rivoire's undergraduate course, Computing Professions, at Sonoma State University. 2025-05-08. [Slides link](#).

Semantic Analysis of Macro Usage for Portability (ICSE 2024): Presentation at the 2024 International Conference on Software Engineering in Lisbon, Portugal. 2024-04-17. [Recording link](#).

Semantic Analysis of Macro Usage for Portability (CAE-R): Virtual presentation for Center of Academic Excellence in Cyber Research (CAE-R). 2023-08-31. [Recording link](#); [jump to 25:58](#).

POSTERS

Cpp2C: Transforming C Preprocessor Macros to C Language Constructs: 2022 University of Central Florida Student Scholar Symposium.

Holy Macroni! Finding Macro Usage Errors in the Linux Kernel: 2024 International Symposium on Secure and Private Execution Environment Design.

HONORS AND AWARDS

UCF 3MT Finalist (2024): For effectively communicating my research to a non-specialist audience in a 3 minute talk. [Video](#). [Certificate](#).

Distinguished artifact reviewer (2024): For my attention to detail while reviewing artifacts for OOPLSA 2024. [Link](#).

FCI Student Scholarship (2024): For my interest in interdisciplinary research, scholarship, and collaboration.

Cum laude honors (2021) (2021): For having a cumulative undergraduate GPA greater than 3.8.

Deans' list (2017-2021): For continued undergraduate scholastic achievement.

Burnett Honors Scholar (2017): For academic talent, motivation, intellectual curiosity and creativity.

Provost Scholarship (2017): For outstanding academic performance in high school.

CERTIFICATIONS

Completed higher education training, Preparing Tomorrow's Faculty

Level 1 College Readiness and Learning Assessment (CRLA) certified tutor.

Level 2 College Readiness and Learning Assessment (CRLA) certified tutor.

UCF Student Enhancement Training (SET) program certified.

WORKSHOPS

2025 CRA-WP Virtual Mentoring Series Workshops

Virtual - October-November, 2025

2025 CRA-E Career Landscape Workshop

Virtual - May, 2025

Programming Language Mentoring Workshop (PLMW)

San Diego, California - June 13-14, 2022

VOLUNTEERING

UCF CS Grad Symposium 2025 Student Panelist

Orlando, Florida - October 2025

- **Early PhD advice:** Recommended that new graduate students remain humble and start honing their communication skills immediately after starting a PhD.

UCF "Surviving Graduate School" Panelist

Orlando, Florida - August 2025

- **Community engagement:** Taught prospective graduate students how to become active in the UCF community and obtain financial support from UCF for travel.
- **Finance tips:** Explained how to obtain financial support from UCF for research-related travel.

UCF GradLaunch PhD Panelist

Orlando, Florida - August 2025

- **Advising:** Instructed new graduate students how to manage their time and organize their day in order to be productive researchers.

UCF Graduate School Info Session PhD Student Panel

Orlando, Florida - May 2025

- **Advising:** Answered undergraduate students' questions about UCF's Computer Science PhD program.

OOPLSA 2024 Artifact Evaluation Committee Member

Virtual - January-February, July-August, 2024

- **Artifact Review:** Reviewed code artifacts associated with papers accepted to OOPLSA 2024. Distinguished reviewer.

NAC - NAPC Volunteer

Orlando, Florida - May 2024

- **Competition Setup:** Moved computers and cables to the competition room for the 2024 North American Championship and Programming Camp (NAC-NAPC), hosted at UCF.

EuroSys 2023 Shadow Program Committee Member

Virtual - November-December 2022

- **Paper Review:** Reviewed real paper submissions to EuroSys 2023.

Camp Connect

Orlando, Florida - June 2021, June 2023, June 2025

- **Computer Programming Lessons:** Taught elementary, middle, and high school students the basics of computer programming in JavaScript.
- **Human Computer Interaction Lessons:** Gave elementary, middle, and high school students hands-on training with a variety of biometric equipment, including respiration belts, EDA and ECG sensors, fNIRS headbands, and eye-tracking sensors.

UCF CECS Senior Design Judge

Orlando, Florida - April 2024

- **Judging:** Followed a given rubric to judge the quality of capstone projects for seniors of the College of Engineering and Computer Science. Criteria included presentation quality, project design quality, and creativity.

UCF CECS Career Kickoff Alumni Mentor

Virtual - October 2022

- **Mentoring:** Advised UCF freshmen on goal-setting, resume-building, and overall professionalism.
- **Job Application Prep:** Conducted mock interview with UCF freshmen and provided tips on how to effectively search for jobs in their field.