

# Brent Pappas

Email: pappasbrent at gmail dot com

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

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

## EDUCATION

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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

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**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

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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](#)

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

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**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

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**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

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**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

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**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

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**UCF 3MT Finalist (2024):** For effectively communicating my research to a non-specialist audience in a 3 minute talk.

**Distinguished artifact reviewer (2024):** For my attention to detail while reviewing artifacts for OOPSLA 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

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Completed higher education training, Preparing Tomorrow's Faculty

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

UCF Student Enhancement Training (SET) program certified.

## WORKSHOPS

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**2025 CRA-E Career Landscape Workshop**

Virtual - May, 2025

**Programming Language Mentoring Workshop (PLMW)**

San Diego, California - June 13-14, 2022

## VOLUNTEERING

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**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.