

# KAARTHIK A. ALAGAPPAN

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## EDUCATION

### University of Central Florida

*Bachelor of Computer Science,*  
GPA: 3.96

*Master of Computer Science,*

Orlando, FL  
December 2020

May 2022

## TECHNICAL SKILLS

**Languages:** C, Java, Python, SQL, C++, Bash, JavaScript, HTML, CSS, PHP, Go

**Tools and Environments:** Linux, Git, MySQL, Agile, React

**Certifications:** Microsoft Office Specialist (2014), Microsoft Technology Associate (2014)  
Adobe Photoshop (2015), Illustrator (2015), Premiere Pro (2015), Dreamweaver (2015)

## WORK EXPERIENCE

### University of Central Florida

May 2019 – Present

#### Research Assistant

- Modified the LLVM and Clang infrastructures and a source code transformer to support a customized, side-channel free architecture, and created Bash scripts to test the tools and simplify the process for the end users
  - Added a new LLVM-IR (C++) branch opcode that produces extra assembly code used by the side-channel free architecture, and modified Clang (C++) to emit that opcode based on the source code attributes
  - Customized a Java-based source code transformer to convert specific statements into a compatible format that does not induce new side-channels
- Collaborating with multiple professors to make P4, a network packet processing language, modular
  - Collecting and organizing relevant data from P4 programs and assisting with refining the scope of the project
  - Analyzing and documenting preprocessor usage patterns in existing P4 projects

## PROJECTS AND EXTRACURRICULARS

### Endless Learner (ELLE) – Virtual Reality

January – December 2020

#### Senior Design Project

- Worked with a researcher to create virtual reality games that aid students in learning new languages while collecting data from the games to analyze the impact of different games on the students' growth
- Served as the project manager for a team of five and as a backend developer
  - Collaborated with two other ELLE groups to determine the requirements and redesign the existing system to better suit the researcher's needs and to have a unified backend, and coordinated the new backend implementation
  - Implemented, documented, and maintained MySQL databases and RESTful APIs created in Python using Flask

### Engineering Leadership & Innovation Institute at UCF

November 2018 – December 2020

#### Member in the student committee

- Worked with the tech team to create projects that were used as tools to teach children about programming
  - Created a Python starter guide and two games, tic-tac-toe and minesweeper, using Python
- Served as a mentor and a judge for the Google Sprint project that aimed to solve common student issues on campus

### Process for Object Oriented Software Design

August – December 2019

- Served as the project manager and as a backend developer for two projects
- Built a contact manager website based on the LAMP stack with HTML5, CSS, JavaScript, and REST APIs
- Collaborated with the professor to create a Bluetooth based attendance app called Knight In
  - Learned Firebase and JavaScript to host the database and create API functions, respectively

### LEAD Scholars (UCF)

August 2017 – May 2019

- A two-year leadership program that helped cultivate effective leadership practices

## VOLUNTEER SERVICES

### Hindu Society of Central Florida

- Creating an automated phone and text messaging system in Python using Twilio services
- Working with the IT committee to improve their website and unite different services under a new management system