

ASHA BHANDARKAR

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OBJECTIVE

Full-time position in embedded software development with emphasis on robotics and/or wearable technology applications

EDUCATION

Georgia Institute of Technology | Atlanta, GA

Master of Science in Electrical and Computer Engineering, GPA 4.0

August 2021 – December 2022

Bachelor of Science in Computer Engineering with Honors, GPA 3.28

August 2018 – May 2021

SKILLS

Programming: C/C++, Python, MATLAB, Java, LaTeX, MIPS Assembly, VHDL

Software: Linux, EAGLE CAD, KiCAD, STM32CubeMX, ROS, Git, Docker, Microsoft Office Suite

Hardware: Arduino, ESP32, NVIDIA Jetson, STM32, Raspberry Pi, Mbed, LaunchPad

Prototyping: PCB Design, Soldering, Oscilloscope, Logic Analyzer, Multimeter, 3D Printing, Laser Cutting,

Communication: Design proposals, technical reports, presentations (large and small audiences)

EXPERIENCE

Contextual Computing Group | Graduate Research Assistant

January 2022 – present

School of Interactive Computing, Georgia Tech / Atlanta, GA

- Developing wearable computing interfaces and usable embedded systems under the advisement of Dr. Thad Starner
- Researching passive haptic learning using vibrotactile gloves to accelerate piano learning
- Designing and implementing hardware/firmware for Bluetooth LE-enabled, ESP32-based wireless haptic glove interface

Amazon Robotics | Software Development Intern

May 2022 – August 2022

AR Research and Development / North Reading, MA

- Designed and implemented a distributed computing solution for item-picking manipulation robots
- Adapted machine learning algorithms (object segmentation and barcode decoding) for NVIDIA Jetson AGX Orin platform
- Benchmarked inference speed and memory footprint of machine learning algorithms on various platforms

John Deere | Embedded Systems Development Intern

May 2021 – August 2021

Construction and Forestry Division / Dubuque, IA

- Determined system requirements for various grade control systems for Gen A skid steer and compact track loaders
- Wrote project charter for payload weighing for skid steer and compact track loaders

Laboratory for Intelligent Decision and Autonomous Robots | Undergraduate Research Assistant

August 2020 – May 2021

George W. Woodruff School of Mechanical Engineering, Georgia Tech / Atlanta, GA

- Adapted MIT's Mini Cheetah simulator and controllers to Unitree's A1 Quadruped platform
- Designed impedance controller and implemented trajectory planning to simulate various locomotion gates using Drake

Georgia Tech Research Institute | Robotics Research Intern

May 2019 – August 2019

Aerospace, Transportation, and Advanced Systems Laboratory (ATAS) / Atlanta, GA

- Programmed UR-5 robotic arm and various sensors using C++ and ROS to enable high-level object manipulation control
- Directed and mentored high school students in creating a user interface to control the robot using Google Blockly

PROJECTS

RoboCup Small Size League

May 2020 – May 2022

RoboJackets, Georgia Tech / Atlanta, GA

- Mentored junior members in hardware and firmware focused design projects
- Designed, programmed, and manufactured circuit board to enable automatic robot shell identification
- Wrote firmware for the STM32F7 chip to utilize the flexible memory controller (FMC) with SDRAM and other features
- Redesigned current API for inhouse microcontroller to work across multiple STM32 chips

MicroFloats: A Swarm of Underwater Autonomous Vehicles

January 2021 – May 2021

Interdisciplinary Senior Design, Georgia Tech / Atlanta, GA

- Designed and manufactured a novel underwater vehicle rated to 400 m to collect environmental data and follow currents
- Developed overall system design for vehicle including a buoyancy engine, GPS, LoRa, and acoustic communications.
- Designed and programmed Atmel ARM based circuit board to interface with custom sensor suite and peripherals

Intelligent Ground Vehicle Competition (IGVC)

August 2018 – August 2020

RoboJackets, Georgia Tech / Atlanta, GA

- Established robot's system design, including a custom CAN diagnostic system and emergency stop system
- Wrote technical design report and presentation and represented team at the 2019 competition
- Redesigned hardware and firmware for AVR based circuit board to increase range and reliability of E-stop system

LEADERSHIP

The Hive | Peer Instructor

January 2019 – present

Interdisciplinary Design Commons, Georgia Tech / Atlanta, GA

- Aids students with projects utilizing electronics benchtop equipment, 3D printing, laser cutting, and machine shop tools

ACM SIGCHI | Student Volunteer

September 2022

UbiComp/ISWC 2022 / Atlanta, GA

- Assisted academic conference organizing committee in setting up and running a 200+ attendee conference

RoboJackets | Electrical Training Lead

May 2020 – May 2021

- Managed a team of 10 members to deliver an electronics training curriculum with robotics emphasis
- Created an open-source self-paced online curriculum to teach skills such as Arduino programming and circuit board design
- Created lectures and lab materials and presented information to 40+ members with limited prior experience in electronics

RoboJackets | Electrical Subteam Lead

May 2019 – August 2020

Intelligent Ground Vehicle Competition Team (IGVC) / Atlanta, GA

- Managed a team of 15 members to design an electrical system for the Intelligent Ground Vehicle Competition (IGVC)
- Established robot's system design, led technical projects, and trained new members
- Set goals and timelines and coordinated with other team leadership of different disciplines

PUBLICATIONS

Won Best Demo Award at UbiComp/ISWC 2022

Asha Bhandarkar, Tan Gemicioglu, Brahmi Dwivedi, Caitlyn Seim, and Thad Starner. 2022. Learning Piano Songs with Passive Haptic Training: an Interactive Lesson. In Proceedings of the 2022 ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp/ISWC '22 Adjunct), September 11–15, 2022, Cambridge, United Kingdom. ACM, New York, NY, USA, 3 pages. <https://doi.org/10.1145/3544793.3560321>