Anand Balakrishnan

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➤ Los Angeles, CA, USA

EDUCATION

- **Ph.D. Computer Science** *Ongoing*
  University of Southern California
  Advisor: *Jyotirmoy Deshmukh*
- **B.S. Computer Engineering** May 2018
  University at Buffalo
  Distinction: *Magna Cum Laude*

RELEVANT EXPERIENCE

- **Research Assistant**
  CPS-VIDA Group, University of Southern California
  Developed and published several algorithms for designing, verifying, and monitoring autonomous systems for end-to-end safety.
  Since August 2018.
- **Technical Intern**
  Siemens Corporation
  Developed framework to monitor for reliability and consistency of multi-modal sensor data for safety certification of learning-enabled systems.
  June 2023 – August 2023
- **ADAS Software Engineering Intern**
  INDI EV, Inc.
  Assisted in building the initial prototype for Level 2 autonomy from the ground up on a test vehicle as part of a small team.
  June 2021 – August 2021
- **Research Intern**
  Toyota Research Institute, North America
  Developed open-source tool that uses a logical monitoring specification languages for monitoring the output of perception systems (object detectors and trackers).
  May 2020 – August 2020
- **Undergraduate Researcher**
  Distributed Robotics and Networked Embedded Systems Lab, University at Buffalo
  Deployed a ROS-based system to collect data to assist in testing the performance of Wi-Fi augmented SLAM algorithms in indoor environments.
  February 2016 – May 2018

SKILLS

- **Expert (5+ years)**: C++ (11, 14, 17), Python, ROS (1, 2), PyTorch, Numpy, Scipy, Pandas
- **Intermediate (2+ years)**: C (99, 11, 17), Rust
- **Familiar (<1 year)**: Matlab, ARM Assembly
- **Hobby:** Zig, Haskell, Lua, FreeRTOS, Arduino

PROJECTS

- **Argus**
  [GitHub:anand-bala/argus]
  A Rust library (with Python bindings) for efficiently working with Signal Temporal Logic (STL) and its quantitative semantics.
  Rust, Python
- **PerceMon**
  [GitHub:anand-bala/PerceMon]
  A tool for online monitoring of perception systems using Spatio-Temporal Quality Logic specifications.
  C++
- **Symbolic Automata Monitors**
  [GitHub:anand-bala/symbolic-automata-monitors]
  Library implementing symbolic automata for monitoring real-valued signals.
  Python

SELECT PUBLICATIONS

- A. Balakrishnan *et al.*, "Model-free Reinforcement Learning for Spatiotemporal Tasks using Symbolic Automata," in *62nd IEEE Conference on Decision and Control (CDC)*, Invited Paper, Accepted, Dec. 2023.

- A. Balakrishnan *et al.*, "PerceMon: Online Monitoring for Perception Systems," in *Runtime Verification*, Oct. 2021. DOI: 10.1007/978-3-030-88494-9_18.

- A. Balakrishnan and J. V. Deshmukh, "Structured Reward Shaping Using Signal Temporal Logic Specifications," in *2019 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Nov. 2019, pp. 3481–3486. DOI: 10.1109/IROS40897.2019.8968254.

For more information regarding my research, please refer to my website or my DBPL page (dblp.org/pid/132/8908)