Adwait Dongare

adongare@cmu.edu | +1-(412)-330-7550

EDUCATION

CARNEGIE MELLON UNIVERSITY | PhD in Electrical and Computer Engineering
Department of Electrical and Computer Engineering | Expected Dec 2019 | Pittsburgh, Pennsylvania
Advisor: Prof Anthony Rowe

INDIAN INSTITUTE OF TECHNOLOGY - BOMBAY | BTech in Engineering Physics with minor in Electrical Engineering
Department of Physics | August 2014 | Mumbai, India • Cumulative CPI: 8.55 / 10.0

INDUSTRY EXPERIENCE

APPLE | Software Engineering Internship
June 2015 – Aug 2015 | Cupertino, California

- Developed system firmware for the low-power co-processor in iOS and watchOS devices.

RESEARCH EXPERIENCE

WISELAB, CARNEGIE MELLON UNIVERSITY | PhD Candidate
Aug 2014 – Present | Pittsburgh, Pennsylvania • Advisor: Prof Anthony Rowe

- Development of platforms and protocols for nanosecond accurate time synchronization in computers, networking infrastructure and embedded systems
- Architecture and deployment of the OpenChirp Low-Power Wide Area Network (LPWAN) for last-mile wireless connectivity to low-power devices
- Development of the Roseline networking stack for Linux and RTOSes, and hardware platforms that are aware of the quality-of-time (clock accuracy, stability and offsets) available to them.

EXPERIMENTAL HIGH-ENERGY PHYSICS LAB, IIT-BOMBAY | Undergraduate Researcher
July 2012 – May 2014 | Mumbai, India • Advisor: Prof Pradeep Sarin

- Analog electronic front-end design for high-energy particle detectors that use diamond pixels
- Electronic system implementation for a cosmic ray detector

PANDA, FORSCHUNGSZENTRUM JÜLICH | Undergraduate Summer Internship
May 2013 – July 2013 | Juelich, Germany

- Evaluation and calibration of the analog sensing front-end in a straw-tube particle detector

GEO600, MAX PLANCK INSTITUTE FOR GRAVITATIONAL PHYSICS | Undergraduate Summer Internship
May 2012 – July 2012 | Hannover, Germany

- Implementation of an active electronic suspension system for the GEO600 gravitational wave detector

PUBLICATIONS

PULSAR: WIRELESS PROPAGATION-AWARE CLOCK SYNCHRONIZATION
Dongare, A. • Lazik, P. • Rajagopal, N. • Rowe A.
(Under Review) IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS), 2017 • Pittsburgh, Pennsylvania
We design and evaluate a wireless clock synchronization system called Pulsar that achieves better than 5 nanosecond accuracy using a combination of an ultra-wideband (UWB) radio and a chip-scale atomic clock (CSAC). We expect it to have direct applications in next-generation wireless systems that target higher throughput.

OPENCHIRP: A LOW-POWER WIDE-AREA NETWORKING ARCHITECTURE | Workshop Paper

Dongare, A. • Hesling, C.• Bhatia, K. • Balanuta, A.• Pereira, R. L. • Iannucci, B• Rowe, A.
(Planned to Appear) IEEE International Workshop on Smart Edge Computing and Networking (SmartEdge), 2017 • Big Island, Hawaii
Describes the architecture of an Low-Power Wide Area Network (LPWAN) named OpenChirp and the early experience in deploying it around CMU and Pittsburgh

TIMELINE: AN OPERATING SYSTEM ABSTRACTION FOR TIME-AWARE APPLICATIONS

Anwar, F. • D'souza, S. • Symington, A. • Dongare, A. • Rajkumar, R. • Rowe, A. • Srivastava, M.
IEEE Real-Time Systems Symposium (RTSS), 2016 • Porto, Portugal
We introduce the Timeline abstraction to Linux to simplify device synchronization and development of real-time applications

LEADERSHIP

IIT BOMBAY RACING TEAM | Design Engineer

August 2012 – May 2014 | Mumbai, India

- Developed the Electronic Control Unit, Data Acquisition and Safety Electronics hardware for electric racing vehicles competing at Formula Student-UK, Silverstone
- Led a team of 7 through planning, development and testing of electronic systems

TEACHING

CARNEGIE MELLON UNIVERSITY | Graduate Teaching Assistant

- 18-549 Embedded System Design | Spring 2017
- 18-349 Introduction to Embedded Systems | Fall 2016
- 18-549 Embedded System Design | Spring 2015

SKILLS

PROGRAMMING
Comfortable:
C • C++ • Matlab • Python • Shell
Familiar:
Assembly • Verilog • Java

SOFTWARE
Circuit Design:
Eagle • Altium
Mobile Development:
Android

LANGUAGES
Fluent:
English • Marathi • Hindi

COURSEWORK

- Advanced Operating Systems and Distributed Systems | Fall 2015
- Computer Networks | Spring 2016
- Real-Time Embedded Systems | Fall 2015
- Introduction to Machine Learning | Spring 2015
- Linear Systems | Fall 2014
- Applied Stochastic Processes | Fall 2014