

ADITHYA ABRAHAM PHILIP

Computer Networking Ph.D. Student, Carnegie Mellon University

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EDUCATION

Carnegie Mellon University, Pittsburgh
Ph.D. Program, Computer Science Department

August 2019 - Current


PES Institute Of Technology, Bangalore
B.E. in Computer Science & Engineering, First Class With Distinction

August 2013 - July 2017


GPA: 9.82/10

Ranked 8th in the CSE Department

RESEARCH PUBLICATIONS

 **Revisiting TCP Congestion Control Throughput Models & Fairness Properties at Scale**
Adithya Abraham Philip, *Ranysha Ware, Rukshani Athapathu, Justine Sherry, Vyas Sekar*


- Published at IMC'21.

 **Orca: Differential Bug Localization in Large-Scale Services**
Ranjita Bhagwan, Rahul Kumar, Chandra Sekhar Maddila, Adithya Abraham Philip

- Published and Awarded the Jay Lepreau Best Paper Award at OSDI'18


 **FastLane: Test Minimization for Rapidly Deployed Large-scale Online Services**
Adithya Abraham Philip, *Ranjita Bhagwan, Rahul Kumar, Chandra Maddila, Nachi Nagappan*

- Published at ICSE'19, available via IEEE Xplore

 **Leveraging Change Intents for Characterizing and Identifying Large-Review-Effort Changes**

Song Wang, Chetan Bansal, Nachiappan Nagappan, Adithya Abraham Philip

- Published at PROMISE'19, available via ACM Digital Library

 **BeaconNet: A Beacon-Based Smartphone Ad-Hoc Network for Resource-Constrained Classrooms**

Viraj Kumar, Adithya Abraham Philip, Sarah Shekeran, Pranav Singhania, Ram P. Rustagi

- Published at ICALT'18, available via IEEE Xplore

WORK EXPERIENCE

Google - PhD SWE Intern

June 2021 - August 2021

- Improved the congestion control algorithm BBRv2's RTT fairness when using ECN, allowing data-center traffic to co-exist with Wide Area Network traffic while still keeping network delays low.

Microsoft Research India - Research Fellow

July 2017 - July 2019

- Developed techniques to address a variety of issues in software engineering, including risky-change prediction, test suite minimization, and automated bug-localization.
- Reduced time taken by internal testing infrastructure by 60% using machine-learning based techniques.
- Jay Lepreau Best Paper Award at OSDI'18 for work on bug-localization, and two more publications at ICSE'19 and PROMISE'19.

Microsoft Research India - Research Intern

August 2016 - January 2017

- Interned under Ranjita Bhagwan and Saikat Guha and built a clustering-based anomaly detection system to identify atypical behavior in network resource accesses.

Goldman Sachs - Summer Technology Intern

June 2016 - July 2016

- Reduced time spent by employees on regulatory reports by 54% by developing a statistical anomaly detection and mailing system to highlight suspicious activity.

OPEN SOURCE CONTRIBUTIONS

Google Summer Of Code 2016

May 2016 - August 2016

Mentor at OpenKeychain, the PGP Encryption Client for Android

- Successfully guided a student towards improving the speed and usability of PGP keys by shifting from passphrase based symmetrically encrypted keys to an "App Lock" mechanism more convenient in phones, while ensuring a reasonable usability to security tradeoff.

Google Summer Of Code 2015

May 2015 - August 2015

Student At OpenKeychain, the PGP Encryption Client for Android

- Produced a 10x speed-up of contacts' public keys to keyserver syncs via multi-threaded fetching and integration of key data. User anonymity was preserved using staggered updates over the Tor network.
- Fourth-largest contributor to the repo, which has almost 100 contributors and 100,000+ installs.

OpenPGP Standard For XMPP

- Helped design a [new standard for OpenPGP encryption over the XMPP protocol](#) (see acknowledgements). Also wrote the official reference implementation for the same in Conversations, an Android XMPP client.

Personal Projects

- Published almost 40 hobby projects on Github, ranging from stock market data fetchers to video game bots to personal safety applications. More details in the "Other Projects" section of this document.

AWARDS & ACHIEVEMENTS

Intuit Hackathon: 1st Place	2017
OnePlus Hackathon: 1st Place	2015
Ayana Hackathon, PESIT: 1st Place	2015
Dexter Hack: 1st Place	2015
ACMC ICPC: Qualified for regionals, ranked 1st in college	2016
Microsoft One-Week Hack: 2nd Place (LinkedIn Category)	2018
Microsoft One-Week Hack: 2nd Place (Social Good Category)	2017
HUL National Hackathon: 2nd Place	2016
FourthLion Hackathon: 2nd Place	2015
SAP Labs Hackathon: 2nd Place	2014
ABInBev Hackathon: 3rd Place	2017
Global Atos IT Challenge 2015: Finalist (Top 10)	2015
Global Atos IT Challenge 2014: Finalist (Top 10)	2014
ImpressIT - SAP Labs With Government of Karnataka: Finalist (Top 10)	2013

OTHER PROJECTS (AVAILABLE ON GITHUB)

PyDealer

- A language-independent, platform-agnostic map-reduce tool for running parallelizable workloads over multiple networked computers.

PESCom

- A Peer-to-Peer VoIP and messaging app which runs on a local network, as a reliable maintenance-free alternative to the wired intercom systems used in corporate and college campuses. The application was developed on Android with a Node.js backend. Personally designed and implemented the custom P2P VoIP protocol ground up.

Ontology-based Q&A Generator

- Dynamically builds a partial ontology based on a given corpus of text, which is then used to generate questions and answers. Python with Stanford Parser was used to generate actor-action-object triples, which were consumed to generate the ontology.

Computer Vision Based Video Game Bot

- Built a bot to automate the more mundane tasks in the turn-based massively multiplayer strategy game [Dofus](#). Used computer vision to interpret game state, and execute appropriate actions.

Pokemon Go Bot

- Used reverse-engineered API calls to automate playing the popular mobile game Pokemon Go. Ran multiple accounts off an always-online Raspberry Pi, simulating GPS coordinates with home/work walking routines, and heuristic-based movement patterns that mimic human behaviour.

Saviour - Personal Safety Application

- Built a personal safety application that crowd-sources instant help when in distress. The app selectively contacts passersby in the immediate vicinity, using heuristics such as age, past responses to emergencies, and possible ties to the victim, to maximize the probability of rapid, effective assistance.

PhoneBridge - Bridging the Tech Gap

- Built a screen-mirroring application that allows skilled users to guide lesser-skilled users in accomplishing tasks on their smartphones. Guides can only provide visual cues, which appear to the guided as swipes or presses to follow, allowing them to learn the procedure by actually doing it.

Virtual Workspace

- Built a virtual reality application that simulates upto 6 monitors in front of a user, using a commodity VR headset and laptop. User actions in the virtual space are translated appropriately to inputs on the user's laptop, allowing her to have 6 monitors for the price of one VR headset.

Future Pen

- Digitises the writing of a normal pen, marker, or chalk by means of an LED attached to the back. The LED is tracked with a camera, using OpenCV implemented in Java for the image processing. The intended use-case is low-bandwidth streaming of whiteboard content in a classroom.

TECHNICAL PROFICIENCY

Computer Languages	Java, Python, C#, C
DB	MySQL
Mobile	Android
Backend	PHP, Flask (Python framework)