ARCHANA PRABHU

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Portfolio | GitHub | LinkedIn

EDUCATION

Bachelors of Engineering in Computer Science 2015 – 2019
University Visvesvaraya College of Engineering (UVCE) **,** Bangalore University, India
Honors Distinction Degree with 86% [Scholaro GPA: 4/4]
Recipient of P. V. Kumaraswamy Gold Medal for 1st Rank in Computer Science and Engineering

Joint Secretary at IEEE Computer Society, UVCE 2016 – 2018
Founding Member of Computer Society in College and responsible for leading the effort to curate coding questions and conduct technical workshops.

PROFESSIONAL RESEARCH & ENGINEERING EXPERIENCE

Software Engineer 2 – Performance Researcher for mobile apps | Microsoft Teams
Microsoft Research & Development Center | Bangalore, KA 2020 – Present

- **QUIC (Quick UDP Internet Connections) research**
  - Currently leading the effort to design a deep learning based congestion control algorithm to expedite call recovery in Low-Bandwidth network conditions.
  - Integrated QUIC (Quick UDP Internet Connections) network protocol for Android stack using Cronet that reduced network latency by 45% for all services.

- **Cross-Action Priority Framework for Network Layer**
  - Assigned a context-aware dynamic priority for network call based on waiting time and earliest deadline first (EDF) algorithm.
  - Adopted a computational off-loading mechanism in low-bandwidth and low-battery environments by deferring them as actionable tasks in mobile clients.

- **Adaptive retry strategy for network calls in Mobile Apps**
  - Devised protocol handoff across QUIC, WebSocket and HTTP2 connections to improve network reliability.
  - Proposed retry for network calls that is cognizant of the network exceptions and selects an appropriate back-off and protocol for the retry.

- Curating an **adaptive algorithm for Real-Time systems with network socket error correction logic** that increased network call reliability by 35%.
- Implemented **a temporal ML-based system using Exponential Moving Average (EMA) and sliding time window algorithm** for bandwidth estimation in Real-Time mobile systems with 90% accuracy.

Software Engineer – Android Developer | Microsoft Teams
Microsoft Research & Development Center | Bangalore, KA 2019 – 2018
Developed an extensive search experience for the Teams app in collaboration with the Microsoft Search, Assistant, and Intelligence (MSAI) team of Microsoft Research and streamlined the search telemetry in client.

Software Engineer Intern | Microsoft Teams
Microsoft Research & Development Center | Bangalore, KA 2017 – 2018
Integrated the Microsoft Office Lens, an Optical Character Recognition (OCR) software that uses image processing, text conversion, and edge detection algorithms with the Android Camera of Microsoft Teams.

SKILLS AND INTERESTS

Technologies: C, C++, Python, Java, Kotlin, Android, Javascript, Rust, Deep Learning, Go, Linux, SQL
Certification: Deep Learning Specialization (DeepLearning.ai) | Protocol Deep Dive: QUIC (Pluralsight)
Research Interests: Networking and Systems, Artificial Intelligence in Real-Time Systems

PUBLICATIONS AND PATENTS

Network Intrusion Detection using Sequence Models 2019
IEEE Xplore Journal

Intelligent Systems: Adaptive Socket Timeout with error correction logic 2021 – Submitted
Patent under review by Microsoft Corporate, External, & Legal Affairs (CELA)

Android Network Module: Real-Time Network Bandwidth estimation library 2021 – Submitted
Library under review by Microsoft Corporate, External, & Legal Affairs (CELA) for Open Sourcing

HONORS AND AWARDS

Promoted to Fast-Track Career Path in Leadership Role for excellent contributions in Microsoft R&D Center. 2020

Invited to present the Emerging Market Network Research at Global Microsoft Dev Day 2020

Awarded with P.V. Kumaraswamy Bangalore University Gold Medal for 1st Rank in Computer Science and Engineering Undergraduate Studies. 2019

Research paper nominated at Grace Hopper Conference India organized by Anita Borg for Original Research contribution and published in IEEE Xplore 2019

PROJECTS

- **Real-Time Distributed Collaborative Editor** – *Microservices architecture* 2021
  - Implemented a multi-user application using Django channels, WebSocket and Conflict-Free Replicated Datatype (CRDT) for document editing, private chats and push notifications.
  - Technology Stack – Django, Python, NodeJS, Rust, JavaScript, Redis Cache
- **Intrusion Detection System** – *Sequence Models* 2019
  - Multiple architectures were explored to detect anomalous behavior in networks. A paper composed for the same has been presented at the Grace Hopper India Celebration '19 and published in IEEE Xplore.
  - Technology Stack - Keras, TensorFlow, Python, PostgreSQL
- **Real-time Anomaly Detection Software** – *For a secure neighborhood* 2018
  - Developed a real-time anomaly detection system for surveillance feeds using C3D to train model
  - The model could process processing multiple cameras feeds simultaneously and performantly.
  - Technology Stack - Keras, Theano, Python, OpenCV