

Arjun Balasubramanian

Graduate Student in Computer Sciences at UW-Madison

Advisors: Prof. Aditya Akella and Prof. Shivaram Venkataraman

Interested in designing and building large-scale systems for emerging workloads and hardware
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EDUCATION

UW-MADISON

Ph.D. in Computer Science

Expected May 2023 | Madison, WI

CGPA: 4.0

NIT TIRUCHIRAPPALLI

B.Tech in Computer Science and Engineering

July 2012 - May 2016 | Trichy, India

Department Silver Medalist

CGPA: 9.82 / 10

LINKS

LinkedIn: [balarjun](#)

COURSEWORK

GRADUATE

Big Data Systems

Advanced Operating Systems

Data Science: Algorithms and Principles

Introduction to Artificial Intelligence

(Teaching Assistant)

Introduction to Computer Networks

UNDERGRADUATE

(Relevant Work)

Operating Systems

Computer Networks

Database Management Systems

Distributed Systems

Real-Time Systems

Artificial Intelligence

Data Mining

Data Structures

Algorithms

SKILLS

PROGRAMMING

Over 5000 lines:

C • C++ • Java • Android

Over 1000 lines:

Javascript • Bash • Go • HTML • CSS

Python • MySQL • LaTeX

Technologies:

Apache Hadoop • Apache Spark

Scikit-Learn • TensorFlow • PyTorch

Apache Zookeeper • Redis

WORK EXPERIENCE

AMAZON | SOFTWARE DEVELOPMENT ENGINEER, eREADER PRODUCTS

July 2016 – July 2018 | Chennai, India

Worked on Amazon's first co-branded eReader device named "Kindle Migu X" for which the OS was built from scratch. Developed the BT and Audio Framework to support playback of Audible books on Kindle eReaders. Promoted to SDE-2 in April'18. Explored software mechanisms to improve the I/O performance of accesses to the disk partition which held user content like books. Prototyped two approaches - each gave a performance gain of 5%-10%.

AMAZON | SOFTWARE DEVELOPMENT INTERN, KINDLE DEVICE SOFTWARE

May 2015 – July 2015 | Chennai, India

Designed a peer-to-peer communication protocol suite for Kindle eReaders based on Universal Plug and Play (UPnP). Built it as a Java-based system service that exposed an API set for device discovery and communication. Demonstrated a use-case using the service where the Family Library setup between Kindle devices could be simplified.

RESEARCH WORK

ACCELERATING DEEP LEARNING INFERENCE VIA FREEZING

TO APPEAR IN HOTCLOUD'19

Oct 2018 – March 2019 | University of Wisconsin-Madison

Worked on Freeze Inference, a technique that performs approximate caching at each intermediate layer of a Deep Neural Network (DNN). By employing such a cache, one can avoid the need to run computations for all layers of the DNN for a sizeable portion of inference requests. [Click here](#) to access the paper.

UNWRITTEN CONTRACT FOR DISTRIBUTED SYSTEMS ON SSDS

Feb 2019 – May 2019 | University of Wisconsin-Madison

Research that involved studying the impact of different distributed storage protocols adopted by various distributed file systems on the lifetime of the SSD cluster on which they are deployed.

FAIR GPU CLUSTER SCHEDULING FOR ML TRAINING JOBS

Feb 2019 – April 2019 | University of Wisconsin-Madison

Worked on a project that involved building a fair and efficient GPU cluster manager for ML training workloads. Built a configuration-based and event-driven simulator that simulated the assignment of training jobs to a large GPU cluster over time. Used the simulator to compare the proposed scheme with earlier schemes using trace-driven workloads.

LOW LATENCY SCHEDULING FOR SERVERLESS PLATFORMS

Sept 2018 – Dec 2018 | University of Wisconsin-Madison

Worked on a project that involved building an entire serverless platform from scratch with the goals of having low scheduling overheads and minimizing the effects of high container start-up times.

HONORS AND SCHOLARSHIPS

2018 Awardee Special CS Scholarship worth \$6,000 at UW-Madison

2017 Winner Kindle eReader Hackathon at Amazon India

2015 Awardee Best Outstanding Student in B.Tech CSE at NIT Trichy

ACTIVITIES

PRAGYAN, TECHNICAL FESTIVAL OF NIT TRICHY | CORE MEMBER

May 2015 – May 2016 | National Institute of Technology, Tiruchirappalli

- Prominent speakers included Dr. Peter C Schultz and Dr. Gianni Di Caro.
- Co-Founder of Pragyan Youth Business Summit 2016 - Centered around the "Make In India" initiative and included talks by Ms. Kumud Srinivasan and Mr. Amit Jain.