Devikrishna Radhakrishnan

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Research Interests

Systems: Operating Systems, Networks, Databases, Real-time Systems

Education

2014 - 18 **B.Tech.**, Computer Science and Engineering **8.46/10**
National Institute of Technology, Calicut, India

2014 **Grade 12**, Higher Secondary Education **98.4%**
Kendriya Vidyalaya Pangode, Trivandrum, India

Research Experience

2020 - Present **University of Illinois at Urbana-Champaign (UIUC)** **Research Intern**
Mentors: **Dr. Sibin Mohan**, *SyNeRCyS Lab*

- Creating a framework using containers to enable hardware-independent execution of real-time applications in an Internet of things (`IoT`) environment.
- Current focus is on designing a predictable mechanism to perform live migration of containers between edge computing nodes in an `IoT` system.

2016 **Indian Institute of Space Science and Technology (IIST)** **Research Intern**
Mentors: **Dr. Vineeth B S**, *Systems and Networks Lab*

- Worked on improving the probability of packet delivery between inter-connected heterogeneous sub-networks in a Delay Tolerant Network (`DTN`).
- The work focused on using different routing protocols in each sub-network and studying its impact on packet loss under a variety of traffic load conditions and network cluster sizes.
- Devised an optimal combination of routing protocols to use which maximize the packet delivery probability in the `DTN`.

Industry Experience

2018 - Present **Oracle** **Software Engineer**

- Part of the core server team handling the database for *Oracle Service Cloud (OSvC)* - a leading provider of cloud-based customer service software.
- Developed secure and optimized APIs for managing access to *OSvC's* database and pushed over 100 commits in the last 2 years to its production codebase.
- Refactored, optimised, and added test-driven development for *Orphan Sweep*, an internal utility used to asynchronously handle dependencies of database operations. The optimisations led to reduction in query run-times by over 15x.
- Created a microservice that allows customers to cache frequently retrieved data and deployed it into production using `Docker` containers. Service is used by 100+ corporate customers.

2017 **Deloitte** **Software Intern**

- Worked on *FOCUS* - a public sector project, undertaken by the **State of Delaware (United States)**, to create a system to maintain and track case records of children, who need health care and/or relocation to foster homes.
- Worked with the **Delaware Children's Department** (kids.delaware.gov) to develop a system for digitization of data using `VisualForce` framework on the Salesforce `CRM` platform.

Awards

2019	**1st prize** in Oracle's Cloud Applications Hackathon
2015, 2017	Received an **S grade** in Mathematics (MA2001) and Data Mining (CS425A) (awarded to **top 1-2%** students in the department)
2014	**Top 0.01% in India** for Computer Science in National Higher Secondary School Exam
2014	Honoured to be selected (among the **top 100 in India**) to witness the Republic Day Parade from the Prime Minister's box
2014	**11th Rank in India** in AISSCE (National Higher Secondary School Exam)
2012	**1st Prize in India** in Youth Parliament (a national level parliamentary debate)

Selected Projects

2017 - 18 **Analysis of Bitcoin Transactions** **Final Year Project**

Dr. Gopakumar G, *Data Mining*

- ◇ Analyzed the pertinence of the 'Preferential Attachment'(a.k.a., the rich get richer) phenomenon in a bitcoin network by studying its structure and wealth distribution.
- ◇ Demonstrated the presence of the phenomenon using degree distribution analysis, correlation tests, and clustering techniques.

2017 **Procedural Language Compiler** **Course Project (CS3091)**

Dr. Muralikrishnan K, *Compiler Design*

- ◇ Created an experimental compiler for a procedural language `ExPL`.
- ◇ The compiler generates a binary executable file that can be loaded and executed by an operating system (`ExpOS`) running on a target machine (`XSM`).

2016 **Experimental Operating System** **Course Project (CS3092)**

Dr. Muralikrishnan K, *Operating Systems*

- ◇ Created an experimental OS (`ExpOS`) that supports Process Management, Memory Management, and System Calls.
- ◇ The OS supports loading and execution of programs that are pre-loaded in the Experimental String Machine (`XSM`).

Teaching Assistant

Spring 2018 **Operating Systems Lab** **Course CS3092**

- ◇ Mentored and helped 4 junior-year students build an experimental OS.

Fall 2017 **Computer Vision using Convolutional Neural Networks (`CNNs`)** **Course CS4098**

- ◇ Taught senior-year undergraduates how to build `CNNs` and apply them in image processing.

Positions of Responsibility

Senior Executive	Computer Science and Engineering Association, NIT Calicut
Joint Secretary	Literary and Debating Club, NIT Calicut
Senior Executive	Program Committee, Ragam (one of South Asia's largest cultural fests)
Senior Executive	Marketing Committee, Tathva (over 40k participants)

Skills

Languages	`C++, C, Python, Java, PHP`
Cloud	`Docker, Kubernetes`
Tools	`Postman, Apache Jmeter, Git, ONE Simulator, runC, CRIU`
Web	`HTML, CSS, JavaScript, TypeScript, MySQL`