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Manoj Raja Rao

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EDUCATION **UCLA**, Los Angeles, California, USA

2008 – 2010

- Advisor: Dr. Yuval Tamir
- Research at UCLA's Concurrent Systems Laboratory

RVCE, Bangalore, Karnataka, India

2001 – 2005

TECHNICAL SKILLS

- Languages: C, Java, Ruby, Python, Perl, C++, Erlang
- Platforms: Linux. Sound knowledge of Processor Architecture. Linux on ARM. EFI. Intel's BIOS

- Languages: C, Java, Ruby, Python, Perl, C++, Erlang
- Platforms: Linux, Sound knowledge of Processor Architecture, Linux on ARM, EFI, Intel's BIOS, Android, ACPI
- Concepts: Distributed Systems, Cloud Computing, Computer Architecture, Parallel Computer Architecture, Operating Systems
- Operating systems: GNU/Linux (development)
- Research: Academic: Distributed Systems, Parallel File Systems, Fault Tolerance, Reliability, Message Authentication in Cluster Computing, Distributed Logging.  
Professional: HA in Cluster Computing, Group Communication in clusters.
- Development tools and Frameworks: Emacs, Vim, Git, Trace32, GDB, Eclipse, Axis2c, JBoss, kdb
- Protocols: HDCP, I<sup>2</sup>C, MHL-CBUS, USB detection

LINUX	• My commits to 3.10 msm Linux Kernel
KERNEL	• My commits to <= 3.4 msm Linux Kernel
COMMITTS	

- My commits to 3.10 msm Linux Kernel
- My commits to <= 3.4 msm Linux Kernel
- My fledgling podcast series

PROJECTS      **AWS PdM:** Developed a framework for Anomaly Detection algorithms for a new AWS ML Service

**AWS PdM:** Developed a framework for Anomaly Detection algorithms for a new AWS ML Service to perform Predictive Maintenance based on Signal Processing Techniques.

**AWS Personalize:** Helped the ML Service scale by Debugging Latency and training times - built a Latency Benchmark Suite to help address customer painpoints in the RNN based algorithm. The Suite helped narrow down the core issue to RNN operator implementation in the older MXNet versions and help select optimal hyper parameter combination.

**Amazon's next gen devices:** Involved in all phases of a product from research, prototyping and productizing next generation devices at Amazon. The responsibilities include architecture of next gen Home products, inputs to device hardware design, Linux BSP development, prototype development for early stage products, Linux Kernel development involving Amazon specific features, device's performance optimizations for systems with turn-around constraints, experience in early life-cycle product decisions. Exposure to in-depth system designs of platforms.

**Snapdragon Linux Kernel:** Involved in the development of MSM-Display drivers for Snapdragon's 64-bit CPU architecture. The responsibilities include development and technically leading a team of engineers to design and develop 64-bit compatible drivers, initial silicon-on-dock bring-up (display) activities of the first 64-bit MSM chipset and subsequent chipsets. Development of multiple multimedia device drivers for Snapdragon SoCs. Member of Linux Device Tree Approval Team. Member of Linux Driver Security Team.

## Fault Tolerance in Distributed Systems: Message Passing Framework for High Availability and Fault Tolerance in Distributed Systems.

**HostMon:** A Linux Monitoring System with the ability to monitor and co-ordinate on distributed nodes as well stand-alone systems. An application designed and developed in Python and C, was intended to monitor the Ghidrah cluster as a part of the Distributed Cluster Testbed in Concurrent Systems Laboratory, UCLA.

**Compiler Construction:** Developed a compiler for translating Mini-Java to MIPS assembly in Java as a part of the course I audited at CS Dept., UCLA.

**Branch Prediction and Out-of-Order Processors:** Analysis of impact of Cache size on performance and Miss-Rates as a part of the course CS251A at CS Dept., UCLA. Analysis and Evaluation of Various types of Branch-Predictors for a low-cost Processor as a part of the course CS251B at CS Dept., UCLA.

**iLAP:** Integrated Linux Cluster Middleware for providing High Availability to Distributed Applications at Huawei Technologies. The organization has patented this technology

**SPS:** Service Provisioning System for provisioning service subscribers and Service Profiles into 3G networks at Aylus Networks. Infusing High Availability into the Registrar for 3G networks with hot-code swapping at Aylus Networks. Providing richer message support at SIP Stack Abstraction Layer for IMS Application Server at Aylus Networks

#### PROFESSIONAL EXPERIENCE

**AWS AI**, East Palo Alto, USA

*Senior Software Engineer*

**July 2019 - Present**

AWS ML and Deep Learning Services.

**Amazon Lab126**, Sunnyvale, USA

*Senior Software Engineer*

**June 2014 - July 2019**

Linux Kernel Development involving active embedded systems development for Android/FireOS based devices.

**Qualcomm Innovation Center Inc.**, San Diego, USA

*Senior Software Engineer*

**Aug 2010 - May 2014**

Linux Kernel Development for Snapdragon Chipsets.

**UCLA**, Los Angeles, California, USA

*Graduate Student Researcher*

**Fall 2008 - Spring 2010**

Research Assistant at the UCLA Medical Center under Dr. Douglas Bell where I implement various types of software ranging from web-based Diabetes study tool, various patient record search and auto-notification applications in Ruby to E-Prescription tools that help physicians to electronically prescribe medicines for patients. Most of these development efforts ensue research at UCLA and RAND Corp.

**Aylus Networks Pvt Ltd.**, Bangalore, Karnataka, India

*Software Engineer*

**May 2006 - June 2008**

Aylus Networks is a telecom software startup. Developed software modules for the 3G-Telecom Application Server for providing cutting edge media share services for 3G cellphone users. Developed HA functionality for many critical modules.

**Huawei Technologies India Pvt Ltd.**, Bangalore, Karnataka, India

*Software Engineer*

**March 2005 - May 2006**

Huawei is one of the leading Networking and Telecom organizations in Asia. Worked as Junior Researcher in the R&D for an internal Linux Cluster Middleware for providing Carrier-Grade HA. I was part of the team which applied for patents in Group communication among cluster nodes.

#### RELEVANT GRADUATE COURSES

- Distributed Algorithms, Cloud Computing, Operating Systems, Advanced Scalable Systems, Advanced Parallel Systems, Online Algorithms, Advanced System Design, Advanced Computer Architecture, Wireless and Mobile Computing, Cyber Physical Systems

#### MISCELLANEOUS RECOGNITION

- Patent idea at Huawei Technologies., All India Ranking of 382 among 100000 participants in Entrance Tests., Huawei Certified .C. Programming Specialist.

#### MEMBERSHIP

- MENSA, FOSS, Computer Society of India