

ANUPAMA POTLURI

Summary :

- 13+ years industry experience in Networking, Object-Oriented Design and Image Processing
- 18 years of academic experience as Assistant Professor, University of Hyderabad.

➤ Education :

Ph.D. in Computer Science, University of Hyderabad, March 2013.

M.S in Computer Science, August 1996, 4.0 GPA

University of Maryland Baltimore County, MD, USA

B.Tech in Computer Science and Engineering, July 1988, 4th Rank

Jawaharlal Nehru Technological University, Hyderabad

Experience :

July 2004 - Present	University of Hyderabad, Lecturer
May 2004 - July 2004	Microsoft India Development Center Technical Leader
July 2003 - January 2004	Matisse Networks India Pvt. Ltd. Technical Leader
August 2000 - March 2003	Cisco Systems Inc. Software Engineer
September 1999 - August 2000	JP systems (I) Pvt. Ltd./JP Systems Inc Systems Analyst
July 1997- August 1999	Rendezvous On-Chip(I) Pvt Ltd., Hyderabad Senior Systems Engineer
November 1996 - June 1997	Wipro Systems, Hyderabad Associate Consultant
April 1989 - December 1994	National Remote Sensing Agency, Hyderabad Software Engineer

Contribution Summary:

1. One of the first to do Parallelization of Image Processing algorithms on Transputers using the **occam** language, in India.
2. To my knowledge, we were one of the first to implement disk-based skiplists as the data structure for index/thesaurus engines.
3. I was the project lead for development of IP Security stack including the IKE protocol, all of which were in draft-RFC stage. I led my team towards contributing comments to these RFCs to disambiguate them as well as point out inconsistencies within them. We proved the interoperability of the software that my team developed in the INTEROP done in Santa Barbara, CA, in May 1999.
4. Cisco CRS-1 router is the first terabit router to be released. As part of the team that developed the network interface infrastructure software of the new IOS-XR operating system, I was responsible for some of the high availability features through checkpointing. In addition, I developed the software to replicate the data plane of the logical/virtual interfaces on only the required physical line cards of the router instead of on all the line cards, thus saving the cost of storing these in the FIBs of all the line cards. This saves the cost of SRAM or on-chip RAM requirements for the line cards.
5. As part of the KQML team, developed the Agent Name System (ANS) architecture and also ensured that communication between agents can bypass firewalls.
6. Worked on the illumination models of a full moon using Clementine satellite data and found the Oren-Nayar model to be most useful for representing the flat look of a full moon.

Awards/Achievements :

1. Ranked 21 in the common entrance to the engineering courses.
2. State Merit Scholarship awarded for performance in Intermediate.
3. Contributed comments to the ESP,AH,IPSEC arch. and IKE Notification RFCs.

Project Details :

May 2004 – July 2004 **Microsoft India Development Center**
Worked on the PPPv6 protocol integration into the Vista Networking stack.

July 2003 – January 2004 **Matisse Networks India Pvt. Ltd.**

1. Project : DANCE 2400E
Development Environment : Linux as development OS

DANCE 2400E is a stackable switch with an optical fibre as the backplane for the stacking. It consists of two modules – networking and optical modules. As the technical leader for the networking module, I was involved in :

- The definition of the architecture of the product and design of the new components.
- Definition of the protocol for the exchange and distribution of configuration and design of the protocol implementation.
- Definition of the interfaces between the networking and optical modules.
- Definition of the bootup sequence to ensure that there were no integration issues between the two modules.
- Leading the development of the private MIB, HTML GUI, CLI and other new components specific to the DANCE product.

In addition, I was also involved in defining the processes for code review, coding standards and code commit processes. I conducted design and code reviews of all the modules developed by Matisse Networks India.

I was involved in other miscellaneous stuff like troubleshooting network problems, setting up code servers, setting up repository in source code control system, definition of bug tracking modules etc.

August 2000 – March 2003 **Cisco Systems Inc., San Jose, CA**

1. Project : HFR OS
Development Environment : Solaris as development host

Cisco released its next generation operating system, IOS-XR, in May 2004. The features that this OS supports are scalability and performance required for millions of connections that can exist simultaneously in future. I have been involved in the development of new features and bug fixing for the packet forwarding infrastructure component of this operating system. This involves the interaction with various protocol groups, as well as, different platforms groups.

Specifically, I have been involved in the design and development of the following:

- Design and development of the interface manager component to handle various types of interfaces such as the replicated interfaces which have a data plane presence on multiple nodes.
- Design and development of a lightweight buffer manager module supporting transparent dynamic growing and shrinking of regions.
- Architecture and design of the tunnel infrastructure component.
- Versioning and seamless upgradability of software modules.

July 2000 - August 2000

**NET Inc., Fremont, CA
Software Engineer**

January 2000 - June 2000

JP Systems Inc., Dallas, TX

1. Project : Broadband Remote Access Server (BRAS)
Development Environment : Solaris as Host
Client : NET Inc., Fremont, CA.

Involved in the architecture definition and design of the broadband remote access server. The BRAS is an access concentrator which also facilitates service provisioning for ISPs. It accepts multiple incoming DSL lines and aggregates them and allows them to be connected to different ISPs. It also helps in authorization, authentication and accounting (AAA) of users.

- Involved in defining the architecture of the software.
- Designed the control session layer which is the central controlling module that initiates the connections and services. The entire module is designed to be asynchronous for scalability. This module interacts with the various modules in the system like the L2TP and RADIUS clients and the network processor interface (NPI) module. The data plane is completely handled in the hardware once the network processor is programmed. The module is designed as a state machine for ease of implementation as well as elegant code.

September 1999 - December 1999

**JP systems (I) Pvt. Ltd.
Systems Analyst**

1. Project : Router Accelerator
Development Environment : Solaris as Host with VxWorks as IDE
Client : Flowwise Networks Inc., San Jose, CA.

The router accelerator is a system which learns the routes and hosts in the network transparently by sniffing and analysing the various routing protocol packets like ISIS, OSPF and RIP as well as ARP packets to learn the MAC addresses of the machines in the network. It then programs the hardware with the learnt routes and performs L3 switching for the entire internal network leaving the router to handle only the WAN traffic. Thus, routing is highly accelerated. Worked on new features and bug fixes.

**July 1997- August 1999
Hyderabad**

**Rendezvous On-Chip(I) Pvt Ltd.,
Senior Systems Engineer**

1. Project : iAccess (SOHO Router)
Development Environment : Windows 95 as Host with pRISM+ as IDE
Client : Technology Rendezvous Inc., Santa Clara, CA.

iAccess is a SOHO router with one Ethernet and two serial interfaces which is aimed at small offices with a dial-up connection to the Internet. It has support for NAT, DHCP and PPP which enables it to connect a small office LAN to the Internet with a single public IP address.

The following modules were designed and developed by me :

- The console driver for the PC 16x50 UART supporting "select" call
- Ported the buffer management (mblk) module from pSOS with added functionality.

- The console daemon module which interacts with the rest of the modules and is responsible for the user interface was implemented as a state machine.
- User database module with its private MIB.
- Tracing module which allows debugging of selected modules at different levels.
- Ported the entire TCP/IP stack code including DNS from KA9Q to pSOS.

I was the Project lead for the following activities :

- Designed the private MIB for configuration of the TCP/IP stack through SNMP. Guided the junior members of the team to develop the code based on the design and helped them test the software.
- Prepared the integration test plan for iAccess router.
- Configuration management for the iAccess software and design documents using Microsoft's Visual Source Safe.
- Guided the integration testing of iAccess router as per test plan.
- Design of DHCP protocol.

2. Project : IPSEC + IKE stack
 Development Environment : Windows 95 as Host with pRISM+ as IDE
 Client : Intoto Inc., Santa Clara, CA.

IPSEC is IP Security family of protocols which ensure the integrity, confidentiality and authenticity of IP packets. IKE (Internet Key Exchange) is the automatic key management protocol which is mandatory for IPSEC compliance.

As the Project Leader, I was responsible for the design and development of the entire IP Security Architecture. This involved the study of RFCs for IPSEC, AH, ESP, ISAKMP and IKE and subsequent implementation of these modules. This was a 5 person-year effort with a peak team size of 8 persons.

As Project Lead, I was instrumental in our team contributing to comments on the various RFCs since these were in draft stage and were evolving as we developed our software. At the VPN interoperability workshop held at Santa Barbara, CA in May 1999, this software (IPSEC+IKE) was successfully tested against software from leading vendors such as Cisco Systems, VPNet and UUNET.

November 1996 - June 1997

**Wipro Systems, Hyderabad
 Associate Consultant**

Project : Information Retrieval Engines - Index and Thesaurus Components
 Development Environment : Windows NT and Windows 95, Unix, C++
 Client : Inso Inc, Boston, MA

- As technical lead of the team, I was responsible for the design, development and testing of disk based skiplists which formed the basis for the index engine and thesaurus engine of the information retrieval system. Reviewed the design and performed code walkthroughs.
- Responsible for Coordination with the client to resolve the various design issues.

The software was designed to be multi-thread safe and for cross-platform compatibility. It was coded using ANSI C++ standards. Object-oriented

design was done and Rational Rose was used as the tool for the design. It also supported the use of unicode characters by a compile-time switch.

June 1995 to August 1996

**Department of Computer Science,
University of Maryland Baltimore
County, MD
Research Assistant**

- Developed the Lucid Common LISP Interface to the C library. This involved the use of the foreign language interface provided by Lucid Common LISP. Extended the software to do multitasking for the handling of received messages.
- Extended the software to use an Agent Name Server to resolve the logical agent name to its physical transport protocol address. The C API was extended to transport messages using SMTP as the underlying transport base by wrapping messages in email and forwarding to bypass firewalls.
- Developed software for a new illumination model, based on the Oren and Nayar Model, for the lunar surface data obtained from the Clementine mission.

April 1989 - December 1994

**National Remote Sensing Agency,
Hyderabad
Software Engineer**

1. Project : Generation of Geocoded Products from
Airborne Multispectral Scanner Data
Development Environment : VAX 11/780, VMS, FORTRAN

The data collected from the Daedalus Airborne scanner data have to be corrected for various errors due to pitch, roll and yaw. The corrected data is then digitally mosaicked, cut and rotated to orient the data to true north. I was responsible for the integration testing of the entire software as the member secretary of the test and evaluation committee.

2. Project : Parallelization of Image Processing Algorithms
Development Environment : PC/AT, Xenix, occam

Image processing algorithms are compute-intensive and time-consuming operations. A cost-effective system using transputers was designed and developed for the Image Processing system developed by National Remote Sensing Agency. I was primarily responsible for the design, development and testing of the software. Many image processing routines such as the Hadamard transform, Slant transform, DCT and others were added to the system.

3. Project : Prototype Expert System for Data Product
Selection
Development Environment : PC/AT, Turbo Prolog

The data products generated from various remote sensing satellites are useful for different applications depending on a number of factors. All the knowledge pertaining to this selection was extracted for the forestry application and encapsulated into a prototype expert system.