SAUMITRA BHANAGE

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CAREER OBJECTIVE

Looking for a research oriented summer internship where acquired skills and education will be utilized towards continued escalation and improvement.

EDUCATION

STONY BROOK UNIVERSITY, STONY BROOK, NEW YORK — Expected Graduation Date: December 2010
Working in File System and Storage Lab (FSL)
Masters of Science in Computer Science

UNIVERSITY OF PUNE, INDIA — July 2007
Sinhgad College of Engineering
Bachelor of Computer Engineering (Computer Science) First Class with Distinction.

PROFESSIONAL EXPERIENCE

CALSOFT PVT. LTD., PUNE, INDIA (www.calsoftinc.com) — July 2007 – June 2009
SENIOR DEVELOPER
Worked as a key contributor to several projects in storage and systems domain.

AWARDS

- Excellent Performer award. Calsoft Pvt. Ltd. India.
- Solutions '06 Three Dimension (3D) Game Development, 2nd prize. AIT, Pune, India.
- Perception - C programming competition, 2nd rank. VIIT, Pune, India
- In-vigor '06 National level C Programming competition, consolation prize. SKNCOE, Pune, India.

SKILLS

- **Platforms:** Linux, Solaris, Windows.
- **Programming:** C, C++, Java, Perl, Shell Scripts, 80x86 Assembly, 8051 programming, html, php.
- **Databases:** Oracle 8, MySQL, MS-Access, PostgreSQL.
- **Tools:** gdb, kdb, mdb, Dtrace, filebench, Iozone, kvm, qemu, Solaris Zones.
- **Academic courses:** Operating Systems, Network Security, Algorithms.

PROJECTS

Green Storage and Systems

- Working as a part of a research group under guidance of Professor Erez Zadok.
- Attempting to tackle energy consumption issues in storage servers and workstations.
- Analyzing tradeoff in energy usage and performance for ext2/3/4, reiserfs and xfs.

SCSI Cache Mirroring & Fail-over

- A high performance SAN cache appliance is used to cache few hundred GBs of data in RAM.
- The project aim was to mirror whole cache to another appliance and preserve active passive mode.
- Designed a fail-safe cache mechanism to remove problems with single cache appliance failure.

SUN Storage Archive Manager-Quick File System (SAM-QFS)

- Quick File System provides heterogeneous disk volume management giving robust file sharing. Many tune-able parameters can used to get extreme read/write performance.
- Storage Archive Manager is a hierarchical storage management system that can be combined with QFS to provide a complete storage solution.

- SAM-QFS is closely integrated with Linux file-systems to provide Linux client support. In this project, the compatibility issues with Linux kernel 2.6.9 and 2.6.18 were fixed and the performance was evaluated with the Linux Testing Project (LTP) test suite.

Port OpenSAF to Solaris

- OpenSAF is an open-source implementation of Service Availability ™ Forum which states standards for service availability framework.
- The project aim was to port all services to Solaris and provide stable clusters.
- OpenSAF was made available on Solaris 10 update 5 on x86 & Sparc architectures with support of GNU gcc compiler and Sun Studio compiler.
- The project work involved learning Solaris kernel internals, debugging with Dtrace as well as mdb and understanding about an event driven distributed service based architecture.

Calsoft Simulated File System (CSFS)

- Build a tool for simulating a file system using user preferences to create different testing scenarios.
- Designed Algorithm for reproducible random file hierarchy generator.
- Designed a file-system filter driver by creating a stackable file system that provided APIs to interact with specially built meta-data handler.

N-Hosts

- Virtualize the single SCSI initiator host into multiple initiators and monitor, record and reply the SCSI traffic.
- Worked on SCSI library commands in user-space and kernel-space.
- Implemented licensing in kernel module and user-space with Netlink sockets and AES encryption.
- Conducted research on virtual tape device emulation on virtual SCSI disk target.

Writable snapshots for Continuous Data Protection (CDP)

- Continuous Data Protection (CDP) implementation creates snapshots of data at regular intervals.
- The writable snapshot implementation makes this system work for fail-over.
- Kernel based application built using device-mapper (dm) to map blocks from one storage device to an On-disk B Tree mapped blocks on backup device.

Share memory between host and guests in Kernel based Virtual Machine (KVM)

- Kernel-based Virtual Machine works with Linux kernel and Qemu to provide full virtualization using virtualization extensions available on Intel-VT and AMD-V.
- Conducted research on virtualization of PCI and Block devices in KVM to share a portion of host machine's memory with multiple guests.

Add Ext4 support in Grub

- Grub 0.97 boot loader maintains own code to read kernel image and ram-disk from various file systems.
- Extent structures added in ext4 prohibits Grub from using ext4 partitions as boot partitions.
- This study project was aimed to modify the boot loader code to make it ext4 aware and make the system boot from an ext4 partition.

Dynamic Linux Server Mirroring — ETH Research Lab, India

- Developed a file based server mirroring solution at Virtual File System layer.
- Designed primary-secondary server switching mechanism, developed interface framework in the kernel modules, user application and java graphical user interface.

- Spoken Languages: English, Hindi, and Marathi.