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VINOTHKUMAR SIDDHARTH

CAREER OBJECTIVE

Computer Science grad student at the University of Wisconsin-Madison with 4 years of R&D experience seeking a research/job opportunity to enhance my knowledge and research interests.

EDUCATION

- **Bachelor of Engineering in Computer Science (Aug 2007 – June 2011)**
  - **Institution**: P.E.S Institute of Technology, Bangalore South Campus (Formerly PES School of Engineering)
  - **Coursework**: Analysis and Design of Algorithms, Data Structures, Operating Systems, Database Systems, Information and Network Security, Unix System Programming, Compiler Design, Pattern Recognition, Discrete Mathematics.
  - **Ranked 3rd** in the college with an overall aggregate of 81% in 8 semesters.

- **Class XII (2007)**
  - **Institution**: Kendriya Vidyalaya, NAL Campus, Bangalore
  - Course completed with an aggregate of 87%

- **Class X (2005)**
  - **Institution**: Kendriya Vidyalaya, NAL Campus, Bangalore
  - Stood first in the school with an aggregate of 95% (475/500).

WORK EXPERIENCE

- **CITRIX SYSTEMS R&D INDIA PVT. LTD (July 2011 – Present)**
  ROLE: SOFTWARE DEVELOPMENT ENGINEER, XENSERVER
  DESCRIPTION: Citrix is a Cloud and Networking Company focused on enabling mobile workstyles. XenServer is the leading Virtualization platform powered by the Xen hypervisor. It is used in the world's largest Clouds and enterprises like Amazon Web Services and Rackspace. It is also strategically used as a platform within Citrix to leverage other products like NetScaler and XenDesktop.

INTERNSHIPS

- **CITRIX SYSTEMS R&D INDIA PVT. LTD (Jan 2011 – April 2011)**
  ROLE: SOFTWARE INTERN, NETSCALER
  DESCRIPTION: NetScaler is a network appliance manufactured by Citrix. NetScaler combines high-speed load balancing and content switching, data compression, content caching, SSL acceleration, network optimization, application visibility and application security on a single, comprehensive platform.

- **SHALOM INSTRUMENTS**
  ROLE: DESIGN ENGINEER
  DESCRIPTION: Shalom Instruments is a Bangalore based leading manufacturer and supplier of superb quality products used in the Life Sciences and Biotechnology sector. The company supplies a comprehensive range of such products that include Magnetic Stirrer, Multi Magnetic Stirrer, Hot Plate Stirrer, Water Bath, Boiling Water Bath, Sand Bath, Dry Bath, Oil Bath, Vortex Mixer, Micro Centrifuge, etc.

SOFTWARE PROFICENCY

Languages: OCaml (Expert), C/C++ (Expert), Java (Advanced), Python (Advanced)
Scripting: Perl, Shell, Python
Databases: MySQL, MS-SQL, Oracle 10g, IBM-DB2
Web: HTML (5), JavaScript, CSS, Opa, Dart and PHP
Operating Systems: Mac OSX, Linux, Windows

IDE(s): Microsoft Visual Studio, Eclipse and XCode

Additionally familiar with Lex, Yacc, C#, F#, Haskell and a suite of other languages.

ACHIEVEMENTS

- All India Rank 27 at National Level Mathematics Olympiad.
- Secured Certificates of Merit from Indian Space Research Organization (ISRO) for outstanding academic performance.
- Stood 2nd in ACM – Student Chapter Coding Contest.
- Secured "School First" in Class X board exams.
- Created the school's first website.
- Secured an All India Rank of 1887 in the 6th National Cyber Olympiad.
- IBM DB-2 certified professional.

EXTRA CURRICULAR ACTIVITIES

- Founder of the Linux User Group (**LUG**) during under-graduation. Conducted various sessions to increase awareness about Linux, Open Source and the various tools and customizations available.
- Played an active role in organizing various college fests and coding competitions.
- Captain of the Basketball team.
- Actively participated in the fund raising activities for THE NATIONAL ASSOCIATION FOR THE BLIND.
- Played an active role in developing the School's Website.
- Volunteered at NGO's like **YFS** (Youth For Seva) and **HELP** (Humanitarian Endeavour for Life's Perseverance) and helped in the education and mentoring of underprivileged kids.
- Winner of several extempore, debate and quiz competitions at both the state and national levels.
- Regularly conducted sessions on XenServer and Cloud Computing at Citrix.

PROJECTS

MAJOR WORK PROJECTS:

- **Project vGPU (Virtual GPU)**
  Scope: This project aims at "Full Virtualization of GPU's". Collaborative work was done across teams and a company (NVIDIA) to enable this feature on XenServer. This opened up a market with a potential of $380 million USD for XenDesktop/XenServer. This was demonstrated at the Citrix annual event "Citrix Synergy" by the CEO's of Citrix and NVIDIA and was released as part of XenServer Tech-Preview!
  Responsibilities:
  - Added toolstack support for vGPU with NVIDIA's GRID cards.
  - Designed and implemented the datamodel
  - Implemented configurable allocation methods for emulated vGPU's to be scheduled on actual physical GPU's.
  - Implemented methods to obtain remaining capacity for vGPU's from physical GPU's.
  - Implemented a GPU monitoring service.
  - Worked on integrating this feature with other products like CloudStack.

  Language: OCaml
  Team Size: 2

- **Single SKU Licensing for XenServer**
  Scope: Prior to XenServer 6.2 release, we had multiple versions licenses named "Free", "Advanced", "Enterprise", "Platinum" and "XCP". XenServer was unable to monetize users using the free version. The aim of this project was to move to replace the current licensing model with a single "Stock Keeping Unit"(SKU) license. This was done in lieu of open sourcing XenServer to the Linux Foundation as "XAPI-PROJECT".
  Responsibilities:
  - To design and switch to a single per-socket license in two packages.
  - **Annualized model** ($X per socket), which provides a license, maintenance (hotfixes and supplemental packs) and support.

- **Perpetual model** ($Y per socket) which provides a perpetual license and incurs an annual maintenance (hotfixes and supplemental packs) and support charge of $Z per socket.
- Implemented a "per-service" license, as understood by the Citrix license server, with a per-socket license as understood by XenServer.

Language: OCaml
Team Size: 4

- **Blktap-3**

Scope: The "blktap" driver is currently a kernel mode driver that is part of the path between the frontend paravirtualised block storage driver in guest VMs and the storage service in the control domain. This project replaces the existing kernel mode storage backend with a userspace one.
Responsibilities:
- Created a userspace entity that performs all the existing operations of the kernel module.
- Implemented a shared ring for consuming block read/write requests exploiting the split-driver model. Interface to this ring was via gntdev from upstream Linux.
- Support for all block driver types:
  - File and block based VHD (including snapshot and fast clone)
  - Caching as used by IntelliCache
  - Mirroring for Storage XenMotion
  - Raw I/O as used by LUN-per-VDI
  - ISO file access
  - Etc…

Language: C
Team Size: 2

- **TRIM/UNMAP Support**

Scope: With the upgrade to a 64bit control domain and an updated Linux kernel (3.10.x) in XenServer 6.5, added TRIM/UNMAP support via the Storage Manager for SSDs.
Responsibilities:
- Add the ability to reclaim space on block granularity for deleted Virtual Disk Images for all supported block storage types.
- Implemented an on-request batch-discard mechanism.
- Added the ability to reclaim any free space even when an LVM based VDI is resized

Language: Python/C
Team Size: 1

- **Project Xenostats**

Scope: The RRD (Round Robin Database) daemon was designed with the intention of being able to consume data sources from foreign domains. The objective here was to create a client library that makes it easy to create new data sources for the RRD daemon from both the same domain in which the RRDD is running and also from other domains.
Responsibilities:
- Designed and implemented the protocol to collect data from various domains.
- Implemented a “Registration” and “Deregistration” mechanism for the plugin and protocol to exchange data at various levels of granularity.
- Implement a single shared page whose existence is signaled by the XenStore daemon. The pages are written by the data-source provider and read by the RRD daemon.
- Created functions required for interfacing with the Xen’s userspace grant sharing functionality and blitting between strings and big-arrays.

Language: OCaml/C
Team Size: 2

- **Project Xen-Domain-Operations Manager (xenopsd)**

Scope: The Xen domain management daemon (xenopsd) was designed to extricate all “domain management” activities as a separate service to relieve the primary control component “XAPI”.

Responsibilities:

- Involved in the design, architecture and implementation of this daemon.
- Added experimental support to manage "libvirt" domains.
- Ported xenopsd to support the latest xen-hypervisor's xenlight (libxl) backend.
- Added support to manage driver-domains for XenServer's next generation architecture (Windsor).
- Enabled task cancellation and asynchronous operations.
- Enabled VM migration/suspend across 32bit and 64bit platforms.

Language: OCaml/C
Team Size: 3

- **Project XAPI DISAGGREGATION**

Scope: To disaggregate the various components of XenServer into separate daemons that can live in their own stub domains for XenServer's Windsor architecture.
Responsibilities:

- Designed and created daemons that could live in their own domains and communicate with various other components.
- Worked on the isolation of network daemon (networkd), round robin database daemon (rrdd), memory management daemon (squeezed), domain management daemon (xenopsd) and other support libraries.
- Ensured that each component can be built independently and can live in its own stub domain.
- Added inter-service communication for independent services/daemons.

Language: OCaml
Team Size: 2

- **SPECIAL PROJECTS**
  - Extended XenServer's Disaster Recovery mechanism towards "Bulk Importing on Fiber Channel Storage Repositories" by implementing a clever algorithm to recover a Virtual Machine's resources like Disk and Memory during a disaster.
  - Created a new host restart agent for XenServer.
  - Optimized XenServer's shared memory mechanism to implement a 3-phase read/write and locking mechanism.
  - Improved graceful handling of out of storage scenarios and minimized VHD corruption.
  - Enabled Read Caching and ensured that it works harmoniously with IntelliCache. This feature greatly improved the VM bootstorm performance and was very well received by XenDesktop.
  - Worked on inter-domain transfer of performance statistics (Round Robin Databases).

COLLEGE PROJECTS:

- **HOME MONITORING AND AUTOMATION USING RTOS**

Developed a project to securely monitor a home using a real time operating system that interacted and controlled multiple sensors (nodes) which are connected in a wireless sensor network using microchip controllers and miwi stack. Interfaced with a large number of home appliances and provided a touch interface for users to interact with the system. Additionally implemented a learning algorithm that picked up the user's typical behaviour and automatically carried out those operations.
Team Size: 4
Language used: C
Libraries used: PIC32 libraries, MIWI stack

- **SUNSET SIMULATION USING OPENGL**

Designed and implemented a program that uses textures to simulate the splendid effects of sunset. The sun gradually moves towards the horizon with the colors and sun's shadow being reflected from the ocean surface.
Language Used: C++
Libraries Used: OpenGL

- **MINI LINUX SHELL**
  Develop a new shell that had an interface similar to the native Linux Shell. Implemented a whole suite of internal commands like echo, cd, pwd and external commands like ls, cut, copy, bc, wc and many others with their commonly used options. Utilized the basic concepts of a lexer and parser. Pipes and re-direction were also implemented.
  Team size: 2
  Language Used: C
  Platform: Linux, gcc compiler

- **BANKING SYSTEM**
  Developed a software suite that provided a full suite of operations required by a Bank. The system automatically customizes the available operation set based on an individual's permissions. Various options to transfer, withdraw, deposit money, etc. were implemented.
  Language Used: C++

- **RUBIK'S CUBE SOLVER**
  Designed and implemented a program that could solve a Rubik's cube of any order from any configuration. A graphical interface was designed to allow the user to manually interact with the program using gestures.
  Language Used: C
  Libraries Used: OpenGL

Declaration: I hereby declare that the above-mentioned information is correct up to my knowledge and I bear the responsibility for the correctness of the above-mentioned particulars.

Place: Bangalore (**Vinothkumar Siddharth)**