

CURRICULUM VITAE OF ANDREW HOSPODOR

Andrew David Hospodor, Ph.D.

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An accomplished executive, engineer-scientist experienced in both startups and Fortune 500 companies having extensive background in distributed systems, applications and storage. Strengths include industrial-academic relationship building, intellectual property development, Inter Parte Review, Source Code Inspection, data forensics, industrial espionage, strategic planning and technical leadership,

Education

- **Ph.D. Computer Engineering**, Santa Clara University, Santa Clara, CA. 1994
Emphasis on storage architecture and embedded systems. Minor in business administration.
Dissertation: A Study of Prefetch in Caching SCSI Disk Drive Buffers.
- **M.S. Computer Science**, Santa Clara University, Santa Clara, CA. 1986
Concentrated studies in networking, communications, data storage, memory hierarchies, interfaces, computer architecture, performance measurement, and error correction coding.
- **B.S. Computer Engineering**, Lehigh University, Bethlehem PA. 1981
Emphasis on core engineering, computer programming, architecture, physics, mathematics.

Experience

Center for Research in Storage Systems, University of California, Santa Cruz, CA. 2009 – 2017

Executive Director and, Project Scientist

Engaged in research and funding related activities. Worked with faculty to develop funding strategies and manage industrial sponsors. Participated in NSF and UC led events designed to attract research funding into the data storage space. Built relationships with industrial and academic contacts. Advised graduate and undergraduate students and reviewed their results pre-publication. Created a new area of research in Genomic Data Storage and incorporated into CRSS. Under NSF guidance, organized a group of similar centers in Data Analytics and Data Visualization to propose a new Engineering Research Center in Data Science for Health.

BookRenter, San Jose, CA.

2006 – 2008

CTO

Led the team that created the first nationwide book rental service. Defined the architecture of a new web 2.0 platform for e-business that combines distributed computing with Ruby on Rails (RoR), MySQL, and web services of partners like Amazon, Barnes&Noble and UPS. Formed capitalization strategy, managed fund raising activities and created partnerships to maximize equity leverage. Responsible for all technical aspects of www.bookrenter.com from hiring to operations.

GridPlan, Santa Clara, CA.

2003 - present

Architect

Introduced the first open source capacity planning tool for Grid Computing that enabled both Enterprise, e-business and Scientific environments to accurately access the value of computational grids, cloud computing, large-scale Linux clusters, blade servers and distributed compute farms. Provided the crucial ability to assess cost-performance of interconnection strategies (such as InfiniBand, 10 Gigabit Ethernet, Myrinet), processors (such as XEON, Opteron), storage, switches and middleware. Established partnerships with Grid Global Forum (GGF), hardware vendors, independent software vendors and open source providers to provide best-of-breed planning technology to IT shops.

Corosoft, Inc., Cupertino, CA.

2001 - 2003

CTO, Founder

Developed a novel approach to managing enterprise e-business applications (databases, appservers, webservers, file services, network services). Introduced Corosoft virtualization software that aggregates resources (servers, networks, storage) behind application services. Built team, raised \$3.8M funding, delivered product to market. Established partnerships in enterprise management (BMC, HP), grid computing (Platform, IBM), network content management (F5) and software (Oracle, Microsoft). Extended strategy to include power management (ACPI) middleware, streaming, clustering file systems, volume management and flexible storage architectures.

Western Digital Corp., San Jose, CA.

1999 - 2001

Vice President, Systems Architecture

Responsible for all aspects of technology in the formation of new business units. Reported to the Chief Technical Officer and VP of Business Development. Identified new technologies for Enterprise Storage Area Networking (SAN) and Audio/Video streaming storage networking systems, most notably isochronous switched fabrics based upon PCI Express and Infiniband. Drove strategic relationships with well-established software companies such as Microsoft and Veritas for existing technology. Identified and structured relationships with partners and performed due diligence on emerging key technology startups that led to capital investment of \$2-5M. Created detailed business plans including capitalization, development and staffing requirements.

Quantum Corp., Milpitas, CA.

1993 - 1999

Storage Architect, Director, Network Storage Architecture Group

Manager, Advanced Storage Applications Group

Led team that developed the first low-cost Network Attached Storage (NAS) disk and tape products. Coordinated company wide technology direction for storage management, file systems, device drivers, BIOS, and APIs for FibreChannel (FC), Gigabit Ethernet (GbE), InfiniBand (IB), Redundant Arrays of Independent Disks, etc. Responsible for technical relationships with strategic partners, such as Microsoft, Legato, Veritas, Oracle. Supported business units with cross connects to Compatibility Lab, Design Engineering, Sales and Marketing. Participated in customer investigations of new storage applications and developed requirements for new storage markets. Managed architecture and performance labs to provide real data for product planning. Created and managed storage simulator team that laid groundwork for delivery of SCSI, IDE, ATA-33, to 133 interfaces, ultimately resulting in net savings of \$50M+. Participated in architecting, planning and specification of Self-Monitoring, Automatic Reporting Technology (S.M.A.R.T.) for intelligent storage devices.

Institute for Information Storage Technology, Santa Clara University.

1990 - 1993

*IIST Research Fellow and Instructor in Electrical and Computer Engineering
(Adjunct Faculty)*

Investigated performance of magnetic disk, optical disk, magnetic tape, and buffering in relation to computer system performance. Researched data storage interfaces and architectures and interacted with local data storage industry. Developed relationships with companies such as Quantum, Conner, Seagate, IBM, Iomega and Maxtor. Generated research proposals including budget and staffing requirements and followed proposals through federal government approval. Represented IIST as part of the \$24.5M NSIC Ultra-High Density Storage project. Responsible for teaching graduate and undergraduate courses.

IBM Almaden Research Center, San Jose, CA. 1990

Visiting Scientist

Spent a summer at IBM Almaden Research Center as part of my doctoral studies. Investigated the performance of IBM's new 5.25" enterprise data storage devices (codename Sutter and Sawmill) and 3.5" devices using the Intelligent Peripheral Interface (IPI). Developed analysis tools and benchmarked the performance of IBM storage devices against competitive products. Provided input to executive management on competitive aspects of hard disk drive design, specifically interfaces and buffering, as well as emerging interfaces, such as FibreChannel, SCSI and ATA.

I/O XEL Incorporated, Santa Clara, CA. 1986 - 1989

Director of Engineering

Developed and delivered performance analysis tools for the data storage industry including The SCSI Benchmark® tester. Clients included Quantum, Priam, Maxtor, Iomega.

Scientific Micro Systems, Mountain View, CA. 1982 - 1986

Design Engineer

Designed disk controller firmware for IEEE 796, LSI-11, and SCSI based disk controllers with embedded microprocessors and microcontrollers. Participated in successful IPO.

National Semiconductor, Santa Clara CA. 1981 - 1982

System Engineer

Designed and delivered the hardware and firmware of a Winchester Disk Controller for IEEE 796 bus.

Digital Equipment Corporation, Tewksbury MA. 1978 - 1979

Software Engineer

Designed conformance tests for compilers and test packages for the VAX 11/780 VMS debugger

Languages

Java, XML, HTML, UML, c, c++, 8086 assembler, 2900 bit slice, FORTRAN

Operating Systems

Windows, NT, XP, ME, Linux, Ultrix, AIX, MS-DOS, VMS, CPM

Interfaces

SCSI, IDE, ATA, FibreChannel, Gigabit Ethernet and TCP/IP, 10 GbE, InfiniBand, ISA, PCI

Patents

- U.S. Patent 9,998,390, "Providing streaming media data" Issued June 12, 2018
- U.S. patent 9,987,319, "Essential Element Management" Issued June 05, 2018
- U.S. Patent 9,886,561, "Efficient encoding and storage and retrieval of genomic data" Issued February 6, 2018
- U.S. Patent 9,358,259, "Recycling cannabinoid extractor" Issued June 7, 2016
- U.S. Patent 9,155,767, "Essential element management" Issued October 13, 2015
- U.S. Patent 8,980,941, "Controlled Cannabis decarboxylation" Issued March 17, 2015
- U.S. Patent 8,343,553, "Essential element extractor" Issued January 01, 2013
- U.S. Patent 7,274,659, "Providing streaming media data" Issued September 25, 2007
- U.S. Patent 7,002,926, "Isochronous Switched Fabric Network" Issued February 21, 2006
- U.S. Patent 6,965,563, "Resource reservation system in a computer network to support end-to-end quality-of-service constraints" Issued November 15, 2005
- U.S. Patent 6,888,831 "Distributed resource reservation system for establishing a path through a multi-dimensional computer network to support isochronous data" Issued May 3, 2005
- U.S. Patent 6,744,772 "Converting asynchronous packets into isochronous packets for transmission through a multi-dimensional switched fabric network" Issued June 1, 2004
- U.S. Patent 6,697,914 "Switched node comprising a disk controller with integrated multi-port switching circuitry" Issued February 24, 2004
- U.S. Patent 6,615,312 "Method for processing file system service to reproduce stream data" Issued September 2, 2003
- U.S. Patent 6,603,625 "Spindle synchronizing in a multi-dimensional network" Issued August 5, 2003
- U.S. Patent 6,470,420 "Method for designating one of a plurality of addressable storage" Issued October 22, 2002
- U.S. Patent 6,012,839 "Method and apparatus to protect data within a disk drive buffer" Issued January 11, 2000
- U.S. Patent 5,771,397 "SCSI Disconnect/Reconnect timing algorithm for optimal performance" Issued June 23, 1998
- U.S. Patent 4,851,998 "Method to Analyze Performance of Computer Peripherals" Issued July 25, 1989

As of June 2018, the above 19 patents were cited 373 times as prior art in patents granted by the US Patent and Trademark Office.

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