

Darin DeForest

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Experience

Darin DeForest has twenty years of industry experience in a variety of roles, from program manager and developer of software architecture and development of building cloud and distributed systems to mobile devices using the latest developments in computer science and its applications.

Recently, Mr. DeForest has worked in development distributed database synchronization for a large China bus transportation system. The development encompassed a wide variety of technologies, such as cloud, web application servers, relational and NoSQL databases, and mobile devices.

Previously, worked at EuclidIQ in which Mr. DeForest investigated, researched, developed, and patent protected video compression algorithms using machine learning and statistical techniques guided by computer vision algorithms to develop predictive models to enhance video compression.

At Op40, Mr. DeForest worked as lead architect to create a distributed internet middleware application model that distributes and execute internet based applications using a variety of web based technology.

Over the course of his work, Mr. DeForest has received various patents related to video object models and distributed middleware. As part of his career he has worked on various innovative technologies, such as detecting credit card fraud, intelligent GUI's, neural networks, Q methodology, firewall and network partitioning at various companies including Motorola, Boeing, American Express, Enron, Interleaf, CSC and CSX.

Mr. DeForest graduated from the University of Maryland with a degree in Computer Science. He went on to Arizona State University, becoming PhD candidate from the Department of Computer Science.

Additional background details and work samples can be reviewed at <https://www.linkedin.com/in/darin-deforest>.

Project Manager/Software Architect (Contract)

2013-Present

Omegasoft, Phoenix AZ

Project was to develop a China based bus transportation solution that delivers a ticketing solution and gathers real-time information about passenger purchasing habits to help deliver a highly-personalized customer experience and new service offerings over a distributed station network.

- Developed and managed cloud based high availability real time distribution and synchronization of database and application infrastructure utilizing couchdb replication to Linux and Android clients. Analyzed performance using tpc-c benchmark.
- Worked with project stakeholders to define requirements and overall system architecture using Jazz Application Lifecycle Management.
- Worked with software architects to define software designs with completeness and viability, software and platform components, and delivery and release schedules using Jazz Application Lifecycle Management.
- Worked with test team to define test plans and test cases based on software requirements.
- Developed devops orchestrated builds and releases by defining SUSE Linux reference platforms for use on Azure, Amazon AWS EC2, NAS, and VMWare vSphere ESXI using SaltStack for integration and distributed testing. Managed both the AWS and vSphere environments.
- Managed 3rd party build support, i.e. building couchdb and PostgreSQL and other libraries for integration.
- Managed git and svn repositories, Bugzilla bug tracking and integrated these into Jenkins continuous build process.
- For testing, created SUSE 11 SP3 Hercules s390x emulator docker container to mimic production IBM SystemZ system. For this, built Hercules and created a SUSE11 SP3 for 390x vm, on which SaltStack and its dependencies for s390x were built.
- Integrated software, platform, machine monitoring using Spiceworks, Zabbix with associated plugins and an integrated ELK (Elasticsearch, Logstash, Kibana) stack.
- Tested and debugged China web and android applications to ensure correct functionality within ec2 AWS and/or vmware vSphere test environment.

- Updated Java 1.2 code base to Java 1.7 using Eclipse IDE.
- Converted web spring/hibernate applications from Websphere/DB2 to JBoss/PostgreSQL.
- Configured real-time, continuous DB2 SQL replication, using a rolling date range.
- Updated client communication protocol from EJB/RMI interfaces to http json rest interfaces.
- Created https SSL termination service using Haproxy that use authentication certificates, then modified the various clients to use this service.
- Worked within virtual agile team environment and traveled to Beijing and Chengdu China for product field testing and support.

Consultant (Contract) **2013-Present**
 Predictive Machines, Phoenix AZ

- Investigate the use of cognitive technology in various prototypes.
- Worked with openflow SDN emulators and hardware to investigate business opportunities.
- Worked with meteor/mongo/node.js/D3 to generate a prototype to display visualization of time series data.
- Worked with DJI phantom 3, DJI mobile SDK, Xcode, and iOS, to generate two POC's, and distributed to testers using TestFlight to capture and stitch images together and perform flight planning via waypoints.
- Worked with Nvidia TK1/TX1, Caffe and Torch to process real time image classification for use in autonomous vehicles.
- Worked with DJI Matrice 100 with Guidance and Manifold for arial image classification and object detection.
- Developed proposal to integrate vision recognition and sensor data collection for long term automobile rentals.
- Worked with biometric Bluetooth heart monitors to collect and classify signals using neural network.
- Worked with fluxstream (OSS health and personalization framework) iOS/Android and web based applications. iOS and Android apps use trigger.io framework.

Lead Algorithmic Video Software Engineer (Contract) **2002-2013**
 Euclid Discoveries LLC, Concord MA

- Worked on video compression algorithms using a variety of image processing, computer vision, machine learning, statistical data analysis and video compression techniques and artificial intelligence algorithms that are the basis of two patents.
- Create video feature models based on ransac, k-means clustering, Principle Component Analysis (PCA), and linear regression using motion vector, color space, surf/shift feature descriptors, and texture dimensions using unsupervised learning.
- Created Structure for Motion models for 3D modelling.
- Extended x264 encoding to include novel macroblock encodings that were able to get 20% compression over the standard profile.
- Developed video codecs using open source and proprietary algorithms using x264, cmake, ffmpeg, opencv, tbb, boost, openmp, and Nvidia cuda using Microsoft Visual C++, Intel C++ compiler, and Apple Xcode that can encodes/decodes for Windows and a decoder for iPhone and iPad iOS.
- Wrote algorithms that created search spaces containing video encoding solutions that then were evaluated in parallel, using multiple cores, to determine the solution entropy encoding size.
- Wrote memory rollback routines, which were able to allow data to be modified, then rolled back to a prior state as if the data hadn't been modified.
- Wrote object trackers to correlate objects through multiple frames and to project them into the current and future video frames.
- Perform analysis of video compression benefit and computational performance on variety of platform including EC2.
- Created browser and windows visualization tools to understand the encoding process and selection of solutions.
- Wrote plug-ins for Matlab.
- Converted Matlab code into C++ and verified correctness.
- Used VMware ESXi to manage multiple development images and testing environments.

Technical Lead Architect (Contract & Permanent) **2000-2002**
 OP40, White Plains, NY

- Architected and developed a distributed and virtualized J2EE application distribution, deployment, synchronization system that works with JBOSS/Tomcat, iPlanet, Websphere, and Weblogic. The work with this system produced 9 patents.
- Worked on distributed architecture asset collection, transformation and deployment system to work in high latency, low bandwidth connectivity.
- Architected and developed an unreliable multicast distribution layer for use over satellite links.
- Architected and developed a persistent tier layer that maps a database table into a java objects.
- Architected and developed a database distribution and replication algorithms including mobile devices such as Pocket PC 2002 with traditional Sun, Linux, and Windows platforms.
- Support database installation and integration efforts with DB2, Oracle, Cloudscape, HSQLDB, SQL 2000 Server, and SQL 2000 CE.
- Mentor team on software development processes, design, architecture, UML, and review designs.
- Maintained build process and source control using continuous integration.

Technical Lead Architect (Contract)	2000-2002
Thinkshed, Austin, TX	

- Developed Human Resource analysis application, where applicants were tested for fitness with a company based on their q-sort relationship using statistical modelling.
- Developed and defined software development infrastructure processes to include bug reporting, source control, software build, and disaster recovery.
- Developed and defined software migration and deployment into QA and production environments, using Linux, Apache, Tomcat and DB2.
- Worked with team members to capture and refine software requirements.
- Architected and develop web based n-tier software solution using Java, JSP, Javascript, and HTML.
- Develop object-relational mapping layer.
- Defined database data model and schema, and import, export, and translation utilities.
- Reviewed team member designs and made recommendations.
- Provided system administration services.

Network Architect (Contract)	1999-2000 (6 months)
Enron Broadband Services, Houston, Texas	

- Reviewed InterAgent (a C++ and Java based messaging oriented middleware) that was re-licensed to Sun to use for use as a JMS (Java Messaging System) and made recommendations to improve the design, testing, and packaging of it's components.
- Reviewed broadband network protocols such as RSVP, Directory Enabled Networks (DEN), COPS for integration with a bandwidth broker service that supports advance reservation and quality of service (QoS) over IP networks.
- Reviewed and published industry and research information throughout the division using Linux, Apache, WebX (a discussion forum), ipchains (packet filter).

Previous Positions	
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Object-Oriented/Web Mentor/Java/Relational to Java/Architect (Contract)	1999-1999 (9 months)
Fireman's Fund, Austin, Texas	

Object-Oriented Process Mentor (Contract)	1998-1999 (8 months)
Boeing, Vienna, Virginia	

Java/Messaging Developer (Contract)	1998-1998 (3 months)
Computer Science Corporation (CSC), Falls Church, Virginia	

Web/Java Architect (Contract)	1996-1998
CSX., Jacksonville, Florida	

Senior Object and C++ Consultant (Contract)	1996-1996
Ryder Inc., via Technical Resource Connection, Miami, Florida	

Object-Oriented Mentor and C++ Developer (Contract)	1994-1996
Motorola Inc., Scottsdale, Arizona via Tech-Aid, Scottsdale, Arizona	

Project Manager and Delphi Developer	1993-1995
WestGroup Management Resource, Scottsdale, Arizona	

Algorithm Reviewer	1994-1994
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John Wiley & Sons, New York, New York Senior Prolog Software Engineer	1993-1994
ReGenisys, Scottsdale, Arizona Senior Lisp Consultant (Contract)	1993-1994
Interleaf, Irvine, California C Consultant (Contract)	1992-1993
Robots, Etc., Tempe, Arizona C and Video Consultant (Contract)	1991-1992
American Express, Advance Technology Group, Phoenix, Arizona. C Consultant (Contract)	1991-1991
MicroAge, Tempe, Arizona Senior Software Engineer	1990-1991
Motorola Inc., Motorola Computer Group, Tempe, Arizona Senior Software Engineer	1989-1990
Motorola Inc., Motorola Cambridge Research Center, Cambridge, Massachusetts Parallel Computation Research Associate of Computer Science	1985-1988
Arizona State University, Tempe, Arizona Teaching Assistant of Computer Science	1984-1985
Arizona State University, Tempe, Arizona	

Articles

- D. DeForest, A. Faustini, and R. Lee. 1988. Hyperflow. In *Proceedings of the third conference on Hypercube concurrent computers and applications: Architecture, software, computer systems, and general issues - Volume 1 (C³P)*, Geoffrey Fox (Ed.), Vol. 1. ACM, New York, NY, USA, 482-488. <http://doi.acm.org/10.1145/62297.62354>
- D. DeForest. *Lucid Bibliography*. Department of Computer Science, College of Engineering & Applied Sciences, Arizona State University, 1986.

• Summer Fellowships

May 1988 – July 1988 Multiprocessor Sequent Research
United States Air Force, Rome Air Development Center, Rome, New York.

July 1988 – Oct. 1988 Hypercube Research
National Aeronautics and Space Administration, Jet Propulsion Laboratory, Pasadena, CA.

June 1987 Fortran Vector Processing
NSF Supercomputer Summer Institute, Colorado State University.

Patents

- US 7,150,015 Dec 2006 Method and system for deploying an asset over a multi-tiered network.
- US 7,209,921 Apr 2007 Method and system for deploying an asset over a multi-tiered network.
- US 7,685,183 Dec 2010 System and method for synchronizing assets on multi-tiered networks.
- US 8,326,883 Dec 2012 System and method for distributing assets to multi-tiered network nodes.
- US 8,458,142 Jun 2012 Method and system for deploying an asset over a multi-tiered network.
- US 8,458,222 Jun 2013 System, method, and data structure for packaging assets for processing and distribution on multi-tiered networks
- US 8,473,468 Jun 2013 System and method for transactional deployment of J2EE web components, enterprise java bean components, and application data over multi-tiered computer networks.
- US 8,666,933 Mar 2014 System and method for distributing assets to multi-tiered network nodes.
- US 8,713,062 Apr 2014 Server system and method for discovering digital assets in enterprise information systems.
- US 8,902,971 Dec 2014 Video compression repository and model reuse.
- US 9,532,069 Dec 2016 Video compression repository and model reuse.

Education

- 1988 Ph.D. Candidate at Department of Computer Science. Arizona State University.
Topic: Compiling to a Fine Grain Parallel Dataflow Architecture.
- 1984 B.S. Department of Computer Science. University of Maryland.
Graduated magna cum laude
- 1984 Gallaudet College, Exchange Student.
- 1982 A.A. English literature. University of Maryland.

Membership in Academic, Scientific, and Professional Societies

American Association for Artificial Intelligence	Microsoft BizSpark Partner
Association of Computing Machinery	Oracle Developer
IBM Partner	Project Management Institute
IEEE Computer Society	Apple Developer
VMUG	