

# BERNARDO (BERNIE) PEREZ

Los Angeles, California United States

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## Experience

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**The Aerospace Corporation - Advance Software Department (ASD)**  
**Member of the Technical Staff (MTS)**

**2006 - Current**

Working on numerous space programs, I manage and research critical and time sensitive data that often requires flexibility and creative consideration. In addition, there is a demand to possess and increase knowledge in:

- High-Speed Data Networks (Socket/MOM/ESB/Java NIO)
- Parallel and Distributed Computing
- Computer and Network Security Engineering (Data Encryption/PKI)
- Space and Ground Computer Systems
- Web Applications/Web Services
- Telemetry Data Processing and Display
- Requirements Management
- Software and System Acquisition
- Database Engineering and Knowledge Management

**The Aerospace Corporation - Energy Technology Department (ETD)**  
**Associate Member of the Technical Staff (MTS)**

**2001 - 2007**

Wrote software that autonomously controls external hardware through the GPIB controller (IEEE488) and serial ports to simulate space environment. Tests were required to run for long periods of time, automatically correcting and sequencing through charges and discharges of the cells/batteries. (C++, Visual Basic, .NET, HTTP/PHP/MySQL (AMP), GPIB, RS232, Win/Linux, Isolated Network, NTP Protocol)

Acquired knowledge of security features from experience with networking and data encryption. Worked with a team to integrate multiple hardware configurations in order to accommodate the electrical engineers and projects. Most work was created and completed independently with minimal supervision.

**CompUSA**  
**Lead Technical Advisor**

**1999 - 2001**

Worked with customers to meet technology needs. Helped customers select correct and appropriate products then installed hardware in homes/businesses. Gained experience in repairing computer systems, setting up networks, and installing computer peripherals.

## Education

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**University of California, Los Angeles (UCLA)**  
**M.S. Computer Science**

**2010 - 2011**

### Master Degree Specialization

General field of Networking Specifically Security and Mobile Devices

MS Project: Using secure AdHoc communication between mobile devices to share GPS ephemeris data

### Course Work

- CS118 - Computer Network Fundamentals
  - Project: Concurrent web server using BSD sockets. (C)
  - Project: Simple window-based reliable data transfer (RDT) with selective repeat. (C/C++)

- TCP/IP protocol, network programming skills, IPv4/IPv6 packet, CSMA & CSMA/CD, routing algorithms/protocol (RIP, OSPF, BGP), NAT, DHCP, QoS, SSL
- CS241A - Object-Oriented and Semantic Database Systems
  - Course Project: Performance Comparison of a Native Object and Extended Object-Relational Database Management Systems (Versant & Caché)
- CS219 - Peer-to-Peer Networks with Mobile Applications
  - Course Project: Adding Peer-to-Peer Data Distribution Support for Stream Processing of Data
  - Network overlays, DHTs (CHORD/Pastry), BitTorrent, network coding, FreeNet, last encounter routing, CAR torrent
- CS249 - Principles of Data Mining
  - Course Project: Data Mining The CrossFit Games
  - Coding Experience with R and Weka
  - Supervised learning, data analysis & visualization, matrix computation/decomposition, linear regression, linear classification, PCA, bagging and meta-modeling, boosting and optimization, neural networks, support vector machines (SVM), unsupervised learning
- CS144 - Web Applications
  - Course Project: Built a web site with web services that allow users to search and navigate eBay bidding data. Managed all the data in a back-end database. Functionalities provided by integrating MySQL, Apache Tomcat, Lucene and Axis2 packages. Imported real data from eBay in XML format to populate our system
  - GET/POST, Encoding (unicode), XML, DTD, XML schema, XPath/XQuery, relation mapping, normalization (BCNF, 4NF), web services (WSDL, SOAP, UDDI), information retrieval (IR), boolean model, string matching (KMP), IR: tf-idf, cosine similarity, LSI, Link-Based ranking, PageRank/TrustRank, AJAX, symmetric-key/asymmetric-key cryptography, vulnerabilities, scaling out/up, cluster-based computing
- CS241B - Pictorial and Multimedia Database Management
  - Course Paper: Automated Multimedia Data Annotations
  - M model, quadrees, ArcGIS, R\* Tree, spatio temporal access methods, content based image retrieval (CBIR), query by semantic example, feature based image retrieval (FIRE)
- CS180 - Introduction to Algorithms and Complexity (Theory)
  - BFS/DFS, greedy method, dynamic programming, selection of prototypical algorithms, choice of data structures and representations, complexity measures: time, space, upper, lower bounds, asymptotic complexity, NP-completeness
- CS239 - Advanced Topics in Computer Security
  - Course Project: Identify some of the potential DoS attacks on the current NDN design (FIA). In addition, planned effective defense mechanisms against them. Aside from the theoretical analysis, we use the CCN API to develop simulations to evaluate our approach.
  - DDOS, privacy and social networking, TPM, malware for portable devices, botnets, security versus usability, DNS security, cyberwarfare and cyber-deterrence, novel hardware attacks (e.g., cold boot, firmware attacks), privacy and data mining, web security, insider threat detection, trust, virtual machine approaches to security, social engineering
- CS188 - Special Course on Secure Design for Embedded Systems
  - Course Project: Investigate when it is beneficial to offload security-oriented computations from mobile devices to grid-powered servers. Effects on battery life or performance improvements.

California State University, Long Beach  
B.S. Computer Science

2002 - 2005

### Course Work

- Designed and created a first person shooter game. (C++, DirectX 9.0c)
- Designed a relational database for a recreation of a college library system. (Oracle9, UML)
- Redesigned the Nikkei Student Union's webpage with a forum and sessions and improved updating functionality. (PHP, MySQL, Apache)
- Completed the requirements and specifications for a mock up of a redesigned staples.com. (C++, Rose, COCOMO, DFD, Use Case Models, and Flowcharts)
- Created a 20 process program in Linux to compute large functions within shared memory. (C++, Multithread with fork())
- Coded multiple traversing, pattern matching, and sorting algorithms. (C++)
- Applied computer security.
- Wrote simulations to generate data for problem solving using Object Oriented Programming (OOP) style. (C++)
- Created a pong game with animation and speed control. (ASM)
- Created a Multi Cycle CPU (MCC) to search for prime numbers. (Verilog)
- Computer Algorithms, Probability and Statistics, Numerical Analysis, Discrete Mathematics, Linear Algebra, Multi-dimensional Calculus.

### Other

#### Projects and Links

#### Personal Pages

<http://rungeek.com>  
<http://blog.rungeek.com>

## Languages

- Java
- C/C++
- JavaScript
- Visual Basic
- C#
- PHP
- SQL
- XML

## APIs, Tools, and Libraries

- Google Maps/Earth
- Verisign VIP
- jQuery
- Apache HTTPD
- ActiveMQ
- Lucene
- ...and much more

## OS

- Mac OSX
- Linux - Ubuntu
- WinXP

## Recent Awards and Honors

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- Award - Secure Document Repository Prototype - 2011
- Award - Working with Harvey Mudd Clinic students - 2010
- Award - Scheduling Project - 2010
- Award - Integration of data through web services - 2010
- Award - Advanced Prototype of a ground station - 2010
- Dean's List - CSULB 2005

**First Computer**      Custom 200MHz P1 w/ 32MB RAM, 2GB HD

**Favorite Editor**      Eclipse