

# SEAN CIER

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## Skills

- **Java, Objective C, C#, C/C++**. Some experience with JavaScript, PHP, shell scripting, and miscellaneous other languages. Enjoy learning new languages.
- **Multithreading, distributed, and massively parallel computing**: clouds, grids, distributed servers, multithreaded client applications, P2P, and General-Purpose GPU (GPGPU) techniques
- **Mobile technology**, in particular iPhone application development
- Design and implementation of robust, scalable software architectures for **server-based systems**
- **Software engineering and design techniques and technologies**, including object-oriented methodologies and design patterns; REST, Map/Reduce, and other web-based and distributed systems; cross-platform development; scalable, reliable and redundant server and service design; database-backed persistent services; encryption, authentication, and secure software
- **Algorithms** in domains such as nonlinear optimization and evolutionary computing (such as genetic algorithms and particle swarm optimization), physical simulation, Monte Carlo method and other stochastic techniques, and computational geometry
- Seeing the big picture and creating innovative and flexible **architectures, APIs, and protocols** to solve the problem at hand in a scalable, maintainable, and pragmatic manner; also happy getting my hands dirty writing code to implement such systems
- Equally effective **leading teams** or working **side-by-side with peers**
- Able to **adapt quickly** to the use of new software architectures, APIs, languages, and techniques
- Quite able to write in **English** as well, for technical and nontechnical audiences

- **3D graphics:** visualization, modeling, animation, and rendering (both photorealistic and interactive). Experience with OpenGL, Open Scene Graph, RenderMan, and other graphics APIs. Have designed and implemented novel image-based modeling and rendering techniques, realtime animation and 3D user interface paradigms, distributed rendering, Monte Carlo path tracing, and virtual reality applications
  - Experience with
    - git, subversion, cvs
    - Ant, NAnt, GNU make
    - Eclipse, XCode, vi, emacs, Microsoft Visual Studio, SharpDevelop, MonoDevelop
    - XML, HTML, RDF, and parser technologies such as SAX, DOM, ANTLR
    - Java 1.6, Microsoft .NET 2.0, Mono
    - SQL, JDBC
    - HTTP, SSL, servlets, RMI, SNMP
    - Docbook, LaTeX
    - a diverse variety of other keywords and buzzwords
  - Used and developed under **Linux, OS X, Windows, IRIX, Solaris**
  - United States citizen. Have held a Top Secret clearance (currently inactive)
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## Education and Professional Achievements

- BS degrees in **Computer Science** and **Physics** from [Carnegie Mellon University](#), 1998
  - Keith Sullivan, Sean Luke, Curt Larock, Sean Cier, and Steven Armentrout, "[Opportunistic evolution: efficient evolutionary computation on large-scale computational grids](#)," Proceedings of the 2008 GECCO conference
  - [U.S. Patent #6463457](#): System and method for the establishment and the utilization of networked idle computational processing power, issued 2002
  - Member of [ACM](#), [SIGGraph](#), and the [Electronic Frontier Foundation \(EFF\)](#)
  - Always learning
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## Experience

- **[Parabon Computation](#)**: February 2007 to present  
*System Architect*
  - Participated and led a variety of software development projects to enhance Parabon's Frontier grid technology
  - Worked on a variety of government proposals and sales efforts

- Implemented Map/Reduce atop the Frontier grid platform
  - Led the development of [Watchman](#), an AJAX-based web application for sensor placement optimization via evolutionary computation techniques, using the Frontier system for computation
  - Implemented the [Blitz testing service](#) for large-scale DDoS simulation and cybersecurity analysis
  - Continued to evolve and refine the [Frontier Grid SDK](#) for application and task development
- **[7b5 Labs](#)**: May 2009 to present  
*General Partner (free time project)*
    - Ported the classic UNIX networked space combat game [XPilot](#) to the iPhone and iPod Touch
    - Created [Subatomic](#), a physics-based casual game for the iPhone and iPod Touch
- **[ProLogic](#)** (now part of Ultra Electronics): July 2002 to January 2007  
*Project Tech Lead; Senior Software Architect*
    - Led teams and collaborated on design and implementation of unified terrorist threat visualization and analysis environment including facility modeling and vulnerability analysis applications. Personal contributions included modular framework design and implementation, module interface designs, visualization technologies such as route interpolation and scene graph access and manipulation, data serialization, and others
    - Led team working on advanced algorithm development for support of projects across the company, including problem domain analysis, algorithm development, and validation. Algorithms investigated include weapon fire scheduling; optimal sensor placement; sampling and isocontour extraction; and blast wave propagation and shielding simulation
    - Integration of visualization environment with threat analysis techniques, algorithms, and applications including in particular the Blast Estimation Effects Model (BEEM); also led research on implementing threat models, including blast wave propagation and structural response
    - Performed customer training and system demonstrations, helped bid and win various contracts, and worked with customers to define requirements and contract Statements of Work (SOWs)
- **[Managed Object Solutions](#)**: October 2001 to June 2002  
*Software Engineer*
    - Worked on developing, implementing, supporting, and documenting a published API for incorporating third-party applications and data sources into Managed Object's network management product, to replace a proprietary legacy API. Primary requirements included generality, scalability, simplicity, and robustness
- **[Parabon Computation](#)**: November 1999 to October 2001  
*System Architect*
    - Part of the core architecture team for Frontier, a general-purpose distributed computing platform which utilizes idle time of Internet-connected desktop machines (providers) to perform powerful, supercomputer-scale massively parallel computation
    - Designed the high- and low-level communications protocols for interaction between provider engines, client applications, and the central server
    - Designed, implemented, and documented the client and task runtime APIs

- Participated in implementation of the Java-based central server
- Designed and implemented a grid-based [application for Monte Carlo-based distributed photorealistic rendering](#) using a bidirectional path tracing algorithm
- **Autometric** (now part of Boeing): June 1997 to November 1999  
*Lead Software Engineer*
  - Designed, developed innovative technologies for, and implemented a proprietary system for building-interior familiarization using existing and novel image-based modeling and rendering techniques, as part of a small team, working with Java, C++, and OpenGL
  - Feature implementation and refinement of a large-scale real-time visualization system, as part of a medium-large team, working with C/C++ and OpenGL

Also available are [PDF](#), [Word](#), and [Google Docs](#) versions of this resume