SEAN CIER

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Skills

- **Java, C#, C/C++**. Some experience with JavaScript, shell scripting, and miscellaneous other languages
- Comfortable with a variety of **software engineering and design techniques and technologies**, including object-oriented methodologies and design patterns; REST-based and other distributed systems; cross-platform development; scalable, reliable and redundant server and service design; database-backed persistent services; encryption, authentication, and secure software
- Particular experience with **multithreading and massively parallel computing**, including clouds/grids, distributed servers, multithreaded client applications, and General-Purpose GPU (GPGPU) techniques
- Have extensively employed **diverse algorithms** in domains such as nonlinear optimization (such as genetic algorithms and particle swarm optimization), physical simulation, Monte Carlo method and other stochastic techniques, and computational geometry
- Adept at 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; equally 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
- Can write in English effectively as well
- Extensive familiarity with **3D graphics**: visualization, modeling, animation, and rendering (both photorealistic and interactive), including theory (e.g. curved surface representations, physical simulation, and global illumination algorithms) and practice (e.g. use of OpenGL, OSG (Open Scene Graph) and the RenderMan

interface). 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
  - subversion, cvs
  - Ant, NAnt, GNU make
  - Eclipse, vi, emacs, Microsoft Visual Studio, SharpDevelop, MonoDevelop
  - XML, RDF, and parser technologies such as SAX, DOM, ANTLR
  - Java 1.6, Microsoft .NET 2.0, Mono
  - SQL, JDBC
  - RMI, HTTP, SSL, servlets, SNMP
  - Docbook, LaTeX
  - a diverse variety of other keywords and buzzwords
- Used and developed under **Linux, Windows, OS X**, IRIX, Solaris
- Hold a Top Secret clearance

Education and Professional Development

- Graduated from **Carnegie Mellon University** with a GPA of 3.47 (**4.0** within Computer Science), with BS degrees in both **Computer Science** and **Physics**
- Member of ACM, SIGGraph, and the Electronic Frontier Foundation (EFF)
- Always learning

Experience

- **Parabon Computation**: February 2007 to present
  System Architect
  - Evolved and refined API/SDK for application and task development using the Frontier grid system (see previous Parabon entry for more detail)
  - Led the development of an AJAX-based web application for sensor placement optimization using the Frontier system for computation, serving as the flagship application of Parabon's web-based "Frontier Dashboard" platform
  - Worked on a variety of proposals, contracts, and sales efforts
- **ProLogic**: July 2002 to January 2007
  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 managament product, to replace a proprietary legacy API. Primary requirements included generality, scalability, simplicity, and robustness

- **Parabon Computation**: November 1999 to October 2001
  System Architect
    - Participated in a large capacity in design and implementation of 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
    - Part of a small core team which designed and implemented the Java-based central server
    - Designed and wrote (leading one other developer) a flexible, extensible Frontier client application for Monte Carlo-based distributed photorealistic rendering using a bidirectional path tracing algorithm
    - Helped design, implement, and debug portions of the C++-based compute engine

- **Autometric** (now 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

- **Independent projects** include a publicly-available Java binding for the RenderMan API, a C# library for MusicBrainz, participation in various Open Source projects such as The GIMP, and assorted other minor projects

Also available are PDF, text, Word, and Google Docs versions of this resume