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# Jonathan Henckel

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## Skills Summary

» Seven years C++ object-oriented development experience.
» Six years experience designing and developing 3D collision detection algorithms.
» Extensive 3D physics and graphics experience on PC and games consoles.
» Internet projects with HTML, Perl, PHP, Java applets/servlets, and Javascript.
» Programming experience in Physics, Graphics, Database, Communications, and AI.

## Work Experience

*Apr 04 - present*
**Software Consultant** — *Independent Consulting, Zumbro Falls, MN*
Development and maintenance of internal software libraries for collision detection and physics simulation for Electronic Arts games.

*Jul 03 - Mar 04*
**Senior Software Engineer** — *Criterion Software, Guildford, England*
Brought Renderware Physics up to product-level quality standards. Architected the Renderware 4 collision and spatial database system. Improved the time-of-impact algorithm. Designed and implemented a remote visualizer that is used to debug physics applications running on PlayStation2 and Xbox. Integrated new physics constraint solver technologies.

*Sep 01 - Jun 03*
**Senior Software Engineer** — *MathEngine, Oxford, England*
Designed and implemented collision detection system for two major game physics engines: Karma (used by Epic Games' Unreal Engine) and Renderware Physics. Developed new algorithms for collision detection, contact generation, and time-of-impact calculation. Wrote cross-platform C code for PlayStation2, PC, Xbox, and GameCube. Implemented optimizations for real-time performance on game consoles.

*Jan 00 - Feb 01*
**Chief Technology Officer** — *PageLab Network, Inc., Minneapolis, MN*
Designed and developed a new high-performance natural dialog search engine, Subjex.com, with merchant/affiliate e-commerce tracking system using industry standard technologies: Linux, Java, and mySQL. Investigated and set corporate direction for new technologies such as XML, wireless protocols, and streaming media indexing.

*Feb 99 - Jan 00*
**Physics Simulation Researcher** — *Industrial Mindworks, Atlanta, GA*
Architected a platform independent 3D simulation and graphics library. Designed and implemented a general purpose physics simulator by integrating many advanced techniques: GJK collision detection, impact dynamics, jointed multibodies using Lagrange multipliers, and cloth and flexible body simulation using damped springs. Wrote papers on vector mathematics, collision detection, and simulation methods.

*Aug 88 - Feb 99*
**Staff Software Engineer** — *IBM Corporation, Rochester, MN*
**CORBA Distributed Object Technologies for NT and AIX**
Gained expertise in object-oriented design and programming, C++, Java, CORBA architecture and object services. Wrote WebSphere Externalization and Persistence Services. Wrote the object server container and hashing algorithms.
**Multimedia Technologies for the AS/400**
Wrote serial communication code to control VCRs, laserdiscs, and cameras remotely. Wrote C routines to support image conversion, compression, and dithering in various image formats.
**Artificial Intelligence Technologies for the AS/400**
Implemented several neural network algorithms and developed a new rule extraction mechanism. Wrote SQL database access code to support several expert systems tools.
Filed seven U.S. patents.

## Education

*Jan 90 - July 93*
**M.S. Computer Science** — *University of Minnesota, UNITE*
Master's project: Theorem prover with natural language interface. Described and implemented a mapping from English to first order logic and a resolution based deduction engine in C.

*Sept 82 - Apr 86*
**B.S. Computer Science** — *University of Michigan, Ann Arbor*