

# Gary McKee

Colorado Springs, Colorado

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## Life Cycle Engineering Software Engineering Algorithm Development

**Objective:** My goal is to work on technically challenging problems that are important to the organization and that allow me to effectively apply my breadth and depth of knowledge.

### Technical Focus

Life Cycle Engineering	Requirements, Analysis, Architecture, Design, Implementation
Algorithm Development	prototypes, performance analysis, implementation & testing
Technical Architectures	Systems Architecture, Data Architecture, Distributed Systems
Data Acquisition & Analysis	Managing large data sets in real time environments

### Qualifications

With experience in large companies, small companies, and as an independent consultant, I am capable of adapting to varied work environments, I have a high level of personal initiative, and I work well in unstructured environments.

My professional focus has been consistently technical with an emphasis on solving difficult technical problems involving software. I have consulted extensively for the federal government and various aerospace companies in technology advocacy, large system architectures, and algorithm development.

### Summary of Experience

System Architecture, Data Architecture, System Engineering	(9+ years)
Algorithm Design, Data Acquisition, Data Analysis	(9+ years)
Database and Internet Applications	(6+ years)
Modeling and Simulation	(4+ years)
Legacy Code, maintenance and upgrades	(3+ years)

**Education:** Bachelor of Science, Mathematics      University of Tulsa, Tulsa, Oklahoma

### Computer Languages

Language	Application Areas	Years
Ada	Real Time data acquisition, multi-source data correlation, C3I systems, Development tool interfaces and prototypes, Automated battle management simulation tool. <b>Taught:</b> Ada in commercial seminars	(5+ years)
FORTTRAN	Geophysics research, high volume data processing, Multiplexing and de-multiplexing real time data streams, Geographic database, multi-sensor tracking system.	(4+ years)
Java	Database access, eCommerce, back end Web server applications <b>Taught:</b> Java in university courses	(3+ years)

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Language	Application Areas	Years
C/C++	Real Time missile tracking, target track fusion, GPS positioning system test environment <b>Taught:</b> C++ in university courses	(3+ years)
Assembly	various machine dependent languages including microcode, Used for system programming, array processor programming, device drivers, real time data translation and multiplexing	(3+ years)
SQL	Database access language, eCommerce, two-tier Web applications <b>Taught:</b> SQL in university courses	(2+ years)
MATLAB	simulations: battle management, orbital mechanics (6 DOF fly outs)	(2+ years)
<others>	COBOL, PROLOG, LISP, various scripting languages	(2+ years)

## Key Accomplishments

### System Engineering

1. Provided System Engineering and Architecture for the GPS-OCX project. Applied my extensive experience with the Missile Defense Agency (distributed real time simulations) to the simulation needs for the proposed GPS Ground System upgrade. This work is currently in process.

### Algorithms

2. Proposed, designed, and implemented new algorithms for efficient **access to geographic data** that was globally sparse but locally dense. Led the research program to develop the prototype and later was program manager for the successful deployment of this product to the Navy customer. The product provided automated mechanisms to replace essential Navy activities previously implemented manually.
3. Designed, implemented and managed a **high fidelity orbital mechanics model** for participation in real time, multi-component government simulation (Nimble Titan War Games, 2005). Resulted in first high fidelity model of these requirements in any government simulation. The model ran successfully in all simulations with no data loss and no software failures.
4. Developed and prototyped a new algorithm for real time **boost phase track prediction** of ballistic missiles. Tracking accuracy and prediction reliability was significantly improved.
5. Developed **algorithms for micro-coded array processor** for auto-correlation, cross-correlation and band-pass filtering. Resulted in a doubling of throughput of legacy programs that used these new algorithms compared with the vendor supplied microcode.
6. Translated abstract math concepts into usable and implementable **algorithms for multi-source data correlation** and probabilistic vehicle identification. Achieved 83% automated vehicle identification to replace a time consuming manual process previously used by the Navy.

### Legacy Code

7. Architect and team lead for **conversion of client tools** from proprietary hardware using IBM hierarchical database to Web based interface using Oracle database. Added data security and user access security. Resulted in reduction of proprietary hardware and software costs exceeding \$500,000 over twelve-month period.
8. Acquired, managed, and delivered a **compiler development** contract from the government. We took an existing Ada Language compiler running on proprietary operating system and ported it to PC quality hardware running on a UNIX operating system. The product was delivered on-schedule, on budget and met all specified quality and performance criteria.

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### Teaching

FULL FACULTY	Art Institute of Colorado, Acting Program Chair	(1999-2002)
ADJUNCT FACULTY	University of Colorado (Boulder Campus)	(2003)
SHORT COURSES	Technical Seminars (Languages, Design, Web)	(1988-1998)
GUEST LECTURER	University of Colorado (Graduate Engineering program)	(2003-2004)
	Art Institute of Colorado, Internet Technologies	(1998)
	Air Force Institute of Technology, Real Time Systems	(1991)

### Professional Development

Simulink for System & Algorithm Modeling	2005
MATLAB, Advanced Features	2005
Satellite Toolkit fundamentals	2004
BEA WebLogic Training with JSP	2000
Java Enterprise (J2EE)	2000

### Employment

**2007-present Principal Systems Engineer Raytheon Corporation**  
Systems Architecture, Modeling & Simulation, Algorithm Development, System Engineering  
Architect for Simulation & Modeling Integrated Product Team (SIM IPT).

**2006-2007 Chief Consultant McKee Consulting**  
Algorithm Development, eCommerce, Internet applications

**2005 Principal Systems Engineer NAVSYS Corporation**  
Systems Engineering, Test Planning & Verification

**2002-2005 Principal Systems Architect Millennium Engineering & Integration**  
Algorithm Development, Modeling & Simulation, Systems Architecture

**1988-2002 Chief Consultant McKee Consulting**  
Algorithm Development, Systems Architecture, Modeling & Simulation, Data Analysis, Assessment,  
eCommerce, Internet applications, Database, Technical Training

### **Prior Experience (various companies)**

C<sup>3</sup>I Architecture, Systems Engineering (requirements, data architecture, life cycle development), micro-code programming, database, I/O device drivers.