

## **Robert W. Harder, PhD**

Colorado Springs, CO

(850) 368-3276

[rob@iharder.net](mailto:rob@iharder.net)

[linkedin.iharder.net](https://www.linkedin.com/in/iharder.net)

**SUMMARY OF QUALIFICATIONS:** TS/SCI cleared Operations Research Analyst with 20 years experience, MS & PhD in OR, Tech Director, Branch Manager, and Analyst. Proven ability to define and solve complex problems with a team or alone. Recognized for technical excellence and ability to communicate complex analysis in non-technical terms. Key characteristics include:

- Top secret clearance
- Policy analysis
- Public speaking
- Modeling & simulation
- Statistical design
- Optimization

## **PROFESSIONAL EXPERIENCE:**

### **Assistant Professor of Computer & Cyber Science**

2014–2018

*United States Air Force Academy, Colorado Springs, CO*

- Directed students using supercomputers to analyze millions of flight track data records looking for anomalous, threatening behavior. The analysis was built with Python and R software on remotely accessed computer systems.
- Mentored students in their capstone project simulating the F-35 repair process. Guided their analysis to find improvements that cut maintenance times by 60%. The computer simulation was built with Arena and Visual Basic for Applications (VBA).
- Developed an automated testing tool to provide immediate feedback on student programming (1k+ students, 40k transactions) and live web reporting for instructors to track progress.

### **Branch Manager for Studies, Analysis, and Assessments**

2011–2014

*Twelfth Air Force, Air Forces Southern, Tucson, AZ*

- Developed assessment framework that captured the entire team's contributions from 6 divisions in our 500-person headquarters resulting in more focused and cross-functional planning. The work succeeded by getting buy-in from all stakeholders and ensuring that everyone benefitted from the work.
- Lead analysis and assessments for building partnership programs involving 41 Central, South American, and Caribbean countries and territories. Headquarters' objectives were achieved by tailoring work to each country's unique situation.
- Saved \$100K developing a graphical operational view and video production of Dominican Republic drug interdiction program.
- Reduced staff workload 480 to 80 hours by coaching and developing two on-site analysts for two \$7M large force exercises in Peru and Belize. Putting the analysis close to the action improved communication and final products.

- Analyzed 29 objectives and 83 tasks in work flow study for contracting office. Finding inefficiencies helped people work less and accomplish more.
- Cut reporting burden 23% for 15 overseas national-level managers by identifying 11 critical improvements to \$179M international relations program. Knowing what a lean program needed to succeed saved time and money.

### **PhD Graduate**

2008–2011

*Naval Postgraduate School, Monterey, CA*

- Developed quantitative framework for assessing visual simulation frameworks.

### **Assistant Professor of Computer Science**

2006–2008

*United States Air Force Academy, Colorado Springs, CO*

- Trained 230 cadets in core and advanced computer science courses including modeling and simulation, database design, and large dataset storage and retrieval.
- Managed daily operations for 25-person department and \$428K annual budget; procured additional \$120K for emerging research resulting in first of kind capability.
- Saved 500 hours per year in staff time by establishing a web portal to aid faculty communication, improve continuity, and capture lessons-learned.
- Ensured 100% uptime in voice and data networks in constantly-changing, adverse environment for 2,400 cadets as Director of Communications and Information.
- Directed research on Unmanned Aerial Vehicle (UAV) autopilot, ground control, payload architecture, and sensor processing, exploitation, and dissemination.
- Led team to national level UAV threat detection and negation “Black Dart” exercise at the Navy’s China Lake desert facility.

### **Deputy Technical Director**

2003–2006

*Air Force Operational Test & Evaluation Center, Ft Walton Beach, FL*

- Provided technical oversight and guidance for planning, execution, and reporting on 17 high visibility operational test and evaluation (OT&E) programs valued at \$24B.
- Saved \$400K and increased effectiveness by uncovering weapon employment error during Small Diameter Bomb (SDB) live-fire testing.
- Built 3D weapon scoring model to reveal significance of aimpoint elevation errors when weaponizing miniature munitions with even high impact angles.
- Authored Design of Experiment study and briefing. Updated SDB and Joint Direct Attack Munition (JDAM) test plans, keeping programs on schedule.
- Enhanced output of critical flight path tracking, improving overall test data for Joint Air to Surface Standoff Missile (JASSM).

### **Chief of Enlisted Models Development**

2000–2003

*Air Force Personnel Operations Agency, Alexandria, VA*

- Cut large data set access times 50% by installing new server, improving network infrastructure, streamlining processes, as director of \$225K technology upgrade plan.
- Managed \$70K technical education fund for 20-person analyst shop.
- Designed and programmed new forecasting model ensuring optimal allocation of \$518M training funds for 280K member enlisted force and 142K Air Force civilians.

## **Masters Graduate**

1998–2000

Air Force Institute of Technology, Dayton, OH

- Saved \$780K with improved Unmanned Aerial Vehicle (UAV) surveillance routes for medium (Predator) and high altitude (Global Hawk) engagements.
- Reactive route scheduler incorporated into Space and Naval Warfare (SPAWAR) Systems Command's situational awareness system.

## **EDUCATION AND TRAINING:**

- PhD, Modeling, Virtual Environments, & Simulation, Naval Postgraduate School
- MS, Operations Research, Air Force Institute of Technology
- BS, Industrial Engineering, Oregon State University
- Test & Evaluation Level II Certification, Defense Acquisition University

## **AFFILIATIONS:**

- Founding developer, IBM's Common Optimization Interface for Operations Research (COIN-OR) software
- Member and student chapter mentor, Institute for Operations Research and the Management Sciences (INFORMS)
- Member, American Mensa

## **OTHER SKILLS AND EXPERIENCE**

- Top Secret Clearance
- Strategy-to-task planning
- Public speaking
- Modeling & simulation
- Virtual reality
- Data analytics
- Statistical design
- Design of experiments
- Database Design
- Telemetry
- Languages: Java, Python, C, Javascript, PHP, HTML, XML, SQL, Ruby, Objective-C
- Multicriterion Decisions
- Artificial Intelligence
- Network Infrastructure
- Process Optimization
- Microcontrollers
- Operational Testing
- Policy Analysis
- International Relations
- Acq T&E Level II Cert
- JMEM/JAWS
- Amazon Web Services
- Metaheuristics
- Object Relation Mapping
- Dynamic Web Design
- Metrics Development
- Training Manager
- Cost Estimation
- Public speaking
- Computer programming
- Cyber offense/defense