

Troy Hall

USAF Retiree and Technical Scholar with 30+ years in armament, mechanical design, and cybersecurity. Currently pursuing Technical Studies at Western Dakota Technical College targeting the South Dakota Defense Institute. Specialist in precision machining, CNC, and enterprise security compliance.

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EXPERIENCE

Technical Lead | Hardware Simulation & Prototyping

Spearheaded the analysis, repair, and continuous improvement of a broad portfolio of electro-mechanical training simulators, including complex optical, laser-targeting, and weapon platforms.

Designed and prototyped upgraded hardware components using 3D modeling (CAD), 3D printing, and precision circuit board machining to resolve legacy equipment failures.

Engineered custom work-holding solutions and precision tooling to support high-tolerance manufacturing and assembly workflows.

Authored comprehensive engineering reports detailing mechanical reverse-engineering, drive calculations, and system integration procedures.

Systems & Security Specialist | Independent Contractor

Executed continuous monitoring and risk mitigation programs, aligning system defenses with modern Cybersecurity Risk Management Construct (CSRMC) principles.

Streamlined security audits and compliance reporting for highly regulated networks—including infrastructure supporting multinational defense industry, payment processing, and state/federal standards—using traditional and cutting edge tools.

Managed enterprise-level server virtualization and infrastructure upgrades to maintain high availability and strict security compliance across diverse operational environments.

Armament Systems Specialist | United States Air Force (Ret)

Directed the maintenance, inspection, and quality assurance of complex systems, maintaining operational readiness rate for high-value assets.

Led technical curriculum development and served as a senior educator and evaluator, designing instructional frameworks to assess and validate operator proficiency on complex hardware.

Directed technical teams in high-pressure settings, ensuring compliance with federal standards, engineering tolerances, and safety protocols.

SKILLS

Tactical Systems & Simulation: Advanced proficiency in military-grade simulation, situational awareness, and battlespace management platforms; specialized in small arms/close air support protocols and technical training curriculum development.

Cybersecurity & Automation: Orchestrated enterprise-level cybersecurity compliance and automated scripting across high-security frameworks, spanning international defense agencies, state-level educational boards, and private industry sectors.

Advanced Manufacturing: Expert-level utilization of CAD/CAM software for precision engineering and the execution of complex manual and computer-controlled machining operations.

Project Leadership: Authored public-facing Standard Operating Procedures (SOPs) and technical documentation repositories; directed end-to-end prototyping life cycles from initial design through final engineering analysis.

EDUCATION

Western Dakota Technical College, Rapid City, SD

COMMENCING FALL 2026

A.A.S. in Technical Studies; Current coursework in Mechanical Design and Computer Science.

Future Curriculum: Selected for the upcoming Gunsmithing Program (2027) to align with South Dakota's defense industry expansion.

National American University (NAU)

Bachelor of Science: Applied Information Technology

MyComputerCareer (MyCC)

A.A.S. IN NETWORK ADMINISTRATION AND CYBER SECURITY

Program Graduate: Cyber Security Engineer, Cyber Security Specialist, and Information Technology Security & Administration.

Lake Area Technical College

Coursework: Computer Information Systems (Network / Security Option)

Air University—Community College of the Air Force (CCAF)

A.A.S. DEGREES

Instructor of Technology and Military Science; Aircraft Armament Systems Technology.

CERTIFICATIONS & SPECIALIZED TRAINING

CompTIA: Security+ | A+ (Hardware & Software) | Network+ (Pending Certification)

PROJECTS

IZLID Capstone Project — *Electro-Mechanical Design & Prototyping*

Engineered and prototyped the IZLID electro-mechanical assembly, focusing on the Base-Cap microswitch interface. Project included precision CAD modeling, application of GD&T, CNC fabrication of a custom PCB, 3D printing of housing components, and integration of a Teensy microcontroller and custom firmware for functional verification.