SARAH J. BOLTON, Ph.D.

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EDUCATION

• Ph.D., Computer Science — Air Force Institute of Technology (AFIT), 2023
• M.S., Computer Science (Artificial Intelligence) — AFIT, 2018
• B.S., Computer Science — University of Arizona, 2012 — Minor in Mathematics
• Air Command and Staff College — Air University, 2025
• Squadron Officer School — Air University, 2019

ACADEMIC APPOINTMENTS

Assistant Professor, Department of Computer & Cyber Sciences, United States Air Force Academy (2023–Present)
— Course Director: CS210 Programming in C; CS220 Data Structures & Systems Programming; slated for CS380 Design & Analysis of Algorithms
— Instructor across 16 courses spanning Python, C, data structures, algorithms, compilers/automata, and colloquia
Director, Academy Center for Cyberspace Research (ACCR), USAFA (2024–Present)
— Coordinates cyberspace research, CRADAs, and external partnerships; runs CS405/CyS405 Colloquium

TEACHING EXPERIENCE

• CS110 — Introduction to Programming (Python)
• CS210 — Programming in C (Course Director)
• CS220 — Data Structures & Systems Programming (Course Director)
• CS380 — Design & Analysis of Algorithms (incoming Course Director)
• CS426 — Languages & Machines (Compilers / Automata Theory)
• CS405 — Computer Science Colloquium
• CyS405 — Cyber Science Colloquium

Teaching Development & Recognition

• Dean's Teaching Certificate
• Course Design Institute (2025)
• Mastery of Teaching Certification Community (MTCC), Cohort 8

RESEARCH INTERESTS

• Artificial Intelligence & Machine Learning
• Aerospace Data Analysis (ADS-B, flight phase identification)
• Cyber Operations & Network Systems
• Computer Science Education & Assessment
• Human–Machine Teaming

PUBLICATIONS (SELECTED)

• ADS-B classification using multivariate LSTM–FCN models — *Journal of Supercomputing* (2023)
• Multi-Sensor Aircraft Classification — CSCE 2023

• Aircraft Classification Using Flight Phase Identification — IEEE NAECON 2023

MILITARY & PROFESSIONAL EXPERIENCE (SELECTED)

C4 Planner, CJTF-HOA/J6 — East Africa (Apr–Oct 2019)
• Critical to C4 planning for a two-week joint exercise in Ethiopia; supported 40 Army SECFOR—enhanced contingency response TTPs
• Executed $2M multi-nation network upgrade; enhanced real-time reporting and force protection at 3 FOLs—supported 980 joint personnel
• Lead crisis/contingency C4 planner; organized short-notice tactical support for 4 personnel—safeguarded security for US Embassy Sudan
• USAID/DoD liaison; developed East African humanitarian/disaster relief plan—protected ~5K US/international personnel
• Principal Campaign Support Plan C4 planner; shaped force composition COAs for 450 personnel—aligned CJTF with CCMD requirements

ISR Communications Flight Commander, USCENTCOM CAOC/A2 (Jun 2014–Jan 2015)
• Led 11 personnel across C4ISR; supported AF's largest deployed ISR force; sustained $20M network and 31 SCIFs with 8 partner nations—enabled 18K OIR/OEF missions
• Averted network failure; organized migration of $248K filer data storage—linked 31 SCIFs/$20M systems across 8 nations
• Hand-picked for WIT CCIP TA; advised on 12 network checklists—compliance-ready on 378 items; mission assurance focus
• Directed coalition team and 14 partner nations' C2 requirements in OIR—ensured 1.5K air strikes/14.6K sorties/4.4K munitions/3K+ targets

Flight Commander – Network Operations, 25th Space Range Squadron (2018–2020)
• Led selectively staffed team of 11 military/contractor/reserve personnel in support of DoD's sole Space Test & Training Range (STTR)
• Developed/coordinated Risk Management Framework (RMF) implementation with HHQs—ensured safe & secure STTR operations
• Delivered technical communications solutions for $91M Space Range Operations Center and Range Closed Loop Environment ISO 24 joint units
• Responsible for communications activities for in-garrison/deployed high-priority virtual & live training, testing, and demonstrations

Officer in Charge / Deputy Flight Commander, 90th Communications Squadron (2013–2016)
• Led 30 military and civilian personnel; authored sustainment plans for $6.5M in WSA equipment & sensors
• Equipped, operated, and maintained $100M communications & information systems for 4.1K users across 20 AF, 90 MW, and 11 tenant units
• Directed acquisition of over $1M/year in computer systems, networking equipment, and information services
• Provided critical radio, C2 circuits, and networks to base, 15 MAFs & 150 LFs over 9,600 sq mi in a tri-state area

Airborne Spanish Cryptologic Linguist; Group Command Language Program Manager (2001–2012)
• Airborne platforms: EC-130H COMPASS CALL, RC-135 RIVET JOINT, C-130 SENIOR SCOUT
• Group-level CLPM: coordinated, assessed, and tracked language training for ~200 linguists across Mandarin, Arabic, Spanish, Russian, Pashto, Korean, Hebrew

TECHNICAL & ACADEMIC SKILLS

• **Programming:** Python, C, Java, JavaScript, HTML/CSS, JSON, PHP
• **Tools & Frameworks:** Git/GitHub, Linux, LaTeX, TensorFlow/Keras
• **Domains:** Machine Learning, Systems Programming, Cyber Operations, Aerospace Data

- **Academic:** Curriculum design, course coordination, assessment design, mentorship

U.S. Air Force service: 24 years (since Aug 2001).