

Thomas M. Blalock

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Education

United States Air Force Academy (2021 - 2025): BSc Data Science, BSc Computer Science, Minor in High Performance Computing
Overall GPA: **3.967** (#9 of 938) Data Science GPA: **4.0** (#1 of 21) Computer Science GPA: **4.0** (#1 of 39)

New Mexico Military Institute (2020 - 2021): Associate of Science. GPA: **4.0** (*Valedictorian*)

University of Central Oklahoma (2018 - 2020): Concurrent enrollment in high school. GPA: **4.0**

Research

Flexible Input Networks (2024 - 2025), Individual | *Air Force Research Laboratory, QC Ware, US Air Force Academy*

- **Awarded #1 USAFA Computer Science Research Project of Summer 2024**
- Designed a class of neural architectures, Flexible Input Networks (FINs), that can learn across multi-modal variability
- Designed 1st RL solution to the Airlift Logistics Challenge, using FINs to output a dynamic number of actions without iteration
- Presented at CORONA 2024 to Air Force personnel including the Secretary of the Air Force and the Chief of Staff of the Air Force

Informed Machine Learning (2023), Team of 4 | *National Security Administration Mathematics Research Group*

- **Awarded #1 USAFA Junior Engineering Research Project of Summer 2023**
- Designed, built, and tested attention-based autoencoder ML model “informed” by an ontology for natural language processing
- Presented to the Director of the NSA and at CORONA 2023 to the Secretary of the Air Force and Chief of Staff of the Air Force

NATO Alliance Space Deterrence (2022 - 2023), Team of 29 | *US Air Force Academy, NATO Science & Technology Organization*

- Led a research team of 29 students to develop space deterrence policy suggestions and frameworks for NATO delegates
- Attend NATO’s inaugural space deterrence wargame in Paris, France with 13 member nations represented
- Presented at the Western Regional Honors Conference 2023 and the USSPACECOM Space Law Conference 2023

Projects

Automated Conversational Hijacking (2024-2025), Team of 3 | *US Air Force Academy Center for Cyberspace Research*

- Designed/constructed proof-of-concept agentic malware that does spear-phishing attacks from peers’ accounts on pre-existing threads

Brain-Computer Interface Speller Application (2023 - 2024), Individual | *US Air Force Academy Center for Cyberspace Research*

- Constructed electroencephalography brain-computer interface system to enable communication via brainwaves
- Designed and coded p300 stimulus-producing GUI, data collection pipeline software, and recurrent CNN classification model

Autonomous Rover (2024), Individual | *US Air Force Academy Center for Cyberspace Research*

- Built computer vision-based autonomous rover trained with imitation learning and deep reinforcement learning

Facial Recognition Similarity Query System (2023), Team of 4 | *US Air Force Academy, Rose-Hulman Institute of Technology*

- Designed and built a similarity query system that retrieves images containing an input face from a 40,000+ image database
- Includes vector database search algorithms and a transfer learning-based CNN fine-tuned using a triplet loss function

Leadership

Squadron Commander (2025): Commanded 110-cadet unit, managing across all USAFA cadet wing operations/mission sets

Wing Academics Non-Commissioned Officer In Charge (2023): Managed staff of ~130 to administrate academics for 4,000+ cadets

Cadet Space Operations Squadron Executive (2022-2023): Led 14-cadet instructor team teaching space operations to ~35 students

USAFA Data Competition Team Cadet in Charge (2022 - 2023): Founded USAFA Data Competition team with 8 members

Science of Learning Team Outreach Director (2022 - 2023): Led 8-cadet team curating educational content servicing 4,000+ cadets

Wall Street Warfighters Cadet in Charge (2022 - 2023): Founded personal finance club; grew it into the largest club at USAFA

Alpha Troop Commander (2021): Commanded unit of 107 cadets in accomplishment of unit tasks spanning a 24/7 cadet schedule

Entrepreneur: Blalock Enterprises, LLC (2020): Launched “custom design-to-print” online merchandise LLC; earned a 126% ROE

Awards

Engineering Division Junior Year CSRP Award, Fall 2023 (#1 of ~70): Produced #1 research project in USAFA’s engineering division

Wing 4th Class Cadet Competition Award, Fall 2021 (#1 of 1078): Hand-selected as #1 USAFA freshman for leadership and initiative

National Reconnaissance Office Advanced Academic Degree (Top 3): Scholarship for a Data Sci MS from UVA and a slot at the NRO

Barry Goldwater Scholarship Finalist: Won Air Force Academy nomination for the Barry Goldwater Scholarship