**Brigid T. Barkmeier**
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**Education:**

**United States Air Force Academy, Class of 2024**

Mechanical Engineering Major Cumulative GPA: 3.889 Major's GPA: 3.889

**Purdue University, Purdue Military Research Institute (PMRI) Fellow**

MS in Mechanical Engineering

**Academic and Professional Experiences:**

**Experimental Observation of Curve Veering with Dr. Phillip Cornwell (*Fall 2023)***

Developing experiment to observe curve veering phenomena, which refers to the switching of natural frequencies of two modes with the varying of different parameters.

**Team Lead for Air Force Civil Engineering Center sponsored Capstone Project (*Fall 2023 – Present)***

Developing an autonomous concrete cutter for Rapid Airway Damage Repair (RADR) process. This system will bring the number of people involved from 4 to 0 for parts of the repair process after an attack on a runway. This project will help AFCEC reach its goal of getting an airfield operational within 8 hours without creating any further risks for airmen.

**Internship at University of Florida's Research & Engineering Education Facility (REEF) (*Summer 2023)***

Learned C++, Python, and ROS integrated with Turtlebots. Developed a program to receive coordinate of a hole from quadrotor, perform sweep of area around coordinate for magnetic readings, publish map of magnetic anomalies from nominal to discover any unexploded ordnance underneath a runway.

**Air Force Special Operations Portable Fluid Warmer with Captain Damon Kirkpatrick (*Fall 2022 – Fall 2023)***

Research focused on developing a portable fluid warmer using materials special operators typically carry with them, so they can rapidly and effectively provide blood transfusions in deployed and operational environments.

**SpaceX Rocket Cargo Program Research with Major George Sondecker (*Fall 2021 – Present)***

Research involving military use of SpaceX's Starship, specifically for cargo and humanitarian missions. Focused on researching and developing a deployable landing surface that can withstand the heat and force of both a rocket's takeoff and landing.

**Awards and Honors:**

**Dean's A Team/Ace's List (Spring 2023, Spring 2021)**

Awarded to cadets who achieve a 4.0 for the semester solely in academic classes (A Team, Spring 2023) or a 4.0 for the semester, including PE classes (Ace's List, Spring 2021).

**Superintendent's List (Fall 2020, Fall 2021, Spring 2022)**

Awarded to cadets who earn a place on Dean's List (over 3.0 GPA), Athletic Director's List (over 3.0 PEA), and Commandant's List (top third militarily). Additionally, I made the Dean's list 8/8 semesters, the Commandant's list 5/8 semesters, and the Athletic Director's list 6/8 semesters.

**Skills:**

**Computer Program Languages**

Proficient with MATLAB, Python, C++, C, as well as utilizing Arduino and ROS.

**Computer Aided Design**

Experience creating designs and simulations in both Fusion 360 and SolidWorks.

**Machine Shop**

Certified to operate CNC mill, CNC lathe, bandsaw, vertical saw, and woodshop saws and sanders. Experience with 3D printers, especially Prusas. Experience with circuit building and soldering. Some experience with welding.

**Leadership Experience:**

**Cadet, United States Air Force (June 2020 – May 2024)**

**Squadron Operations Flight Commander (Fall 2023)**

Member of squadron leadership; directly responsible for ~1/3 of the squadron, about 30 cadets. Specifically oversee the squadron's military, athletic, and academic performance.

**Squadron First Sergeant (Spring 2023)**

Direct advisor to squadron commander and leadership; assisted with disciplinary system, including implementation of new standards. Additionally, focused on morale and welfare of the squadron. Organized monthly "Redeye of the Month" award to recognize 4 cadets working hard within the squadron. Created and oversaw an anonymous feedback form for the squad.

**Women's Club Water Polo Captain (Fall 2022 – May 2024)**

Responsible for organizing and leading practices, especially as we do not have a coach. Additionally, I work with the co-captain to plan out and execute all travel, funding, and other logistics needed to compete in tournaments (both home and away). On a weekly basis, I spend 6 hours leading practices for 32 girls and an additional 5-10 hours on developing practice plans, as well as completing required paperwork needed for travelling, hosting, and competing.

**Squadron Academics Non-Commissioned Officer in Charge (Fall 2021)**

Oversaw academic performance for squadron; briefed entire squadron (100 cadets) on good studying habits and academic resources. Directly worked with 5 cadets on academic probation, assisting them in paperwork and supervising study hours.

**Extracurricular activities:**

**Phi Kappa Phi (Spring 2023 – Present)**

Member of one of the oldest honor societies in the nation, only offered to the top 10% of each undergraduate class.

**Tau Beta Pi (Fall 2022 – Present)**
Member of elite engineering honor society, offered to top 1/8$^{th}$ of junior class. Participate in STEM outreach in the local Colorado area for young children.
**USAFA Women's Club Water Polo Team (Fall 2020 – May 2024)**
Member of the club water polo team. Practiced 4-5 times a week for 1.5 hours, August – May. Competed in 5 to 6 tournaments each school year, typically about 4 games at each.