Dennis G. Pezan

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EDUCATION

B.S., Operations Research – Finance Specialization Class of 2029
United States Military Academy (USMA), West Point, NY
Minor in Artificial Intelligence
GPA 3.586

RESEARCH INTERESTS

Reinforcement learning and reward design, network interdiction and contested logistics, game theory, ensemble methods, predictive modeling under uncertainty, autonomous systems, military operations research

RESEARCH EXPERIENCE

Network Interdiction Models for Contested Logistics 2026–Present
Undergraduate Researcher, Department of Mathematical Sciences, USMA, in partnership with the MIT Center for Transportation & Logistics (CTL)
- Investigate how to optimally attack and defend military logistics networks subject to adversarial interdiction of supply lines
- Apply network optimization, game theory, and Markov decision processes to develop and analyze network interdiction models
- Analyze model outputs to inform strategic logistics and force-protection decisions

Reward Misspecification in a Simulated Multi-Echelon Resupply Task Summer 2026
Research Intern, Modeling & Analysis Division, Transformation Decision Analysis Center (TDAC), U.S. Army, Fort Lee, VA
- Engineered and iteratively redesigned the reward function for a reinforcement learning agent operating in the Army's Logistics Battle Command (LBC) simulation
- Diagnosed reward hacking through behavioral auditing, rebuilt the objective, and verified the correction against the original failure modes
- Trained and evaluated the agent in Python (PyTorch) against a new implementation of the LBC environment, analyzing how reward design shaped learned policy behavior

Behavior of Machine Learning Models Under Uncertainty 2025–2026
Undergraduate Researcher, Independent Research (MA289), Department of Mathematical Sciences, USMA
- Conducted applied AI and ML research on model behavior and data-driven decision making
- Developed Python pipelines (PyTorch, scikit-learn) to train and benchmark reinforcement learning and ensemble models; automated experiment tracking and visualization
- Trained and evaluated Decision Tree, Bagging, and Random Forest classifiers on an identical 80/20 split of the Titanic dataset to isolate the effect of ensemble structure
- Computed pairwise tree correlation empirically ($\rho \approx 0.76$ bagging vs. 0.67 random forest) to demonstrate how decorrelation lowers the irreducible variance floor
- Built and deployed an interactive research site presenting the methodology and results

TECHNICAL REPORTS

Pezan, D. G. (2026). *Diagnosing and correcting reward misspecification in a simulated multi-echelon resupply task.* Technical brief. dennis-pezan.com/rl-reward-paper.html

PRESENTATIONS

Undergraduate Research Presentation, USMA, West Point, NY Spring 2026
Decision trees and ensemble methods: variance reduction through tree decorrelation

LEADERSHIP EXPERIENCE

Cadet in Charge, MA103 Tutoring Program 2026–Present

Center for Enhanced Performance (CEP), USMA

- Lead and coordinate the full tutor staff supporting MA103, a core mathematics course with 1,010 cadets enrolled
- Direct tutoring coverage for every major graded event across the academic year, including quizzes, written partial reviews, and term-end examinations
- Serve as a certified CEP tutor in mathematics, chemistry, and psychology

Cadet Ambassador 2025–Present

CLD-STEM / Cadet Ambassador Program, USMA

- Represent West Point at advisory boards in Chicago and Los Angeles
- Deliver STEM outreach and mentorship to underrepresented students (50+ hours)

SERVICE AND OUTREACH

Peer Writing Consultation 2026–Present

Cadet Fellow, Mounger Writing Center (MWC), USMA

- Commit 3+ hours weekly to peer consultations helping cadets strengthen writing and communication at any stage of the drafting process

Technology Refurbishment and Distribution Jan – July 2024

Volunteer Senior Publicist, Recycle & Reboot, Plainfield, IL

- Led outreach to secure donated technology; helped refurbish and distribute 100+ computers to underserved communities

HONORS AND AWARDS

Stokes Writing Fellowship, USMA 2026–Present

Endowed fellowship awarded to selected cadet writers; funds research travel, mentorship from experts in the field, and publication of original research.

Dean's List, USMA 26-1, 26-2

Norwegian Foot March Badge 2026

TECHNICAL SKILLS AND COURSEWORK

Programming: Python (PyTorch, scikit-learn, pandas, NumPy, matplotlib), Java (Spring Boot), SQL

Tools: Git and GitHub, Vercel, Microsoft Fabric, Kafka, REST APIs, Excel

Coursework: MA289 (Machine Learning), MA371 (Linear Algebra)

Languages: Spanish (fluent)

ADDITIONAL EXPERIENCE

Department Manager, McDonald's Sept 2022 – July 2024

Plainfield, IL

- Managed weekly scheduling for 80+ employees with 95% on-time accuracy; oversaw $20,000+ in weekly supply procurement and operations
- Promoted as the youngest department manager in the region at age 16; sustained 90%+ customer satisfaction