

JEREMY D. PRETTY

APPLIED AI RESEARCHER • RESPONSIBLE AUTONOMOUS SYSTEMS • HUMAN-CENTERED AI

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RESEARCH PROFILE

PhD-trained applied AI researcher and technology executive whose work connects responsible autonomous systems, human oversight, AI reliability, and production-scale engineering. Author of four peer-reviewed publications addressing human factors, human-computer interaction, automation, fatigue, and safety-related systems. Designs and evaluates multi-agent architectures, computer-vision pipelines, NLP classification systems, and AI-enabled operational platforms across federal, gaming, academic, and entrepreneurial settings. Experienced doctoral chair, committee member, subject-matter expert, peer reviewer, and graduate instructor.

RESEARCH AGENDA

RESPONSIBLE AGENTIC AI Governance, orchestration, approval logic, guardrails, auditability, and human supervision	AI RELIABILITY & EVALUATION Behavioral regression, anomaly detection, validation, quality evidence, and operational assurance	HUMAN-CENTERED AUTONOMY Human oversight, trust, workload, attention, fatigue, alarms, and automation tradeoffs
COMPUTER VISION & NLP Visual anomaly detection, feature analysis, classification, prioritization, and production pipelines	SIMULATION & ADAPTIVE SYSTEMS Procedural generation, behavioral modeling, adaptive difficulty, narrative response, and autonomous testing	SOCIO-TECHNICAL SYSTEMS High-stakes federal and aerospace contexts, organizational adoption, compliance, and decision support

PEER-REVIEWED PUBLICATIONS

- Heinrich, D., McAndrew, I., & Pretty, J. (2021). Human factors considerations in satellite operations human-computer interaction technologies: A review of current applications and theory. *International Journal of Managing Information Technology*, 13(3).
- Chen, K., & Pretty, J. (2022). Selection of influential factors on fume hood containment performance based on questionnaire survey and fuzzy comprehensive evaluation. *The Chemist*, 93(1).
- Heinrich, D., McAndrew, I., & Pretty, J. (2022). Attention, concentration, and fatigue in space operations. *International Journal of Applied Technology & Leadership*, 1(2).
- Heinrich, D., McAndrew, I., & Pretty, J. (2023). Automation, alarm management, and human-computer. *International Journal of Applied Technology and Leadership*, 2(1).

SELECTED APPLIED RESEARCH & DEVELOPMENT

Human-Supervised Multi-Agent Operating System: Designed agent orchestration, workflow routing, governance, memory, approval logic, safety constraints, and audit mechanisms for operational, engineering, and organizational-learning use cases.

AI Safety and Reliability Tooling: Created Constrails for agent guardrails and Modelstripwire for output testing, behavioral-regression detection, and identification of high-risk model responses before deployment.

NLP-Based Bug Triage: Developed a Python/NLTK context-aware classification and prioritization system that improved triage accuracy and efficiency by 75% and substantially reduced manual review effort.

Real-Time Visual Anomaly Detection: Built Python, OpenCV, and TensorFlow pipelines for screen monitoring, graphical discrepancy detection, and automated capture of annotated evidence.

Adaptive Game AI and Simulation: Led AI/ML work across procedural content, behavioral modeling, adaptive difficulty, narrative response, visual validation, and autonomous testing agents.

Enterprise Research Platform: Designed a secure multi-tenant SaaS environment combining project analytics, QA traceability, test evidence, risk analysis, and compliance-focused reporting.

ACADEMIC & RESEARCH APPOINTMENTS

Adjunct Professor | University of Maryland Global Campus **2026–Present**
Instructor in Artificial Intelligence and Machine Learning courses.

Adjunct Professor | South College **2026–Present**
Instructor in Business Artificial Intelligence, connecting AI and machine-learning concepts with business strategy, operations, decision-making, and organizational transformation.

Adjunct Professor | Embry-Riddle Aeronautical University **2026–Present**
Instructor in Project Management.

Adjunct Professor | Grand Canyon University, College of Engineering and Technology **2024–Present**
Instructor in artificial intelligence, machine learning, computer vision, programming for AI, computer-science capstone, and advanced statistics. Subject-matter expert for image processing, deep learning, ethics of AI, computer vision, multiplayer game development, and game creation. Peer reviewer for reinforcement learning, feature extraction, game security, and simulation courses.

Adjunct Professor | University of Arizona Global Campus **2024–Present**
Instructor in project procurement, project management, integrated cost and schedule control, risk management, and graduate project planning.

Adjunct Professor | Southern New Hampshire University **2022–Present**
Instructor in project management and operations at undergraduate and graduate levels. Distinguished Online Teaching Award, Business Programs (2025); Outstanding Educator Award (2024, 2025).

Adjunct Professor & Doctoral Chair | Capitol Technology University **2020–Present**

Doctoral chair and committee member for PhD candidates in product management and technology leadership; graduate instructor in product management, analytics, expert systems, big data, and AI-enabled decision support.

RESEARCH & TECHNICAL LEADERSHIP EXPERIENCE**Founder & Chief Research Architect** | TMFPRETTY, LLC **2024–Present**

Remote | Certified Service-Disabled Veteran-Owned Small Business

- Architects multi-agent AI systems with explicit governance, approval, workflow-routing, safety, and human-oversight mechanisms.
- Leads simulation-oriented AI/ML pipelines for procedural generation, adaptive difficulty, behavioral modeling, narrative systems, and autonomous test agents.
- Developed real-time computer-vision validation workflows and large-scale system architecture comprising 265+ runtime scripts across 40+ systems and 34 custom development tools.
- Designed Caruso, a secure enterprise SaaS platform integrating project analytics, QA traceability, systems engineering, and compliance evidence.

Chief Artificial Intelligence Officer | PMAT Inc. **2024–Present**

Remote | Federal technology contractor

- Establishes enterprise research and technology priorities for generative AI, machine learning, agentic systems, intelligent automation, and AI-assisted software engineering.
- Founded the AI/ML Center of Excellence and developed responsible-AI governance, standards, evaluation practices, and workforce-enablement strategy aligned with federal and cybersecurity requirements.
- Advises executives, program leaders, and technical teams on emerging technology, AI risk, use-case selection, adoption, and operational transformation.

Project Manager / Senior Test Lead, AI & Data Science Focus | Blizzard Entertainment **2021–2024**

Austin, Texas

- Developed NLP classification and computer-vision anomaly-detection systems and established data-driven evaluation approaches for product and quality outcomes.
- Led cross-functional work across Graphics, Performance, Online, Game Engine, and Data Science teams while directing 12 employees and 50 contractors.

Senior Technical Program Manager | United States Air Force Civil Service **2019–2021**

Randolph AFB, Texas

Led mission-critical application migration to AWS GovCloud; implemented an optimization initiative saving more than \$500,000 annually; served as Alternate Contracting Officer's Representative for a \$38 million contract.

Additional Technical & Research Roles | CDO Technologies • BTAS • P3I Inc. • Northrop Grumman • United States Air Force **2004–2019**

Progressive leadership in DevOps, data-center migration, electronic key management, systems testing, agile delivery, and mission operations.

EDUCATION

PhD, Product Management — Capitol Technology University

MS, Artificial Intelligence and Machine Learning — Colorado State University Global

MS, Project Management — Embry-Riddle Aeronautical University

MBA — East Texas A&M University

Credentials: PMP • PMI-ACP • PMI-SP • CTAL-TM • ISTQB-CTFL

RESEARCH METHODS & TECHNICAL SKILLS

Methods: Human-factors analysis • Fuzzy comprehensive evaluation • Statistical modeling • Experimental design • Evidence-based system evaluation

AI/ML: Python • TensorFlow • OpenCV • NLTK • Computer vision • NLP • Multi-agent systems • Anomaly detection • Adaptive systems

Research Leadership: Doctoral supervision • Committee service • Peer review • Curriculum development • Interdisciplinary mentoring • Technical communication

Systems: AWS • Unity • Enterprise SaaS • Real-time pipelines • Secure multi-tenant architecture • QA traceability • Data analysis

SELECTED PRODUCTION CONTRIBUTIONS

Diablo IV • Overwatch 2 • World of Warcraft: Dragonflight • World of Warcraft: Wrath of the Lich King Classic — AI, data-science, quality-engineering, and production-system contributions at Blizzard Entertainment.