

JAMES E. TUNNESSEN JR.



D. Eng. Candidate, Artificial Intelligence & Machine Learning

Forbes Technology Council ~ Former Federal Chief AI Officer Council Member
25+ years federal service · 14 in uniform (1995–2002, 2008–2014) · 15 federal civilian (2011–2026) · 13 at the executive level · five agencies

Email: info@gradientdescent.biz • **Location:** Virginia; Washington, DC area

GitHub: github.com/jtunnesen • **LinkedIn:** linkedin.com/in/jimtunnesen

Advisory & Research: gradientdescent.biz (Gradient Descent Advisory Services · Gradient Descent Labs)

Software: GOVERNBOX.ai — a Gradient Descent LLC venture

EXECUTIVE PROFILE

Technology executive at the intersection of AI governance, engineering, and public-sector leadership. Founder & CEO of GOVERNBOX.ai and Founder & Principal Researcher of Gradient Descent LLC — an AI think tank, venture studio, and holding company spanning applied research (Gradient Descent Labs), executive advisory (Gradient Descent Advisory Services · GOVERNBOX.ai Advisory Services), and enterprise software (GOVERNBOX & GOVERNBOX.ai). More than 25 years of federal service across the Marine Corps, the Army, and five federal agencies: approximately 14 years in uniform (1995–2002, 2008–2014) and 15 years as a federal civilian (2011–2026), 13 of them at the executive level. A career member of the Senior Executive Service and twice a federal Chief Information Officer, most recently Chief Information Officer / Chief AI Officer / Chief Privacy Officer at the National Endowment for the Arts, with prior C-suite technology roles at Voice of America, USDA FSIS, and DHS USCIS. D.Eng. candidate in Artificial Intelligence & Machine Learning at George Washington University (expected August 2027), researching specification-driven verification of ML compliance determinations. Forbes Technology Council member.

PROFESSIONAL EXPERIENCE

Entrepreneurial & Advisory

Founder & Chief Executive Officer August 2026 – Present

GOVERNBOX.ai — a Gradient Descent LLC venture | Virginia; Washington, DC Metro Area | GOVERNBOX.ai

- Founded a self-service AI-governance SaaS (“governance in a box”) that lets nonprofits, associations, public-sector bodies, and small-to-mid-sized businesses stand up and operate a defensible AI governance program — without hiring consultants or buying an enterprise platform
- Product spans five integrated modules — AI governance, risk, IT, data, and privacy — with sector-aware policy generation, staff training and sign-off workflows, and board-ready reporting

Founder & Principal Researcher November 2025 – Present

Gradient Descent LLC | Virginia; Washington, DC Metro Area | gradientdescent.biz

- Virginia limited liability company (Entity ID 11924042), organized November 2025; operations began 2026
- Direct the venture strategy of an AI think tank, venture studio, and holding company: applied AI research and IP incubation (Gradient Descent Labs), executive advisory (Gradient Descent Advisory Services · GOVERNBOX.ai Advisory Services), and enterprise software (GOVERNBOX & GOVERNBOX.ai)
- Advise boards, executives, and technology organizations on agentic AI, responsible AI governance, enterprise technology risk, and applied ML for enterprise and public-sector environments

- Forbes Technology Council contributor; published thought leadership on AI governance, agentic systems, and federal AI strategy

Federal Executive Leadership

Chief Information Officer / Chief AI Officer / Chief Privacy Officer (SES) July 2020 – August 2026
National Endowment for the Arts (NEA) | Washington, DC

- Led the Office of Information Technology Management: cybersecurity, application development, AI, data governance, enterprise architecture, infrastructure, IT support, privacy, and COOP
- Advanced cybersecurity posture from “Ad Hoc” to “Managed & Measurable”; implemented SOC and Zero Trust architecture (Okta, Intune, Zscaler)
- Designed agentic AI framework with RAG + LLM fine-tuning for financial decision-support; first of kind at a federal cultural agency
- Designed semantic search with vector embeddings across NEA’s grants management systems
- Led multi-cloud migration across Azure and AWS; implemented Microsoft Copilot, DocuSign, and Xacta
- Chaired NEA AI & Data Governance Boards; authored NEA IRM Strategic Plans FY22 and FY26
- Member, Federal Chief AI Officer (CAIO) Council — interagency body coordinating federal AI strategy, policy, and governance across the executive branch
- Member, Federal Chief Information Officer Council (ex officio, NEA CIO)
- Introduced vibe coding and AI-assisted rapid prototyping practices to federal development teams

CIO & Chief Digital Officer (SES) January 2017 – July 2020
Voice of America (VOA) | USAGM | Washington, DC

- Managed 250+ staff and \$200M+ technology budget serving 275M+ weekly viewers across 47 languages globally
- Built “Ipsum,” VOA’s internal NLP auto-transcription/translation tool, achieving 10x speed improvement; adopted by 4 global media organizations
- Launched VOA+ OTT streaming platform; deployed 20+ language-specific mobile apps with circumvention technology
- Implemented AI recommendation engine in CMS; migrated 400+ TB to cloud enterprise Data Lake
- Established and led USAGM CIO Council overseeing technology for 5 international broadcasting organizations; deployed camera robotics, drone program, 360° immersive news, and Alexa Skills for 12 language streams

Chief Technology Officer (GS-15) October 2015 – January 2017
USDA Food Safety and Inspection Service (FSIS) | Washington, DC

- Led \$100M+ technology modernization program; introduced Agile/DevOps across FSIS engineering organization
- Re-engineered Whole Genome Sequencing infrastructure via cloud shared service with FDA & CDC: \$12M/yr in cost savings
- Created and co-chaired the USDA Chief Technology Officer Council, coordinating technology strategy across the department’s 18 agencies and 105,000 employees, against a departmental IT portfolio then exceeding \$3B annually
- Served as CTO of an agency with roughly \$1B in annual budget

Chief of Digital Innovation & Development (GS-15) April 2013 – October 2015
DHS U.S. Citizenship and Immigration Services (USCIS) | Washington, DC

- Led first federal agency hackathon; built digital innovation program and implemented DevOps creating cross-functional development teams
- Moved USCIS from traditional data centers to the AWS cloud
- Introduced human-centered design and agile product development to a 20,000-person federal agency
- Brought development cycle time down from years to months for new development, and from months to minutes for operations and maintenance

Earlier Federal Service

Business Analyst August 2011 – April 2013

U.S. General Services Administration (GSA) | Washington, DC

- Led globally dispersed IT teams, contractors, and process owners to deliver mission-critical business applications — principally on the Salesforce platform — for 12,000+ CRM users
 - Created and maintained the Salesforce roadmap driving enterprise-wide adoption; application usage up 116% in FY12
 - Built and deployed the Marketing Information Management System for GSA's National Marketing and Communications Division, and led the executive working group that redesigned the agency's lead management process
 - Oversaw integration into the Salesforce enterprise environment supporting a \$40B sales pipeline
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EDUCATION

Doctor of Engineering (D.Eng.) – Artificial Intelligence & Machine Learning Expected August 2027

George Washington University, School of Engineering & Applied Science, Washington, DC

- Praxis: "Specification-Driven Verification of Machine Learning Compliance Determinations" (in progress; expected August 2027)
- Coursework: Computer Vision & Generative AI, Deep Learning & NLP, Data Engineering for AI, Applied ML Intelligence & Reinforcement Learning, Analytical Methods for Machine Learning
- Research: LSTM RNN-based deep learning with Self-Attention for mental health semantic textual analytics; PyTorch on GCP GPU clusters

Master of Business Administration (MBA) – Information Systems, Corporate Finance, & Marketing 2008

George Washington University, Washington, DC

Bachelor of Arts, Corporate Communication | Bachelor of Arts, French 2004

College of Charleston, Charleston, SC

Executive Program: Artificial Intelligence for Business Strategy 2019

Massachusetts Institute of Technology (MIT), Cambridge, MA

PUBLICATIONS & INTELLECTUAL CONTRIBUTIONS

Doctoral research

Tunnessen, J. *Specification-Driven Verification of Machine Learning Compliance Determinations*. D.Eng. praxis, George Washington University School of Engineering & Applied Science (*expected August 2027*)

Bylined

Substack essays were published under the ExecutiveTech masthead, now Lab Notes — the Gradient Descent Labs journal.

Tunnessen, J. (FY2026). *NEA Information & Technology Directive*. National Endowment for the Arts (Author)

Tunnessen, J. (FY2026). *NEA Information Resources Management Strategic Plan FY2026*. National Endowment for the Arts (Author)

Tunnessen, J. (FY2026). *NEA Artificial Intelligence Strategic Plan and Procedures FY2025*. National Endowment for the Arts (Author)

Tunnessen, J. (2026). *The Agentic Control Plane: Engineering Governance for the Autonomous Enterprise*. Forbes Technology Council

Tunnessen, J. (2026). *Why Identity Governance Is the Key Enabler for Secure AI Innovation*. ExecutiveTech (Substack)

Tunnessen, J. (2026). *One Developer. One Week. One Argument*. ExecutiveTech (Substack)

Tunnessen, J. (2026). *Escaping Pilot Purgatory: A Framework for Scaling Enterprise AI*. Forbes Technology Council

Tunnessen, J. (2026). *Government Technology Is Not Broken. Government Leadership Is Afraid*. ExecutiveTech (Substack) — Anchor Essay

Tunnessen, J. (2026). *Beyond the Pilot: The Data Architecture of Agentic Government*. ExecutiveTech (Substack)

Tunnessen, J. (2025). *The Case for Explainable AI: Why "Because the Algorithm Told You So" Won't Cut It*. ExecutiveTech (Substack)

Tunnessen, J. (FY2022). *NEA Information Resources Management Strategic Plan FY2022*. National Endowment for the Arts (Author)

Tunnessen, J. (FY2019). *USAGM Artificial Intelligence Strategic Plan FY2019*. Voice of America (Author)

Tunnessen, J. (FY2018). *USAGM Information Resources Management Strategic Plan FY2018*. Voice of America (Author)

Contributed

Work published under another masthead's byline or as one of several named contributors.

Tunnessen, J. (2026). *20 Enterprise Risks Lurking Behind Open AI Adoption*. Forbes Technology Council (Expert Panel Contributor)

Tunnessen, J. et al. (2020). *ACT-IAC AI Playbook for the U.S. Federal Government*. American Council for Technology–Industry Advisory Council (ACT-IAC) (Contributor)

Tunnessen, J. et al. (2019). *AI/ML Primer for Government*. American Council for Technology–Industry Advisory Council (ACT-IAC) (Contributor)

RESEARCH INTERESTS

Governance, explainability, and verification of agentic AI systems in regulated environments; NLP, deep learning, and privacy-preserving architectures.

APPLIED RESEARCH & SELECTED SYSTEMS BUILT

Cybersecurity Analysis & Documentation AI Agent 2026

Gradient Descent Labs | Developed independently and provided to the National Endowment for the Arts for agency use

- Designed and built a purpose-built agentic AI system integrating NIST 800-53 rev 5, OWASP Top 10 for 2025, MITRE ATT&CK, MITRE CVEs, and CISA KEV
- Repository scanning, vulnerability analysis, and MITRE ATT&CK assessment
- Anchors published research on purpose-built vs. large-scale model thesis (Forbes Technology Council, 2026)

Section 508 Analysis & Documentation AI Agent 2026

Gradient Descent Labs | Developed independently and provided to the National Endowment for the Arts for agency use

- Built a small, task-specific LLM agent for automated accessibility compliance evaluation
- Demonstrated applied thesis: purpose-built models outperform generalist LLMs on constrained, high-frequency tasks

GitHub README Generator — Purpose-Built Agentic System 2026

Gradient Descent Labs | Production deployment

- Deployed small, task-specific LLM agent for automated developer documentation generation
- Demonstrated applied thesis: purpose-built models outperform generalist LLMs on constrained, high-frequency tasks

DevtoDeployment — Multi-Agent Python Application 2026

Gradient Descent Labs | GCP: Cloud Run, Pub/Sub, Firestore, GCS, Secret Manager

- Architected multi-agent orchestration system using Python 3.12, LangGraph, and Google Cloud Platform
- Integrated OpenClaw agentic gateway via Telegram; Anthropic Claude API as primary LLM backend

Tsunami Prediction System — End-to-End ML Pipeline on Azure 2026

Independent Applied ML Project | github.com/jtunnessen/tsunami-prediction-system | Azure App Service

- Architected and deployed an end-to-end ML classification pipeline on Azure, optimizing recall and model interpretability for seismic risk analysis (89% tsunami recall)
- Owned the full ML lifecycle — data ingestion, automated preprocessing, hyperparameter tuning, model serialization, and cloud deployment behind a web interface for real-time prediction

Mental Health Analysis via Textual Analytics 2025

Research Project — George Washington University | GCP GPU Clusters

- Built a two-layer bidirectional LSTM with an additive attention mechanism over 300-dimensional GloVe embeddings, trained in two phases to classify self-reported mental-health discourse from a public research corpus
- Rendered token-level attention heatmaps to show which spans drove each prediction, and examined algorithmic bias, explainability, and fairness using PyTorch on Google Cloud GPU infrastructure
- Benchmarked against baseline NLP models. Academic coursework on a publicly available research dataset — not a screening instrument, not clinically validated, and not deployed

Ipsium NLP Auto-Transcription & Translation Tool 2019

Voice of America | USAGM

- Designed and deployed "Ipsium," VOA's internal NLP transcription and translation tool, achieving 10x speed improvement
- Adopted by four international media organizations; scaled across 20+ language services serving 275M+ weekly viewers

Whole Genome Sequencing Cloud Re-Architecture 2016

USDA Food Safety and Inspection Service | Cloud Shared Service with FDA & CDC

- Led cloud migration and re-engineering of WGS infrastructure, yielding \$12M per year in cost savings
- Established first federal cloud shared service for genomic data spanning USDA, FDA, and CDC

Code for selected projects is published at github.com/JTunnessen.

TECHNICAL EXPERTISE

Languages & Frameworks: Python, PyTorch, TensorFlow, LangChain, LangGraph, SQL/NoSQL, Rust (developing)

AI/ML Specialties: LLMs, NLP, Transformers, Agentic AI, RAG, Computer Vision, MLOps, GenAIOps, Explainable AI

Platforms & Infrastructure: Azure, AWS, GCP (Cloud Run, Pub/Sub, Firestore, GCS), DataBricks, Spark, Tableau

AI Tools & Ecosystems: HuggingFace, AI Studio, Anthropic Claude API, Gemini API, OpenAI API, MCP

Cybersecurity: Zero Trust, Okta, Intune, Zscaler, NIST SP 800-53 rev 5, AI Governance-as-Code

TEACHING INTERESTS

Courses I am prepared to develop and teach at the graduate level:

- Explainable AI (XAI) & Counterfactuals
- AI Governance, Ethics & Policy
- Orchestration & Oversight of Agentic AI Systems
- Applied Machine Learning & Deep Learning
- Federal Enterprise IT Strategy & Digital Transformation
- Cybersecurity Leadership: Zero Trust and Beyond
- Data Engineering for AI Systems
- Technology Leadership for the CIO (nonprofit to Fortune 500)

TEACHING EXPERIENCE

Guest Lecturer — AI Governance, Federal Technology Leadership 2024 – Present

Various Venues | Washington, DC Metro Area

- Delivered practitioner lectures on agentic AI governance, federal CIO leadership, and responsible AI deployment to professional and executive audiences
- Moderated executive panels on AI strategy including SIM Capital Area Chapter sessions with OpenAI and NASA Goddard; GovLoop Executive Roundtables; ATARC Executive Roundtables

Chief Instructor, NCO Leadership School 1999 – 2000

United States Marine Corps | Marine Corps Air Station Beaufort, Beaufort, SC

- Designed and delivered leadership curriculum for non-commissioned officer professional military education (PME)
 - Responsible for all school operations, instructor development, course scheduling, and academic quality
 - Taught leadership principles, tactical decision-making, and small unit management to Marines preparing for supervisory command
 - Developed and refined instructional materials; evaluated student performance and provided structured developmental feedback
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MILITARY SERVICE

Infantry Platoon Sergeant | Honorably Discharged April 1995 – December 2002

United States Marine Corps

- Combat arms NCO; led infantry units through operational deployments and garrison commands

- Chief Instructor, NCO Leadership School, MCAS Beaufort (1999–2000) — responsible for curriculum design, school operations, and instructor development
- Additional assignments: Military Liaison, Parris Island SC; Weapons Platoon Sergeant, C Co, 1/6, 2nd Marine Division

Engineer Officer | Honorably Discharged October 2008 – July 2014

Virginia Army National Guard & U.S. Army Reserve

- Commissioned Engineer Officer in reserve component; roles included Platoon Leader, Executive Officer, Operations Officer, Plans Officer, and IT Process & Policy Chief at Joint Force HQ
 - Approximately 14 years of combined military service across active and reserve components (U.S. Marine Corps 1995–2002; Virginia Army National Guard & U.S. Army Reserve 2008–2014)
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PROFESSIONAL AFFILIATIONS & SERVICE

- Forbes Technology Council — Member & Contributor
 - Institute of Electrical and Electronics Engineers (IEEE) — Member
 - International Association of Privacy Professionals (IAPP) — Member and Sponsor
 - Information Systems Audit and Control Association (ISACA) — Member
 - Association for the Advancement of Artificial Intelligence (AAAI) — Member
 - Society for Information Management (SIM) Capital Area Chapter — Member
 - ACT-IAC (American Council for Technology–Industry Advisory Council) — Contributor
 - Military Officers Association of America (MOAA) — Member
 - Army & Navy Club, Washington, DC — Member
 - George Washington University Alumni Association — Member
 - College of Charleston Alumni Association — Member
 - Federal Chief Information Officer Council — Former Member (ex officio as NEA CIO, through 2026)
 - Federal Chief AI Officer (CAIO) Council — Former Member (ex officio as NEA CAIO, through 2026)
 - Federal Senior Agency Official for Privacy Council — Former Member (ex officio as NEA CPO, through 2026)
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HONORS, AWARDS & RECOGNITION

- Chairman’s Award for Distinguished Service — National Endowment for the Arts (2022)
 - Award for Work on Agile Contracting Solutions — DHS USCIS CIO’s Award (2015)
 - Lean Agile Innovation Award — DHS USCIS CIO’s Award (2015)
 - First Federal Hackathon — DHS USCIS CIO’s Award (2014)
 - Army Commendation Medal for Leadership — U.S. Army (2009)
 - Leadership Excellence Award — Association of the U.S. Army (2009)
 - Navy Achievement Medal for Leadership — U.S. Marine Corps (2002)
 - Military Excellence Award for Leadership — Non-Commissioned Officers Association (2000)
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PRESENTATIONS, SPEAKING ENGAGEMENTS & MEDIA

Keynotes & Featured Addresses

Federal Tech Leadership Summit: Lightning Talk — AI-Driven DevSecOps in Practice 2026
GovCIO Media & Research | Washington, DC

GITEC Conference: Opening Keynote — The Evolution of the CIO 2025
Government Information Technology Executive Committee Annual Conference | Washington, DC

FCW Briefing: Truly Digital Government: Beyond Better Websites 2019
FCW | Washington, DC

ATARC Federal DevOps Summit: Keynote and Master of Ceremonies 2017
Advanced Technology Academic Research Center (ATARC) | Washington, DC

Federal Innovation Summit: Creating Enclaves of Innovation 2016
Federal Innovation Summit | Washington, DC

Red Hat Government Symposium: It Will Take All of Us to Improve Federal IT 2016
Red Hat Government Symposium | Washington, DC

Red Hat Government Symposium: Keynote on Innovation 2015
Red Hat Government Symposium | Washington, DC

Invited Talks & Conference Presentations

Panel: The CIO and Innovation Officer Government/Audience Interchange May 2026
ACT-IAC Emerging Technology and Innovation Conference | Washington, DC

ATARC Executive Roundtable: Driving Mission Outcomes Through Data Relationships and Gen AI
March 2026

Advanced Technology Academic Research Center | Washington, DC

ATARC Executive Roundtable: Building a Data Foundation March 2026
Advanced Technology Academic Research Center | Washington, DC

National Capital Region DoD Quarterly Historians Training Workshop September 2025
NCR DoD Historians | The Pentagon | Washington, DC

SIM Capital Area Chapter: AI at NASA Goddard Space Flight Center August 2025
Organizer & Moderator — Executive site visit and AI briefing at NASA Goddard | SIMCAC | Greenbelt, MD

SIM Capital Area Chapter: OSCAL — Panel with OpenAI April 2025
Moderator — Executive discussion panel on AI strategy and deployment with OpenAI | SIMCAC | Washington, DC

GovLoop Executive Roundtable: AI and Data in 2025 — The Opportunity and Challenge March 2025
GovLoop | Washington, DC

SIM Capital Area Chapter: AI in Practice — Panel with OpenAI February 2025
Moderator — Executive discussion panel on AI strategy and deployment with OpenAI | SIMCAC | Washington, DC

Amazon Media & Entertainment Conference 2019
Use of Machine Learning to Automate Localization for International Distribution | Amazon

ACT-IAC Emerging Technology Conference 2019
Use of Artificial Intelligence in Media and the Federal Government | ACT-IAC

Acquia Engage: Big Ideas 2019

Acquia Engage Conference | New Orleans, LA

ACT-IAC Executive Leadership Conference 2016

Curing What Ails Us: Imagine an Entirely Agile Government | ACT-IAC

ATARC Federal DevOps Summit: Visionary Panel — Agencies Adopting Agile Approaches 2016

Advanced Technology Academic Research Center | Washington, DC

Government Information Technology Executive Committee Summit 2016

DevOps from Idea to Continuous Improvement | GITEC | Washington, DC

Top Trends & Technologies Driving Mobility in Government 2016

Mobility in Government Conference | Washington, DC

GovLoop Webinar Course: Modernizing Your IT Infrastructure 2016

GovLoop | Virtual

Red Hat Government Symposium: Accelerating Application Delivery 2015

Red Hat Government Symposium | Washington, DC

ATARC Redefining Federal IT Conference 2015

Using Hybrid Cloud for Enhancing Mission Capabilities | ATARC | Washington, DC

ATARC Federal Cloud Computing Summit 2015

DevOps and Automation in the Cloud | ATARC | Washington, DC

USCIS Internal Leadership Forum 2015

DevOps, Open Source, and Kanban for Software Development | DHS USCIS | Washington, DC

Consumer Financial Protection Bureau (CFPB) 2014

Operating with Open Source and DevOps | CFPB | Washington, DC

GSA: Enterprise Social Networks, the New Reality 2012

U.S. General Services Administration | Washington, DC

Podcast, Radio & Media Appearances

Federal News Network: Cloud Exchange 2026

Interview on AI and digital strategy at NEA | Federal News Network

Federal News Network: Ask the CIO 2020

Interview on AI and digital strategy at VOA | Federal News Network

Federal News Network: Artificial Intelligence Helps VOA Translate Broadcasts Worldwide 2020

Podcast | Federal News Network

FedScoop TV: How Open Source Is Winning in Government 2015

Video Interview | FedScoop

Federal News Radio / WTOP 2015

How Citizen Services Can Be Transformed by Software Analytics | Radio Interview | WTOP Washington

Articles & Media Features

20 Enterprise Risks Lurking Behind Open AI Adoption 2026

Article | Forbes

FEDTECH Magazine: Culture Shock 2017

Interview / Feature Article | FEDTECH Magazine

GovLoop Book: Your Guide to DevOps in Government 2016

Featured as one of four government DevOps subject matter experts | GovLoop

FedTech Magazine: DevOps Is Here, and It's Going to Change Your Agency's Culture 2016

Article | FedTech Magazine

GovLoop Article: Modernizing Your IT Infrastructure 2016

Article | GovLoop

ModernGov: Accept the Challenge — Modernize Your IT Infrastructure 2016

Article | ModernGov

FCW Magazine: At USCIS, They DID(it) 2014

Feature Article | Federal Computer Week (FCW)