MICHAEL BILCA

TS/SCI Eligible | FBI SSBI (2019) | CI Poly (2022) | Virginia, USA | m@temper.ai | +1.703.884.7184 | Download PDF ↓

Creator of temper.ai, a working neuromorphic SNN demo and AI alignment thought-piece.

EXECUTIVE SUMMARY

Technology executive with 23+ years delivering AI-driven solutions and advanced systems for national defense and federal law enforcement. Proven track record in translating R&D into mission-ready capabilities across DoD, FBI, telecom, and federal cybersecurity missions. Expert in AI architecture, secure core and edge systems, and enterprise-scale transformation aligned with multi-agency objectives.

Status: Transitioning from federal service to private sector leadership roles in applied AI, neuromorphic systems, and AI security architecture.

MISSION-FOCUSED TECHNOLOGY LEADERSHIP

- Led development of AI-driven defense algorithms—including the Anti-Torpedo Torpedo (ATT) and submarine command-and-control systems—successfully adopted and fielded by the U.S. Navy.
- Developed AI models to simulate adaptive threat response for defense/national security applications.
- Coordinated cybersecurity strategy across domestic lawful enforcement and intel agencies, and across industry interest groups, including satellite, 3/4/5/6G, and cloud/virtualized architectures.

PROFESSIONAL EXPERIENCE

Founder & Principal Architect — temper.ai 2002 – Present

- Developed Turing, a working neuromorphic spiking neural network demonstration platform exploring distributed intelligence architectures as an alternative to centralized LLMs
- Published "The Distributed Mind: Why AI Alignment Requires Architectural Decentralization," analyzing concentration risk in current AI paradigms and proposing distributed SNNs as safer alternative
- Built spike-timing-dependent plasticity (STDP) learning algorithms with dopamine-modulated weight adaptation, demonstrating self-organizing dynamics in continuous-time neural systems
- Implemented in Go with OpenGL visualization, demonstrating real-time temporal processing on consumer hardware

Technical Standards Strategist — FBI / Tridea Works 2013 – 2025

- Led 5G lawful intercept strategy, unified policy and architectures for 22K+ law enforcement/intel agencies; influenced global telecom standards.
- Directed cyber security strategy in international forums to drive USG alignment with tech modernization.
- Led security requirements and USG LI strategy across multi-vendor cloud-native virtualized platforms.
- Represented U.S. law enforcement in 3GPP SA3, SA3-LI and ETSI NFV Security, architecting next-gen lawful interception for 5G/6G.

Executive Engineer — In Depth Engineering, Inc. 2011 – 2013

- Developed mathematical modeling and system architecture, software design, and implementation of the Anti-Torpedo Torpedo (ATT) Response Management System for the US NAVY.
- Developed analytical approach to maximize the probability of target acquisition.
- Developed aircraft carrier motion model, ATT launch model, Launcher selection model, separation model, intercept model.
- Developed and implemented models and operational code in Wolfram Mathematica, Java, and C/C++.
- Presented R&D results to NAVY customer, gained acceptance for deployment of novel approaches.

Executive Systems Engineer — ASSETT Inc. 2008 – 2011

- Led team responsible for development and deployment of next-generation Ohio Replacement Program (Columbia class) submarine combat system, securing a $75M engineering services contract.
- Coordinated capability transitions aligned with defense modernization and mission autonomy priorities.
- System demonstrated multiple programming language implementations (C/C++, OpenGL, Java, Python, ActionScript, Bash scripts) running in harmony on a Service Oriented Architecture (SOA) substrate.
- Demonstrated live code injection, zero-downtime upgrades, significant development and maintenance cost savings.
- Migrated advanced architectural concepts developed in CSoF R&D to APB process for Virginia Class Submarine combat system evolution.
- Served as a consulting member of the Submarine NAVY Systems Architecture Working Group.
- Contributed technical solution to winning SBIR proposal (Submarine Defense Engagement Service).

Senior Consulting Engineer — FBI, CIU, Tridea Works 2003 – 2008

- Developed and implemented U.S. IP surveillance and intercept strategies for 22K+ law enforcement agencies.
- Defined LI standards in ATIS, WiMAX, and CableLabs, influencing FCC and national security stakeholders.
- Authored technical reports and represented CALEA interests in U.S. and global bodies.

Systems Architect — Lucent Bell Labs 2000 – 2002

- Represented Lucent in global IP telecom standards (ITU-T SG11) for SIP/BICC/ISUP interoperability.
- Led “skunk works” delivery of a Java/XML media server management platform ahead of schedule.

EDUCATION

B.S., Mathematical & Computational Science — Stanford University

Group Theory, AI, Statistics, Optimization | Hoefer Prize in Mathematics

Graduate Coursework, Electrical Engineering — Princeton University

Game Theory, Wireless Systems

TECHNICAL EXPERTISE

AI & Neuromorphic Systems	Spiking Neural Networks, STDP learning algorithms, temporal coding, distributed intelligence architectures, energy-based models, genetic algorithms
Leadership	IT governance, virtualized infrastructure, secure-by-design architectures, telecom systems
Architecture	SOA, high-availability systems, VoIP/IMS, cloud-native deployments, SCAS
Development	Go, C/C++, Python, AI/ML (Spiking Neural Networks, Genetic Algorithms), OpenCL, Java, Wolfram Mathematica

AWARDS & CLEARANCES

- **TS/SCI with CI Poly (Active)**
- 2016 ETSI NFV Outstanding Expert Contribution Award (Security)
- 2008 ASSETT award for teamwork
- AT&T Labs Comet Award for Outstanding Contributions and Teamwork
- Hoefer Prize in Mathematics, Stanford University
- President’s Distinguished Honor Award, Los Angeles Valley College
- Outstanding Mathematics Student awards, 1986, 1995, 1996, 1999