BURAK OKTENLI

AI Governance & Autonomous Systems Safety Researcher | Defense & Critical Infrastructure

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PROFESSIONAL SUMMARY

Researcher and engineer developing authority lifecycle governance architectures for autonomous systems across defense, automotive, maritime, and critical infrastructure domains. Developer of seven governance frameworks (HMAA, SATA, CARA, MAIVA, FLAME, ADARA, ERAM) with four U.S. provisional patents filed. Principal researcher of AUTHREX Systems, a research initiative focused on authority governance for autonomous systems. Author of 24 published works (12 on Zenodo with DOIs under CC BY 4.0, 12 on SSRN). Designed six hardware research platforms across four operational domains. Research targets DoDD 3000.09, ISO 26262 ASIL-D, MIL-STD-810G, and IEC 61508 SIL 3 compliance.

EDUCATION

M.P.S. Applied Intelligence (STEM) 2026 – Present
Georgetown University, School of Continuing Studies, Washington, D.C.

MBA, International Business | GPA: 4.0 2024 – 2026
Lynn University, Boca Raton, Florida

B.Sc. Computer Science Engineering | GPA: 3.45 2015 – 2020
University of South Florida, Tampa, Florida

U.S. PATENT APPLICATIONS (PROVISIONAL)

HMAA — Human-Machine Authority Architecture | U.S. Provisional 63/999,105 | Filed Mar 7, 2026
Real-time authority computation engine for autonomous systems governance

CARA — Control Authority Regulation Architecture | U.S. Provisional 64/000,170 | Filed Mar 9, 2026
Deterministic recovery protocol for authority-gated autonomous systems

SATA — Sensor Attestation and Trust Anchoring | U.S. Provisional 64/002,453 | Filed Mar 11, 2026
Hardware-anchored continuous sensor trust computation protocol

FLAME — Flash War Latency Architecture | U.S. Provisional 64/005,607 | Filed Mar 2026
Mandatory deliberation windows preventing autonomous escalation

GOVERNANCE ARCHITECTURES (7 FRAMEWORKS)

- SATA — Sensor trust fusion via Dempster-Shafer theory with hardware-anchored attestation
- HMAA — Real-time authority computation with trust-proportional tiering and hysteresis
- CARA — Four-phase deterministic recovery (GREP: Guard, Reduce, Evaluate, Promote)
- MAIVA — Byzantine fault-tolerant multi-agent trust consensus for swarm coordination
- FLAME — Mandatory deliberation windows with 5-state circuit breaker state machine
- ADARA — Adversarial deception detection via cross-sensor anomaly correlation
- ERAM — Escalation risk assessment for human-machine command authority

HARDWARE PLATFORM DESIGN SPECIFICATIONS (6 PLATFORMS, 4 DOMAINS)

Platform	Domain	Comp.	BOM	Key Specifications
BLADE-EDGE	Defense (DEW)	72	~$139K	Dual Jetson AGX Orin, dual Zynq UltraScale+, MIL-STD-810G
BLADE-MARITIME	Maritime (ASV)	84	~$43K	Hydroacoustic sonar, MAD, IP68, MIL-STD-810G
BLADE-AV	Automotive	62	~$16K	ARS540 radar, OS1-64 LiDAR, ISO 26262 ASIL-D
BLADE-INFRA	Infrastructure	92	~$12K	ICS/SCADA, SIL 3, NERC CIP, FIPS 140-2 L3
UAV Platform	Defense (UAV)	52	~$4.2K	Pixhawk 6X, RFD900x, HMAA-governed
Rover Testbed	Defense (UGV)	37	~$484	Jetson Nano, 5-sensor SATA fusion

PROFESSIONAL EXPERIENCE

Consulting engagements were conducted on a part-time, remote basis during academic breaks while maintaining full-time student and OPT status in the U.S.

Data Governance & Trust Architecture Engineer
2021 – 2024

Blue.Cloud | Tampa, Florida | Full-Time, STEM-OPT Authorized Employment

- Engineered data governance architectures with role-based access control (RBAC) enforcement in regulated cloud environments
- Executed cloud infrastructure risk assessments aligned with ITAR/EAR data handling requirements
- Developed automated data validation and integrity verification pipelines for enterprise data systems
- Designed disaster recovery and failover architectures including structured recovery and incident escalation procedures

Infrastructure Security & ICS Governance Consultant
2021 – 2025

SIMA, Advanced Materials & Supply Chain Security | Istanbul, Turkey | Independent Consultant (Part-Time, Remote – Academic Breaks)

- Advised on security strategy for advanced materials supply chain networks
- Designed Zero Trust governance policies for industrial control systems (ICS)
- Conducted threat modeling and supported transition to NIST-aligned frameworks

Risk & Infrastructure Resilience Consultant
2023 – 2025

SADEF, Critical Infrastructure & Agricultural Supply Chain Security | Istanbul, Turkey | Independent Consultant (Part-Time, Remote – Academic Breaks)

- Conducted vulnerability assessments across distributed critical infrastructure in regulated international environments
- Authored operational continuity frameworks mitigating cyber-physical threats consistent with U.S. CISA strategies
- Supported governance of cross-border information flows in regulated markets

Data Governance & Integrity Consultant
2020 – 2023

FHS, Aerospace & Precision Industrial Engineering | Istanbul, Turkey | Independent Consultant (Part-Time, Remote – Academic Breaks)

- Implemented data governance frameworks for aerospace manufacturing in regulated commercial sectors
- Deployed data loss prevention (DLP) strategies to safeguard proprietary engineering data
- Optimized manufacturing workflows using predictive risk modeling and periodic security audits

Cloud Infrastructure & Data Engineering Intern
Jan 2020 – Aug 2020

Bluenet | Tampa, Florida | CPT-Authorized Internship

- Supported cloud consulting initiatives including infrastructure design, development, testing, and maintenance
- Supported application development teams across front-end, back-end, middleware, and database workflows
- Assisted Big Data consultants with data processing operations

Operational Technology & Risk Analyst
2017 – 2020

REXOIL, Critical Petrochemical & Energy Infrastructure | Istanbul, Turkey | Independent Consultant (Part-Time, Remote – Academic Breaks)

- Supported operational risk assessment and supply chain governance for a petrochemical entity
- Redesigned operational technology (OT) reporting protocols to reduce data latency in operational decision cycles
- Conducted risk analysis across distributed supply chain networks to identify systemic vulnerabilities

SELECTED PUBLICATIONS (24 TOTAL — 12 ZENODO DOIs, 12 SSRN)

- HMAA: An Operational AI Governance Engine for Real-Time Authority Computation — DOI: 10.5281/zenodo.18861653
- SATA: A Hardware-Anchored Trust-Chain Protocol for Autonomous Mission Authority — DOI: 10.5281/zenodo.18936251
- CARA: A Deterministic Authority Recovery Architecture — DOI: 10.5281/zenodo.18917790
- MAIVA: Byzantine-Resilient Trust Aggregation for Autonomous Action Authorization — DOI: 10.5281/zenodo.19015517
- FLAME: Flash War Latency Architecture for Multi-Domain Escalation Control — DOI: 10.5281/zenodo.19015618
- ADARA: Adversarial Deception-Aware Risk Architecture — DOI: 10.5281/zenodo.19043924
- BLADE-EDGE: Deterministic Governance for Multi-Agent Decision Systems — DOI: 10.5281/zenodo.19177472
- BLADE-AV: Authority-Governed Drive-by-Wire Safety Architecture — DOI: 10.5281/zenodo.19232130
- BLADE-MARITIME: Authority-Governed Maritime Surveillance Node — DOI: 10.5281/zenodo.19246785
- BLADE-INFRA: Authority-Governed Critical Infrastructure Protection — DOI: 10.5281/zenodo.19277887
- Authority-Governed UAV Autonomy for Contested Environments — DOI: 10.5281/zenodo.19128769
- Authority-Governed Assured Autonomy Rover Testbed — DOI: 10.5281/zenodo.19143190

+ 12 additional publications on SSRN covering defense AI doctrine, escalation risk, and AI-enabled military decision-making.

TECHNICAL COMPETENCIES

Compute Platforms: NVIDIA Jetson AGX Orin, Xilinx Zynq UltraScale+ FPGA, Pixhawk 6X, Jetson Nano
Governance Standards: DoDD 3000.09, ISO 26262 ASIL-D, MIL-STD-810G, IEC 61508 SIL 3, NERC CIP, FIPS 140-2
Sensor Fusion: Dempster-Shafer theory, phased array radar, LiDAR, EO/IR, hydroacoustic sonar, MAD, AIS, GNSS/IMU
Security: TPM 2.0, ATECC608B HSM, Zynq eFUSE SecureBoot, NIST RMF, Zero Trust, ITAR/EAR compliance
Software: Python, ROS 2, TLA+ formal verification, VHDL/Verilog (RTL), C/C++, JavaScript, HTML/CSS
Credentials: 140+ professional credentials from Stanford, Harvard, Oxford, Wharton, Duke, Georgetown, Google, IEEE, AIAA, ACM, AAAI, INFORMS, NDIA, Sigma Beta D

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