

# Noctua AI — Industry-Specific Case Studies

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Explore how Noctua AI delivers measurable impact across critical industries through ethically aligned, custom AI systems. Each case study below showcases real-world applications, challenges, and results of our AI solutions.

## Defense & Aerospace

### Autonomous Recon with NoctuaEdge™

**\*\*Challenge:\*\*** A defense agency needed real-time computer vision on UAVs operating in GPS-denied zones.

**\*\*Solution:\*\*** Deployed NoctuaEdge™ with embedded object recognition on ARM chipsets, achieving <15ms latency with no cloud reliance.

#### Key Results

- - Reduced mission risk by 48% through autonomous threat classification
- - Enabled 24/7 surveillance in disconnected environments
- - Met DoD AI ethical compliance and explainability mandates

## Healthcare & Biotech

### Medical Imaging Diagnostics with ForgeAlign™

**\*\*Challenge:\*\*** A biotech firm struggled with inconsistencies in MRI analysis across facilities.

**\*\*Solution:\*\*** Built a fine-tuned model using ForgeAlign™, trained with radiologist-verified human feedback for interpretability.

#### Key Results

- - Increased diagnostic accuracy by 32% across hospital networks
- - Bias reduction in underrepresented demographic scans by 19%
- - HIPAA-compliant data architecture and audit trail integration

## Finance & Risk Modeling

### Fraud Detection Overhaul via NoctuaOps™

**\*\*Challenge:\*\*** A fintech firm needed adaptive fraud detection without sacrificing speed or accuracy.

**\*\*Solution:\*\*** Implemented custom anomaly detection pipelines using NoctuaOps™ with scalable MLOps lifecycle tools.

#### **Key Results**

- - Detected 23% more fraudulent patterns in real-time transactions
- - Achieved <1.2s average response time across 10M+ queries/day
- - Fully auditable outputs with GDPR-aligned model governance

## **Smart Cities & Infrastructure**

### **Urban Mobility Optimization via NeuroSafety™**

**\*\*Challenge:\*\*** A metropolitan city needed to reduce congestion through real-time predictive traffic analytics.

**\*\*Solution:\*\*** Deployed NeuroSafety™ to track risk scores and align model outcomes with regulatory priorities.

#### **Key Results**

- - Reduced average commute times by 18% across peak hours
- - Improved emergency vehicle routing response by 24%
- - Enabled city-wide model auditing for transparency