

VERILYST – MODEL CARD

Verilysted Verification for Human-Centered Care

Real-Time Coordination, Tracking, and Compliance You Can Count On

Model Overview

Description:

Verilyst is a multimodal verification system designed to confirm that caregiving tasks are performed correctly and ethically in home healthcare environments. The model integrates computer vision, geolocation validation, and temporal anomaly detection to provide verifiable proof of care without compromising patient privacy. It uses photo-based evidence analysis, GPS metadata, and event-sequence learning to detect, classify, and validate caregiver task completion.

License / Terms of Use:

This model is proprietary to Black Women in Artificial Intelligence (BWIAI) and designed for use within licensed Verilyst implementations only. All data captured through the system remains the property of the deploying healthcare organization and must comply with HIPAA or equivalent privacy regulations. No personally identifiable imagery or biometric data is stored on caregiver devices after verification; local copies are encrypted and deleted post-upload. External distribution or reuse of the model weights is not permitted without written authorization.

Deployment Geography:

Global — Designed for web-based and mobile deployment across international home healthcare networks, subject to local compliance requirements.

Use Case:

Verification of in-home caregiving tasks for healthcare providers, agencies, and insurance auditors to ensure compliance, accuracy, and transparency.

Release Date:

Winter 2026

Reference(s):

- NVIDIA Clara Guardian – Multimodal AI for Healthcare Facilities
- NVIDIA Holoscan – Edge Computing for Real-Time Sensor AI
- HIPAA Security Rule – U.S. Department of Health & Human Services

Model Architecture

Architecture Type: Multimodal AI Verification Pipeline

Network Architecture:

- Vision Model (CNN-based) for visual task validation
- Geolocation Model for presence and proximity detection
- Temporal State Model (LSTM) for anomaly and sequence analysis
- Weighted Ensemble Decision Layer for confidence scoring

Input

Input Type(s): Image, GPS, Temporal Data

Input Format: JPEG/PNG (photos), JSON (metadata), Timestamped event logs

Input Parameters:

- Image resolution: $\geq 720 \times 720$ recommended
- GPS precision: ≤ 10 meters
- Timestamp accuracy: ± 1 second

Other Properties:

All images are anonymized and encrypted prior to cloud upload; no personal identifiers are retained locally on devices.

Output

Output Type(s): JSON, Dashboard Visualization

Output Format: Structured JSON object (verification result, confidence score, anomaly flag)

Output Parameters:

- Verification status (boolean)
- Task classification label
- Confidence score (0.0–1.0)
- Geospatial variance
- Timestamp correlation accuracy

System outputs are visualized in a compliance dashboard for auditors and supervisors, supporting data export to PDF or CSV for regulatory review.

Notifications & Escalations (System Behavior)

Description:

Verilyst includes a real-time event notification framework that alerts designated recipients when care tasks become due, verified, overdue, or flagged by the AI model for review. Notifications are designed to keep humans in the loop and ensure rapid follow-up while maintaining strict privacy safeguards.

Alert Triggers (Configurable):

- Due / Reminder – Task approaching scheduled time window
- Completion – Task completed with required verification (photo, GPS, timestamp)
- Exception – Missed or delayed task, geolocation mismatch, or low-confidence AI result
- System – Connectivity loss, repeated upload failure, or device offline

Delivery Channels:

Encrypted Email (TLS), SMS, Mobile Push Notification, In-App Banner, REST Webhook (EHR / Compliance).

Routing & Escalation:

Role-based targeting (caregiver, supervisor, nurse, case manager) with multi-tier escalation ladder (10 / 30 / 60 minutes). Configurable quiet hours, batching, and delivery limits.

Privacy & Safety Controls:

Minimal PHI in alert payloads; full details accessible only through a secure dashboard link. Access controlled via SSO/MFA, audit logging, and role-based permissions.

Reliability Metrics:

Delivery success rate 99.7%; latency <10 seconds; SMS fallback for failed email notifications.

Ethical Impact:

By maintaining continuous, privacy-safe alerts, Verilyst keeps caregivers and supervisors actively engaged, ensuring AI enhances accountability while preserving human oversight.

Accessibility & Disability Inclusion Policy

Verilyst is designed to be inclusive and equitable for patients and caregivers of all abilities. When a participant cannot provide a visual or written signature, or cannot scan a code due to disability, illness, or temporary limitation, the platform provides **equivalent verification alternatives** that are fully auditable and carry the same evidentiary weight as standard inputs.

Supported Accessible Methods:

- **Voice Confirmation:** Short audio consent or completion statements, stored as encrypted, access-controlled artifacts; optional on-device speech-to-text for notes.
- **Proxy Acknowledgment:** Authorized caregiver or supervisor records acknowledgment with identity, role, timestamp, and reason.
- **Device-Level Evidence:** Verified events from approved devices/sensors (e.g., smart pill boxes, medication dispensers) logged with signatures and timestamps.
- **Text-Only Notes:** Time-stamped entries when media capture is impractical.

Interface & Standards:

- User interface conforms to **WCAG 2.2** guidance for screen readers, keyboard navigation, large text, and high contrast modes.
- Haptic cues and clear focus states are provided for accessible navigation on mobile devices.

Audit & Transparency:

All accessible verification events are tagged with method metadata (e.g., voice, proxy, device), timestamps, and reviewer actions to ensure transparent audit trails without collecting unnecessary personal data.

Software Integration

Runtime Engine(s):

NVIDIA TensorRT and CUDA (for edge inference); Python/PyTorch backend; Web client integration via REST API and JSON.

Hardware Compatibility:

NVIDIA GPUs (T4, A100, Jetson series); CPU fallback; edge deployment via NVIDIA Holoscan SDK.

Supported Operating Systems:

Linux (Ubuntu 22.04+), Windows 10/11, macOS (M1/Intel), Android 13+, iOS 17+.

Model Version(s):

v1.0 – Initial release with image + GPS + time-based verification pipeline.

Training, Testing, and Evaluation Datasets

Training Dataset:

Combination of synthetic and de-identified caregiving task datasets curated by BWIAI with healthcare partners. Includes object recognition data (medication trays, assistive equipment) and environmental context images generated for privacy compliance.

Dataset Properties: ~120,000 images; 15 countries; 8 lighting environments; 3 camera types.

Dataset Licenses: Internal BWIAI proprietary dataset under research and clinical BAA agreements.

Evaluation Dataset:

Independent validation using anonymized caregiver logs and synthetic task sequences representing real-world diversity. Includes controlled lighting, pose, and distance variations.

Dataset Properties: 20,000 evaluation samples across home, assisted living, and field training environments.

Dataset Licenses: BWIAI internal evaluation dataset under restricted use.

All datasets are HIPAA-compliant, de-identified, and encrypted.

Inference

Acceleration Engine:

NVIDIA CUDA, TensorRT, Holoscan edge runtime for real-time inference.

Test Hardware:

NVIDIA Jetson Orin Nano (edge); NVIDIA T4 and A100 GPUs (cloud); standard Android/iOS devices for client capture.

Performance Characteristics:

Average latency: <200ms end-to-end verification

Accuracy: 96.2% on composite validation set

False-positive rate: <2.8%

Average memory usage: 1.2GB (cloud inference)
Uptime SLA: 99.8% in production environments

Trustworthy AI and Responsible Use

BWIAI advocates for ethical, human-centered AI in healthcare. Verilyst is designed according to privacy-by-design principles and tested for bias across caregiver demographics and environmental conditions. When integrated with NVIDIA edge and cloud infrastructure, the model adheres to the Trustworthy AI framework emphasizing transparency, fairness, reliability, and privacy protection. Healthcare organizations deploying TrustLink Systems should ensure: informed consent for all image and data collection; continuous human oversight of AI-verification outcomes; regular retraining and bias audits.

Developer: Black Women in Artificial Intelligence (BWIAI)

Product: Verilyst Verification Platform

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Summary Statement

Verilyst by BWIAI leverages NVIDIA AI infrastructure to verify care ethically and transparently ensuring every act of care is proven, private, and compassionate.