AI Training Data Processing Patent EP3989012

European Patent Specification

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Description

Technical Field

[0001] The present invention relates to methods and systems for processing industrial control system (ICS) data for artificial intelligence training, specifically concerning cybersecurity threat detection in operational technology (OT) environments. The invention particularly relates to real-time analysis of SCADA network traffic patterns and automated anomaly detection in industrial automation systems.

Background

[0002] Industrial control systems face increasingly sophisticated cyber threats requiring advanced detection mechanisms. Traditional signature-based detection methods prove insufficient for identifying novel attack patterns in OT environments. The present invention addresses these limitations through innovative data processing techniques for AI model training.

Summary of Invention

[0003] The invention provides a method for processing industrial control system data comprising:

- Collecting real-time telemetry from multiple ICS data sources
- Preprocessing raw data through proprietary filtering algorithms
- Generating normalized training datasets for machine learning models
- Implementing adaptive feedback loops for continuous model improvement

Detailed Description

[0004] The system comprises:

Data Collection Module

- High-speed packet capture interface
- Protocol-specific parsing engines

- Temporal data alignment mechanism
- Secure storage architecture

Processing Pipeline

- Multi-stage filtering system
- Anomaly pre-classification engine
- Feature extraction framework
- Data normalization protocols

Training Implementation

- Distributed learning architecture
- Model validation framework
- Performance optimization system
- Cross-validation mechanisms

Claims

A method for processing industrial control system data for artificial intelligence training, comprising:

a) capturing network traffic data from industrial control systems;

b) analyzing said data using proprietary filtering algorithms;

c) generating normalized training datasets; and

d) implementing continuous feedback mechanisms.

The method of claim 1, wherein the capturing comprises:

a) real-time packet inspection;

b) protocol-specific parsing;

c) temporal alignment; and

d) secure storage implementation.

A system for implementing the method of claim 1, comprising:

a) data collection modules;

b) processing pipelines;

c) training implementation frameworks; and

d) validation mechanisms.

Technical Implementation

[0005] The invention implements:

Proprietary data processing algorithms

Secure storage architecture

Distributed learning frameworks

Real-time analysis capabilities

Industrial Applicability

[0006] The invention provides particular advantages in:

- Critical infrastructure protection
- Maritime facility security
- Industrial automation systems
- SCADA network monitoring
- Operational technology environments

Patent Details

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Related Applications

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Legal Notices

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Authentication

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