NETWORK TRAFFIC ANALYSIS ENGINE PATENT

Patent No. CN112567834

DeepShield Systems, Inc.

1. PATENT OVERVIEW

1. This document describes Patent No. CN112567834 ("the Patent"), titled "System and Method for Real-Time Industrial Network Traffic Analysis Using Deep Learning Models," granted by the China National Intellectual Property Administration (CNIPA) on March 23, 2021.

2. The Patent is owned by DeepShield Systems, Inc., a Delaware corporation with its principal place of business at 2100 Innovation Drive, Suite 400, Wilmington, Delaware 19801.

2. TECHNICAL DESCRIPTION

1. The Patent covers a novel method for analyzing network traffic patterns in industrial control systems (ICS) using proprietary deep learning algorithms, specifically:

a) Real-time packet inspection and classification

b) Behavioral anomaly detection in OT protocols

c) Adaptive baseline modeling for SCADA communications

d) Multi-layer traffic correlation analysis

e) Protocol-specific threat identification mechanisms

2. The patented technology implements a three-tier architecture:

2.1. Layer 1: Protocol Parsing Engine

- Industrial protocol decoders (Modbus, DNP3, EtherNet/IP)
- Packet reconstruction and session tracking
- Command sequence validation

2.2. Layer 2: Analysis Engine

- Neural network-based traffic pattern recognition
- Behavioral modeling of device communications
- Temporal analysis of control commands

2.3. Layer 3: Response Engine

- Automated threat classification
- Risk scoring algorithm
- Response action determination

3. PATENT CLAIMS

1. The Patent contains 27 claims, including:

1.1. Independent Claims:

- Claim 1: Core traffic analysis methodology
- Claim 12: System architecture
- Claim 23: Machine learning implementation

1.2. Dependent Claims:

- Claims 2-11: Protocol-specific implementations
- Claims 13-22: System components and interactions
- Claims 24-27: Training and optimization methods

4. TERRITORIAL COVERAGE

1. Primary Patent Protection:

- China (CN112567834)

2. Related Patent Applications:

- United States (US Application No. 16/892,445)
- European Union (EP Application No. 20195873.2)
- Japan (JP Application No. 2020-157392)

5. MAINTENANCE AND RENEWAL

1. First Maintenance Fee Due: March 23, 2024

2. Current Status: Active and in good standing

3. Renewal Schedule: Annual maintenance fees required per CNIPA schedule

6. LICENSING AND RESTRICTIONS

1. The Patent is exclusively owned by DeepShield Systems, Inc.

2. No licenses have been granted to third parties as of January 11, 2024.

3. Restrictions:

- No shop rights granted
- No prior user rights identified
- No government rights or march-in rights apply

7. PRIOR ART REFERENCES

1. Key Distinguished Prior Art:

- US Patent 9,847,965
- US Patent 10,116,693
- CN Patent 110234567
- EP Patent 3,456,789

2. Novelty Assessment:

The Patent's claims were determined to be novel over cited prior art based on the unique combination of deep learning models with industrial protocol analysis.

8. INVENTOR INFORMATION

1. Primary Inventors:

- Dr. Elena Rodriguez
- James Morrison
- Dr. Marcus Chen

2. Assignment Status:

All inventors have properly assigned their rights to DeepShield Systems, Inc. through recorded assignments.

9. LEGAL REPRESENTATION

1. Prosecuting Law Firm:

Zhang & Associates, LLC

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2. U.S. Correspondent:

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10. CERTIFICATION

The undersigned hereby certifies that this patent information is accurate as of January 11, 2024.

/s/ Robert Kessler

Robert Kessler

Chief Financial Officer

DeepShield Systems, Inc.

CONFIDENTIALITY NOTICE