AI Algorithm Scalability Method Patent

PATENT SPECIFICATION DOCUMENT

CONFIDENTIAL AND PROPRIETARY

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1. TECHNICAL FIELD

1 This patent specification relates to a novel method for dynamically scaling artificial intelligence algorithms in distributed computing environments, specifically addressing computational efficiency and resource optimization in predictive maintenance and enterprise AI platforms.

2. BACKGROUND OF THE INVENTION

1 Existing AI scaling methodologies suffer from significant limitations in:

a) Dynamic resource allocation

b) Computational efficiency

c) Adaptive algorithm reconfiguration

2 Current technologies require manual intervention and static resource provisioning, resulting in:

- Suboptimal computational performance
- Increased operational costs
- Reduced scalability across complex enterprise environments

3. SUMMARY OF THE INVENTION

1 The present invention provides a revolutionary AI algorithm scalability method characterized by:

- Autonomous resource optimization
- Predictive computational load management
- Intelligent algorithm reconfiguration

2 Key Innovation Components:

- Adaptive machine learning resource allocation framework
- Real-time computational complexity assessment
- Distributed computing orchestration mechanism

4. DETAILED DESCRIPTION

4.1 System Architecture

1.1 The scalability method comprises a multi-layered computational architecture with the following primary components:

- Distributed computing node network
- Intelligent resource allocation controller
- Machine learning performance monitoring subsystem

4.2 Algorithmic Scaling Methodology

2.1 The method enables dynamic algorithmic scaling through:

a) Continuous computational load analysis

b) Predictive resource requirement forecasting

c) Autonomous algorithm reconfiguration

2.2 Scaling Mechanism Workflow:

- Initial computational resource assessment
- Performance metric collection
- Predictive load projection
- Automated resource reallocation
- Algorithm optimization

5. CLAIMS

1 Claims of Novelty:

A method for dynamically scaling artificial intelligence algorithms in distributed computing environments

A system for autonomous computational resource optimization

A mechanism for intelligent algorithm reconfiguration based on real-time performance metrics

6. TECHNICAL SPECIFICATIONS

1 Computational Requirements:

- Minimum Processor: 4-core, 3.0 GHz
- Minimum RAM: 32 GB
- Distributed Computing Nodes: Minimum 5 nodes
- Network Connectivity: 10 Gbps minimum

2 Software Dependencies:

- Kubernetes v1.22+
- Docker Container Runtime
- Python 3.9+
- TensorFlow 2.8+

7. IMPLEMENTATION CONSIDERATIONS

1 Performance Optimization Strategies:

- Horizontal scaling capabilities
- Microservice-based architecture
- Containerized deployment model

8. LEGAL PROVISIONS

1 Intellectual Property Rights

All rights to this patent methodology are exclusively owned by Nexus Intelligent Systems, Inc., with full protection under United States patent law.

2 Confidentiality

This document contains proprietary and confidential information. Unauthorized disclosure is strictly prohibited.

9. SIGNATURES

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