PERFORMANCE ANALYTICS ENGINE PATENT

United States Patent Application No. 16/789,432

Filed: March 15, 2022

ABSTRACT

A system and method for real-time performance analytics processing comprising a multi-layered computational engine that ingests, processes, and analyzes operational data from distributed IoT sensors and enterprise systems to generate predictive performance metrics and automated optimization recommendations. The system utilizes machine learning algorithms to identify patterns, anomalies, and optimization opportunities across complex operational environments.

BACKGROUND OF THE INVENTION

[0001] Modern enterprise operations generate vast quantities of performance data across multiple systems, sensors, and processes. Traditional analytics approaches lack the capability to process this data in real-time and generate actionable insights. This invention addresses the technical challenge of real-time operational performance optimization through advanced computational methods.

[0002] Prior solutions have failed to effectively combine IoT sensor data with enterprise system metrics in a unified analytics framework. Additionally, existing systems cannot adapt their analytical models in real-time based on changing operational conditions.

SUMMARY OF THE INVENTION

[0003] The present invention provides a performance analytics engine comprising:

- A distributed sensor network interface layer
- A real-time data ingestion and normalization pipeline
- A machine learning computation core
- An adaptive optimization algorithm framework
- A predictive analytics visualization system

[0004] The system enables real-time processing of operational metrics to identify performance optimization opportunities and automatically generate remediation recommendations.

DETAILED DESCRIPTION

[0005] The performance analytics engine comprises multiple integrated subsystems:

Data Ingestion Layer

[0006] The data ingestion layer includes:

- Protocol-agnostic sensor data collectors
- Enterprise system API integrations
- Real-time stream processing capabilities
- Data validation and normalization functions

Computational Core

[0007] The computational core implements:

- Distributed processing architecture
- Dynamic model training capabilities
- Pattern recognition algorithms
- Anomaly detection systems
- Predictive analytics models

Optimization Engine

[0008] The optimization engine features:

- Multi-variable optimization algorithms
- Constraint-based recommendation generation
- Real-time performance scoring
- Automated remediation workflows

CLAIMS

What is claimed is:

A computer-implemented method for real-time performance analytics, comprising:

a) receiving operational data from distributed sensors;

b) processing said data through machine learning models;

c) generating optimization recommendations; and

d) implementing automated performance improvements.

The method of claim 1, wherein the machine learning models comprise:

a) supervised learning algorithms;

b) unsupervised pattern detection;

c) reinforcement learning capabilities; and

d) adaptive model optimization.

A system for enterprise performance optimization comprising:

a) distributed sensor networks;

b) real-time data processing pipelines;

c) machine learning computation engines; and

d) automated optimization controllers.

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ASSIGNMENT

The entire right, title and interest in this patent application is assigned to:

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DECLARATION

I hereby declare that I am the original inventor of the subject matter which is claimed and for which a patent is sought. I have reviewed and understand the contents of the above-identified specification, including the claims. I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true.

/s/ Dr. Robert Martinez

Date: March 15, 2022

/s/ Michael Chang

Date: March 15, 2022