USER AUTHENTICATION SYSTEM PATENT

United States Patent Application No. 16/789,432

Filing Date: March 15, 2022

Assignee: Summit Digital Solutions, Inc.

ABSTRACT

A system and method for multi-factor user authentication in enterprise environments utilizing biometric data, behavioral analytics, and machine learning algorithms. The invention provides enhanced security through continuous authentication monitoring while maintaining operational efficiency through automated trust scoring and adaptive security protocols.

BACKGROUND OF INVENTION

[0001] Modern enterprise systems require robust user authentication mechanisms that balance security requirements with operational efficiency. Traditional authentication methods relying solely on passwords or basic two-factor authentication have proven insufficient for protecting sensitive enterprise data and systems.

[0002] This invention addresses the limitations of existing authentication systems by implementing a dynamic, AI-driven approach that continuously validates user identity through multiple data points while minimizing friction in user workflows.

SUMMARY OF INVENTION

[0003] The present invention provides a system for continuous user authentication comprising:

- A behavioral analytics engine that monitors user interaction patterns
- Machine learning algorithms for real-time trust score calculation
- Biometric validation through multiple modalities
- Adaptive security protocols based on contextual risk assessment
- Integration with enterprise identity management systems

DETAILED DESCRIPTION

Authentication Engine Architecture

[0004] The core authentication engine comprises three primary components:

Data Collection Module

- Captures biometric markers including keystroke dynamics

- Monitors cursor movement patterns

- Records application usage behaviors

- Collects environmental context data

Analysis Module

- Processes collected data through proprietary ML algorithms

- Generates real-time trust scores

- Identifies anomalous behavior patterns

- Updates user risk profiles dynamically

Response Module

- Implements adaptive authentication requirements

- Triggers additional verification when needed

- Manages session permissions

- Logs security events

Machine Learning Implementation

[0005] The system employs proprietary machine learning models trained on:

- Historical user behavior patterns

- Known attack vectors

- Industry-specific risk factors

- Environmental context data

Trust Score Calculation

[0006] Trust scores are calculated using the following factors:

- Behavioral consistency with established patterns

- Biometric match confidence

- Environmental risk factors

- Historical authentication success rate

- System access patterns

CLAIMS

A method for continuous user authentication comprising:

a) Collecting behavioral biometric data

b) Analyzing user patterns through machine learning

c) Generating dynamic trust scores

d) Implementing adaptive security protocols

The method of claim 1, wherein behavioral biometric data includes:

a) Keystroke dynamics

b) Mouse movement patterns

c) Application interaction patterns

d) Session timing characteristics

The method of claim 1, wherein machine learning analysis includes:

a) Pattern recognition

b) Anomaly detection

c) Risk scoring

d) Behavioral clustering

INVENTORS

- James Henderson, Chief Digital Officer

- Dr. Robert Martinez, Chief Innovation Officer

- Michael Chang, Chief Technology Officer

PATENT REPRESENTATIVES

Wilson & Patterson LLP

1234 Technology Drive

San Francisco, CA 94105

ASSIGNMENT RIGHTS

All rights, title, and interest in this patent application are assigned to Summit Digital Solutions, Inc., a Delaware corporation, including:

- Right to prosecute patent application

- Right to file continuing applications

- Right to collect damages for infringement

- Right to license the technology

- Right to enforce patent rights

EXECUTION

IN WITNESS WHEREOF, this patent application is executed this 15th day of March, 2022.

/s/ James Henderson

James Henderson

Chief Digital Officer

Summit Digital Solutions, Inc.

/s/ Dr. Robert Martinez

Dr. Robert Martinez

Chief Innovation Officer

Summit Digital Solutions, Inc.

/s/ Michael Chang

Michael Chang

Chief Technology Officer

Summit Digital Solutions, Inc.

CERTIFICATION

I hereby certify 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/ Sarah Johnson

Sarah Johnson

Patent Attorney (Reg. No. 58,392)

Wilson & Patterson LLP