Skip to Main Content

# inPASS
### Indian Patent Advanced Search System

(http://ipindia.nic.in/index.htm)

INTELLECTUAL PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS
GEOGRAPHICAL INDICATIONS

(http://ipindia.nic...

## Patent Search

| | |
|---|---|
| Invention Title | Adaptive Deep Learning Framework for Real-Time Anomaly Detection in Large-Scale Data Streams |
| Publication Number | 11/2025 |
| Publication Date | 14/03/2025 |
| Publication Type | INA |
| Application Number | 202541018879 |
| Application Filing Date | 03/03/2025 |
| Priority Number | |
| Priority Country | |
| Priority Date | |
| Field Of Invention | COMPUTER SCIENCE |
| Classification (IPC) | G06N0020000000, H04L0009400000, G06N0003045000, G06N0003080000, G06N0003044000 |

Inventor

| Name | Address | Country |
|---|---|---|
| Mr.S Vinay Kumar, G.Pulla Reddy Engineering College | Assistant Professor, Department of CSE(AI & ML), G.Pulla Reddy Engineering College (Autonomous): Kurnool Nandyal Road, Kurnool, Andhra Pradesh | India |
| Dr.K Rangaswamy, Rajeev Gandhi Memorial College of Engineering and Technology | Associate Professor, Department of CSE(DS), Rajeev Gandhi Memorial College of Engineering and Technology, Nandyal- 518501, Andhra Pradesh | India |
| Mr.Sharan Kumar Huli, P D A College of Engineering | Assistant professor Department of Information Science and Engineering (ISE) P D A College of Engineering, Kalaburagi 585102, Karnataka | India |
| Dr.Annavarapu Venkata Sridhar, P D A College of Engineering | Professor Department of AIML, P D A College of Engineering, Kalaburagi,585102, Karnataka | India |
| Dr.V.Kishen Ajay Kumar, Institute of Aeronautical Engineering | Associate Professor, Department of ECE, Institute of Aeronautical Engineering Dundigal, Hyderabad – 500043, Telangana | India |
| Dr.T.Ravikumar, Aditya Institute of Technology and Management | Professor, Department of CSE, Aditya Institute of Technology and Management Tekkali, Srikakulam Dist– 532201 Andhra Pradesh | India |

Applicant

| Name | Address | Country |
|---|---|---|
| Mr.S Vinay Kumar, G.Pulla Reddy Engineering College | Assistant Professor, Department of CSE(AI & ML), G.Pulla Reddy Engineering College (Autonomous): Kurnool Nandyal Road, Kurnool, Andhra Pradesh | India |
| Dr.K Rangaswamy, Rajeev Gandhi Memorial College of Engineering and Technology | Associate Professor, Department of CSE(DS), Rajeev Gandhi Memorial College of Engineering and Technology, Nandyal- 518501, Andhra Pradesh | India |
| Mr.Sharan Kumar Huli, P D A College of Engineering | Assistant professor Department of Information Science and Engineering (ISE) P D A College of Engineering, Kalaburagi 585102, Karnataka | India |
| Dr.Annavarapu Venkata Sridhar, P D A College of Engineering | Professor Department of AIML, P D A College of Engineering, Kalaburagi,585102, Karnataka | India |
| Dr.V.Kishen Ajay Kumar, Institute of Aeronautical Engineering | Associate Professor, Department of ECE, Institute of Aeronautical Engineering Dundigal, Hyderabad – 500043, Telangana | India |
| Dr.T.Ravikumar, Aditya Institute of Technology and Management | Professor, Department of CSE, Aditya Institute of Technology and Management Tekkali, Srikakulam Dist– 532201 Andhra Pradesh | India |

Abstract:

The invention provides an adaptive deep learning framework for real-time anomaly detection in large-scale data streams. The framework incorporates a hybrid deep model integrating RNNs, CNNs, and attention mechanisms for efficient feature learning. An incremental learning mechanism ensures continuous adaptation to evolv patterns, while a reinforcement learning module optimizes anomaly detection thresholds based on real-world feedback. The system is designed for deployment in di computing environments, enabling scalable and low-latency anomaly detection in diverse applications such as cybersecurity, industrial monitoring, and financial frau The experimental setup involves a distributed computing infrastructure with high-performance GPUs, real-time data processing pipelines, and cloud-based storage fo large-scale datasets. The database used for training and validation comprises multiple benchmark datasets, including cybersecurity logs, IoT telemetry data, and finan transaction records, ensuring robust model evaluation and generalization.

## Complete Specification

Description:The invention provides an adaptive deep learning framework for real-time anomaly detection in large-scale data streams. The framework incorporates a deep learning model integrating RNNs, CNNs, and attention mechanisms for efficient feature learning. An incremental learning mechanism ensures continuous adaptation evolving data patterns, while a reinforcement learning module optimizes anomaly detection thresholds based on real-world feedback. The system is designed for distributed computing environments, enabling scalable and low-latency anomaly detection in diverse applications such as cybersecurity, industrial monitoring, and fraud detection. The experimental setup involves a distributed computing infrastructure with high-performance GPUs, real-time data processing pipelines, and cloud storage for handling large-scale datasets. The database used for training and validation comprises multiple benchmark datasets, including cybersecurity logs, IoT te data, and financial transaction records, ensuring robust model evaluation and generalization. , C , Claims:1. An adaptive deep learning framework for real-time anor detection in large-scale data streams, comprising a hybrid deep learning model integrating recurrent neural networks, convolutional neural networks, and attention mechanisms.

2.    A system for real-time anomaly detection, wherein the model dynamically updates using an incremental learning mechanism to adjust to evolving data pattern

3.    A reinforcement learning module configured to refine anomaly classification based on user feedback and real-world data validation.

4.    A distributed processing architecture enabling real-time detection of anomalies in high-velocity data streams.

5.    A method for detecting anomalies in large-scale data streams using a hybrid deep learning approach, wherein temporal and spatial features are extracted and through continuous learning techniques.

<div align="center">

[ View Application Status ]

</div>