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	(71)**Name of Applicant :**
	  1)**Chitkara University**
	   Address of Applicant :Chitkara University, Chandigarh-Patiala National Highway, Village Jhansla, Rajpura, Punjab - 140401, India. Patiala ----------- -----------
	  2)**Bluest Mettle Solutions Private Limited**
	Name of Applicant : NA
	Address of Applicant : NA
	(72)**Name of Inventor :**
	  1)**MISHRA, Rahul**
	Address of Applicant :ODC-4, Panchshil Tech Park, inside Courtyard by Marriott premises, Hinjewadi Phase - 1, Pune - 411057, Maharashtra, India. Pune ----------- -----------
	  2)**SINGH, Dhiraj**
	Address of Applicant :ODC-4, Panchshil Tech Park, inside Courtyard by Marriott premises, Hinjewadi Phase - 1, Pune - 411057, Maharashtra, India. Pune ----------- -----------
	  3)**VIKRAM**
	Address of Applicant :Chitkara University, Chandigarh-Patiala National Highway, Village Jhansla, Rajpura, Punjab - 140401, India. Patiala ----------- -----------

(57) Abstract :
A block-based anomaly detection system (BBADS) (102) for anomaly detection by integrating block-based analysis, machine learning algorithms, and graph analytics is disclosed. The system (102) achieves enhanced accuracy in identifying anomalies within diverse and evolving datasets. The system (102) includes capturing anomalies within specific localized contexts, introducing a graph-theoretic approach for interconnected anomaly detection, and employing a hierarchical mechanism for comprehensive anomaly assessment. Further, the system (102) facilitates real-time anomaly scoring, automates feature extraction from graphs, and seamlessly integrates with existing systems across various domains. The system addresses challenges such as robustness against adversarial attacks, prioritizing high-impact anomalies, and incorporating ethical guidelines for responsible detection. Furthermore, the system (102) showcases adaptability through cross-domain anomaly transfer learning and continuous monitoring of graph evolution.

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