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G.A.R.6
[See Rule 22(1)]
RECEIPT



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To
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CBR Detail:

Sr. No.	App. Number	Ref. No./Application No.	Amount Paid	C.B.R. No.	Form Name	Remarks
1	E-12/1908/2025/KOL	202531092284	2500	12027	FORM 9	
2	202531092284	TEMP/E-1/103184/2025-KOL	1920	12027	FORM 1	AI-ENABLED ATM FOR INTELLIGENT TRANSACTION MANAGEMENT AND ENHANCED SECURITY ACCIDENT PREVENTION
3	E-106/2770/2025/KOL	202531092284	0	----	FORM28	----

TransactionID	Payment Mode	Challan Identification Number	Amount Paid	Head of A/C No
N-0001759108	Online Bank Transfer	2509250071629	4420.00	1475001020000001

Total Amount : ₹ 4420.00

Amount in Words: Rupees Four Thousand Four Hundred Twenty Only

Received from Sudarshana Bandyopadhyay the sum of ₹ 4420.00 on account of Payment of fee for above mentioned Application/Forms.

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(19) INDIA

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(54) Title of the invention : AI-ENABLED ATM FOR INTELLIGENT TRANSACTION MANAGEMENT AND ENHANCED SECURITY ACCIDENT PREVENTION

(51) International classification	:G06Q0020400000, H04L0009400000, G07F0019000000, G06Q0020100000, G06N0020000000	(71) Name of Applicant : 1)SRJX RESEARCH AND INNOVATION LAB LLP Address of Applicant :Plot No - 3E/474, Sector-9, CDA, Post- Markat Nagar, Cuttack-753014, Odisha, India Cuttack Orissa India
(31) Priority Document No	:NA	(72) Name of Inventor :
(32) Priority Date	:NA	1)DR SOUMYA RANJAN JENA
(33) Name of priority country	:NA	2)MR SANJOY SAHA
(86) International Application No	:	3)DR SOHIT AGARWAL
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(57) Abstract :

The present invention relates to an Artificial Intelligence (AI) enabled Automated Teller Machine (ATM) system configured to provide intelligent transaction management, adaptive security, and predictive maintenance. The system comprises a user interface including a touchscreen, keypad, biometric input devices and display; an AI-enabled core system with one or more processors and trained machine learning models; an initial authentication module adapted to perform multi-layer authentication using biometric, behavioural, and fallback methods; a behaviour analysis module configured to evaluate real-time user activity against historical transaction data; a transaction module comprising a logical sub-module for AI-driven preparation and predictive recommendation of transactions, and an execution sub-module for secure transaction processing; a security monitor configured to detect anomalies and fraudulent activity using AI-based models; and a communication interface for interaction with a bank server. The system operates by authenticating the user, analyzing behaviour, generating predictive transaction suggestions, executing secure transactions and performing adaptive post-transaction security checks. In addition, the invention incorporates predictive maintenance by monitoring operational parameters, identifying potential faults, and initiating corrective actions proactively. The invention thereby delivers an intelligent ATM platform capable of adaptive security, real-time fraud detection, personalized interaction, and enhanced operational reliability.

No. of Pages : 17 No. of Claims : 11

FORM 2 THE PATENTS ACT, 1970 (39 OF 1970) AND THE PATENTS RULES, 2003 COMPLETE SPECIFICATION (See section 10; rule 13)
1. TITLE OF THE INVENTION AI-ENABLED ATM FOR INTELLIGENT TRANSACTION MANAGEMENT AND ENHANCED SECURITY
2. APPLICANT (a) NAME: SRJX RESEARCH AND INNOVATION LAB LLP (b) NATIONALITY: India (c) ADDRESS: Plot No - 3E/474, Sector-9, CDA, Post- Markat Nagar, Cuttack-753014, Odisha, India
3. PREAMBLE TO THE DESCRIPTION The following specification particularly describes the invention and the manner in which it is to be performed.

FIELD OF THE INVENTION

The present invention relates to the field of automated banking systems and more particularly to an Artificial Intelligence (AI) enabled Automated Teller Machine (ATM) system that integrates machine learning algorithms for intelligent transaction management, adaptive multi-layer security, behavioural analytics and predictive maintenance.

BACKGROUND OF THE INVENTION

Automated Teller Machines (ATMs) have transformed banking operations by providing customers with round-the-clock access to essential financial services such as cash withdrawals, deposits, balance inquiries, and fund transfers, independent of physical bank branches. Since their initial deployment in the late 1960s, ATM technologies have undergone substantial evolution in terms of hardware, user interface, and transaction processing speed. Despite these improvements, conventional ATMs remain constrained by static processing frameworks, predefined transactional flows, and basic authentication mechanisms.

Such limitations expose both users and financial institutions to a variety of vulnerabilities, including card skimming, identity theft and unauthorized access. Traditional authentication mechanisms such as Personal Identification Numbers (PINs) and magnetic stripe cards are inherently susceptible to replication, interception and other forms of fraudulent exploitation. Current ATM security measures, while offering partial mitigation, remain largely reactive and incapable of adapting dynamically to sophisticated and rapidly evolving cyber threats. This static nature of conventional ATM security has repeatedly proven inadequate in addressing emerging risks.

In addition to security shortcomings, existing ATM systems offer a largely standardized and uniform user experience, with little or no personalization. The transactional interface is typically limited to fixed options, without the capacity to anticipate or tailor services to individual users based on behavioral patterns or historical usage. As consumer expectations increasingly favor seamless, intuitive, and personalized digital interactions, such limitations

result in diminished user satisfaction, reduced operational efficiency, and suboptimal engagement with ATM services.

The problems faced by the existing technology includes:

1. **Static Authentication Methods:** Conventional ATMs primarily rely on PIN codes and magnetic stripe cards, both of which are highly susceptible to fraud through skimming, theft, or replication.
2. **Limited Real-Time Risk Mitigation:** Existing systems lack advanced analytical capabilities to identify and mitigate threats in real time. They cannot effectively detect or respond to abnormal behavior indicative of fraudulent activities.
3. **Absence of Biometric Authentication:** Earlier ATM designs generally do not incorporate biometric verification, leaving systems vulnerable to impersonation and unauthorized usage.
4. **No Behavioural Analytics:** Traditional ATMs are unable to analyze deviations from typical user behavior, thereby failing to provide early warnings or preventive measures against fraud.
5. **Rigid Transaction Flows:** Transaction processes in prior ATMs are standardized and inflexible, offering no personalization or predictive guidance based on historical user behavior or preferences.
6. **Lack of Predictive Transaction Management:** Previous designs are unable to anticipate user requirements or optimize transaction efficiency, resulting in repetitive operations and reduced customer satisfaction.
7. **Inadequate Maintenance Mechanisms:** Maintenance in conventional ATM systems is largely reactive, leading to higher downtime, delayed detection of faults, and increased operational costs.
8. **No Integration of AI or Machine Learning:** Earlier ATMs do not utilize intelligent technologies to analyze user interactions, limiting opportunities for personalization or intelligent transaction management.
9. **Inability to Adapt Security Dynamically:** Security measures in traditional ATMs remain static and cannot evolve in response to new or sophisticated cyber threats.

10. **Limited Data-Driven Insights:** Conventional ATM operations provide minimal actionable data, restricting the ability of financial institutions to enhance security, improve efficiency, or strengthen customer engagement.

Accordingly, there exists a need for an advanced ATM system that leverages AI to provide adaptive, multi-layered authentication, real-time threat detection, predictive maintenance and personalized user interaction. Such a system would not only address existing security concerns but also enhance customer experience and operational reliability by continuously learning from user behavior and dynamically adapting to both threats and preferences.

OBJECTS OF THE INVENTION

The primary objective of the present invention is to provide an Artificial Intelligence (AI) enabled Automated Teller Machine (ATM) system capable of intelligent, secure, and adaptive transaction management.

Another objective of the invention is to integrate multi-layered authentication, including biometric, behavioural, and fallback methods, for enhanced user verification and fraud prevention.

A further objective is to employ AI and machine learning algorithms for real-time analysis of user behaviour, enabling detection of anomalies and potential fraudulent activities.

Yet another objective is to provide predictive transaction recommendations tailored to individual users based on historical transaction data and contextual parameters, thereby improving user convenience and operational efficiency.

An additional objective is to enable secure execution of financial transactions, including cash withdrawals, deposits, account transfers, and bill payments, in communication with a bank server.

Another objective is to implement AI-driven predictive maintenance by continuously monitoring operational parameters of the ATM and initiating

corrective actions to prevent system failures, reduce downtime, and lower maintenance costs.

A further objective is to create a comprehensive, adaptive ATM platform that combines intelligent transaction management, real-time fraud detection, predictive maintenance, and personalized interaction, thereby overcoming limitations of conventional ATM systems and improving overall user experience and security.

SUMMARY OF THE INVENTION

The present invention provides an Artificial Intelligence (AI) enabled Automated Teller Machine (ATM) system that integrates advanced machine learning algorithms into conventional ATM infrastructures to achieve secure, intelligent, and adaptive transaction management. The system comprises a user interface for input and display, an AI-enabled core processing unit, an initial authentication module employing biometric and behavioral authentication, a behavior analysis module for anomaly detection, a transaction module with predictive recommendation capability, a security monitor for real-time fraud prevention, and a communication interface with a bank server.

The method of operation includes multi-layer authentication of the user, analysis of real-time activity against historical transaction patterns, generation of predictive transaction suggestions, secure execution of transactions, and adaptive post-transaction security validation. The system further incorporates predictive maintenance functionality by monitoring operational health and initiating corrective actions proactively.

By combining AI-driven personalization, anomaly detection, fraud prevention, and predictive maintenance, the invention overcomes limitations of existing ATM systems, thereby ensuring improved security, operational efficiency, and user experience.

BRIEF DESCRIPTION OF DRAWINGS

Fig 1: Detailed flow chart of the invention

Fig 2: The architecture and working principle of the invention

DETAILED DESCRIPTION OF INVENTION

The present invention relates to an Artificial Intelligence (AI)-enabled Automated Teller Machine (ATM) system that integrates advanced machine learning algorithms into conventional ATM infrastructures to provide intelligent transaction management, adaptive security, and improved operational reliability.

In operation, when a user approaches the ATM, the system initiates identification through advanced biometric scanning methods, such as facial recognition or fingerprint verification. The AI engine promptly evaluates the biometric data and securely authenticates the user's identity. Once authenticated, the user may initiate a transaction, which is further analyzed by the AI system against historical transaction data and behavioural patterns. This layered analysis not only confirms the validity of the transaction but also serves to detect abnormal activities or deviations from established usage patterns.

If unusual behaviour is detected, the system immediately activates robust security protocols, including real-time alerts to the user and financial institution, thereby preventing unauthorized access or fraudulent activities. In addition to safeguarding transactions, the AI system enhances the user experience by generating personalized transaction recommendations based on historical behaviour and user preferences. This personalization reduces repetitive steps, optimizes transaction flows, and improves overall customer satisfaction.

The invention further provides predictive maintenance capabilities. The AI continuously monitors the operational status of the ATM, identifying potential

technical issues before they escalate into failures. By enabling proactive corrective action, the system significantly reduces downtime, lowers maintenance costs, and enhances reliability.

Accordingly, the invention delivers a comprehensive ATM platform that combines dynamic multi-layered authentication, behavioural analytics, personalized interaction, real-time fraud detection, and predictive maintenance. Through the integration of AI-driven intelligence, the system ensures secure, efficient, and adaptive banking services aligned with contemporary security demands and consumer expectations.

Core Architecture of the present invention:

The AI-enabled Automated Teller Machine (ATM) system comprises multiple components and entities that operate collaboratively to provide intelligent, secure, and efficient transaction management. The primary components of the system are described as follows:

1. User: The user is the initiating entity of the transaction process. Users interact with the ATM to perform financial operations such as cash withdrawals, deposits, fund transfers, or balance inquiries. The system begins once the user engages with the interface of the ATM, thereby triggering subsequent AI-driven modules including authentication, behaviour analysis, and transaction processing.

2. User Interface (UI): The user interface serves as the communication medium between the user and the ATM. It may include a touchscreen, keypad, biometric input devices (e.g., fingerprint scanner, facial recognition camera, iris scanner), and output display. The UI captures authentication data and transaction commands while providing visual or audio feedback to the user. The interface is designed for intelligent interaction, offering predictive transaction suggestions and streamlined options based on historical user data.

3. AI-Enabled ATM Core System: At the core of the ATM lies the AI-driven processing infrastructure. This system coordinates user input, authentication, behavioural analysis, transaction execution, and

communication with the bank server. It performs real-time decision-making, pattern recognition, anomaly detection, and system health monitoring, thereby enabling adaptive, secure, and efficient ATM operations.

4. Initial Authentication Module: This module validates user identity through multi-layered mechanisms, including biometric authentication (e.g., fingerprint, facial recognition, iris scans), PIN entry, and behavioural biometrics. AI algorithms process these inputs in real time to determine legitimacy. If authentication fails, user access is denied and alerts are forwarded to the security monitor for immediate action.

5. Behavior Analysis Module: This module evaluates user behaviour by comparing real-time activity with established historical patterns. Data such as transaction frequency, timing, withdrawal amounts, and geographic access locations are analyzed. Deviations from expected behavior are flagged as potential anomalies or fraudulent attempts. The results of this analysis are used by the transaction module and security monitor to determine subsequent actions.

6. Transaction Module: The system employs two sub-modules for transaction processing:

- *Logical Transaction Sub-Module:* Responsible for AI-driven preparation and validation of the transaction request, including predictive suggestions and optimization of user commands.
- *Execution Sub-Module:* Performs the actual transaction functions such as cash dispensing, deposits, fund transfers, or bill payments. Both sub-modules ensure secure communication with the bank server to verify balances and execute financial operations reliably.

7. Security Monitor: The security monitor continuously observes both user activity and system performance for anomalies. It integrates inputs from the behaviour analysis module and transaction module. In case of detected irregularities or fraudulent activity, the security monitor may block the transaction, temporarily restrict account access, or notify banking

authorities. It also enforces compliance with regulatory and cybersecurity standards.

8. Bank Server (Bank System): The bank server functions as the backend infrastructure for transaction validation and account management. It maintains account records, balances, and transaction history. The ATM system communicates securely with the bank server to authenticate user requests, validate funds, and synchronize transaction data. All transactions are logged for auditing, reporting, and regulatory compliance.

Method of Operation:

The AI-enabled Automated Teller Machine (ATM) system operates through an intelligent, multi-stage process flow that integrates artificial intelligence, machine learning, and adaptive security mechanisms. The process may be described as follows:

Step 1: Start

The process initiates when a user approaches the ATM to perform a transaction. This marks the beginning of interaction with the AI-integrated system.

Step 2: User Approaches ATM

Upon detecting proximity through sensors such as motion detectors or cameras, the ATM activates its interface and displays a welcome screen. Preliminary processes such as facial detection or environmental scanning may be performed for initial security assessment.

Step 3: Initial Authentication

The system conducts multi-layered user authentication, including:

- *Biometric Authentication:* facial recognition, fingerprint, or iris scanning.
- *Behavioural Authentication:* keystroke dynamics or touchscreen interaction style.

- *Fallback Authentication:* PIN or One-Time Password (OTP) if biometric methods fail.

The AI engine evaluates authentication data in real time and determines whether access should be granted.

Step 4: User Behaviour Analysis

Once authenticated, the system analyzes user behaviour to detect anomalies.

- Behaviour is compared against historical transaction records.
- Atypical actions, such as unusual withdrawal amounts, unusual times, or unfamiliar locations, are flagged.
- If deviations are detected, the system may prompt for additional verification or terminate the session.

Step 5: Intelligent Transaction Recommendations

Leveraging AI and machine learning, the system generates personalized options for the user, such as:

- “Withdraw Usual Amount.”
 - “Transfer to Favourite Contact.”
 - Context-based suggestions (e.g., holidays, salary credit events).
- This predictive recommendation system reduces transaction time and enhances personalization.

Step 6: Transaction Execution

Upon user confirmation, the system securely executes the transaction.

- Activities are processed and recorded with encryption.
- Outputs may include physical cash dispensing, balance updates, or digital receipts.

This step ensures that standard ATM functions are performed with AI-based oversight.

Step 7: Adaptive Security Checks

After transaction execution, the system performs adaptive security validation.

- Transaction patterns are verified against legitimate behaviour.
- AI models are updated with new behavioural data.
- Security alerts are sent to the bank or user in case of anomalies (e.g., multiple withdrawals in quick succession, location mismatches).
This creates a continuous feedback loop to strengthen security.

Step 8: End

The session concludes either through user logout or automatic timeout.

- A session report is generated and optionally transmitted to the user's mobile device or email.
- The ATM resets to an idle state, ready for the next user.

We claim:

1. An Artificial Intelligence (AI) enabled Automated Teller Machine (ATM) system comprising:
 - a) a user interface including a touchscreen, keypad, biometric input devices and a display for user interaction;
 - b) an AI-enabled ATM core system comprising one or more processors and memory storing trained machine learning models;
 - c) an initial authentication module configured to receive biometric, personal identification number and behavioral biometric inputs, and to authenticate the user using AI-based classification models;
 - d) a behavior analysis module comprising AI algorithms trained on historical transaction data, the module configured to detect anomalies in user activity by comparing real-time behavior with stored patterns;
 - e) a transaction module comprising:
 - o a logical transaction sub-module configured to generate predictive transaction suggestions using machine learning models; and
 - o an execution sub-module for performing validated transactions including cash dispensing, deposit, account transfer and bill payment;
 - f) a security monitor configured with AI anomaly detection models to identify fraudulent activity and to generate security alerts; and
 - g) a communication interface configured for secure exchange of transaction data with a bank server.
2. The system as claimed in claim 1, wherein the AI-enabled ATM core system is configured to update stored machine learning models based on new user transaction data for adaptive personalization and security enhancement.

3. The system as claimed in claim 1, wherein the initial authentication module employs a deep learning facial recognition model or a fingerprint classification model trained on stored user biometric data.
4. The system as claimed in claim 1, wherein the behavior analysis module is trained to detect deviations in at least one of transaction frequency, withdrawal amount, access time or geographic location.
5. The system as claimed in claim 1, wherein the transaction module generates context-based predictive suggestions based on AI inference using historical user data and event data including at least one of holiday schedules or salary credit events.
6. The system as claimed in claim 1, wherein the security monitor employs anomaly detection algorithms trained on fraud datasets to restrict or block suspicious transactions.
7. A method of operating an Artificial Intelligence (AI) enabled Automated Teller Machine (ATM) system, the method comprising:
 - a. detecting proximity of a user and initiating a session;
 - b. performing multi-layer authentication by biometric recognition, behavioral authentication and fallback methods, wherein AI-based models classify authentication inputs to verify legitimacy;
 - c. analyzing authenticated user behavior using AI algorithms trained on historical transaction data to detect anomalies;
 - d. generating predictive transaction suggestions through machine learning inference based on user preferences and contextual data;
 - e. executing selected transactions via secure communication with a bank server;
 - f. applying AI-based post-transaction security validation by detecting abnormal withdrawal patterns, geographic mismatches or multiple rapid transactions; and
 - g. generating a session report and resetting the ATM system to an idle state.
8. The method as claimed in claim 7, wherein the authentication step comprises processing facial recognition data through a convolutional neural network model stored in the AI-enabled ATM core system.

9. The method as claimed in claim 7, wherein the analyzing step comprises anomaly detection using clustering or outlier detection algorithms applied to real-time user behavior data.
10. The method as claimed in claim 7, wherein the predictive transaction suggestions are generated using a recommender model trained on historical transaction datasets of the user.
11. The method as claimed in claim 7, wherein the post-transaction validation step comprises adaptive updating of AI security models based on detected user activity.

Dated this 25th day of September 2025



Sudarshana Bandyopadhyay

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ABSTRACT

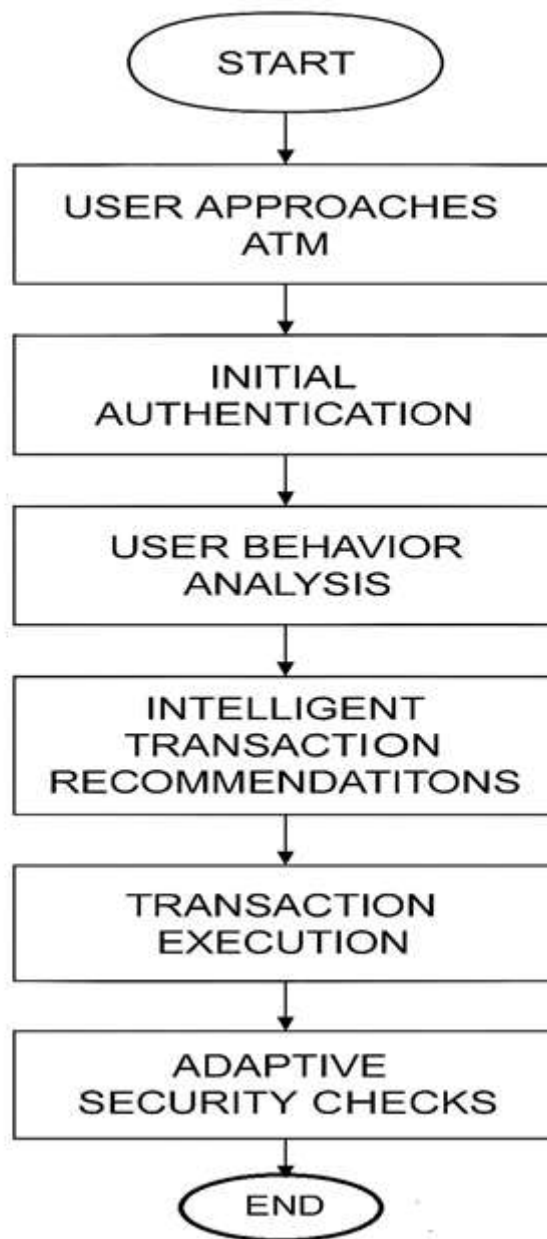
**AI-ENABLED ATM FOR INTELLIGENT TRANSACTION
MANAGEMENT AND ENHANCED SECURITY**

The present invention relates to an Artificial Intelligence (AI) enabled Automated Teller Machine (ATM) system configured to provide intelligent transaction management, adaptive security, and predictive maintenance. The system comprises a user interface including a touchscreen, keypad, biometric input devices and display; an AI-enabled core system with one or more processors and trained machine learning models; an initial authentication module adapted to perform multi-layer authentication using biometric, behavioural, and fallback methods; a behaviour analysis module configured to evaluate real-time user activity against historical transaction data; a transaction module comprising a logical sub-module for AI-driven preparation and predictive recommendation of transactions, and an execution sub-module for secure transaction processing; a security monitor configured to detect anomalies and fraudulent activity using AI-based models; and a communication interface for interaction with a bank server. The system operates by authenticating the user, analyzing behaviour, generating predictive transaction suggestions, executing secure transactions and performing adaptive post-transaction security checks. In addition, the invention incorporates predictive maintenance by monitoring operational parameters, identifying potential faults, and initiating corrective actions proactively. The invention thereby delivers an intelligent ATM platform capable of adaptive security, real-time fraud detection, personalized interaction, and enhanced operational reliability.

Fig 2

Appl No. -

Sheet 1 of 2



Detailed Flowchart

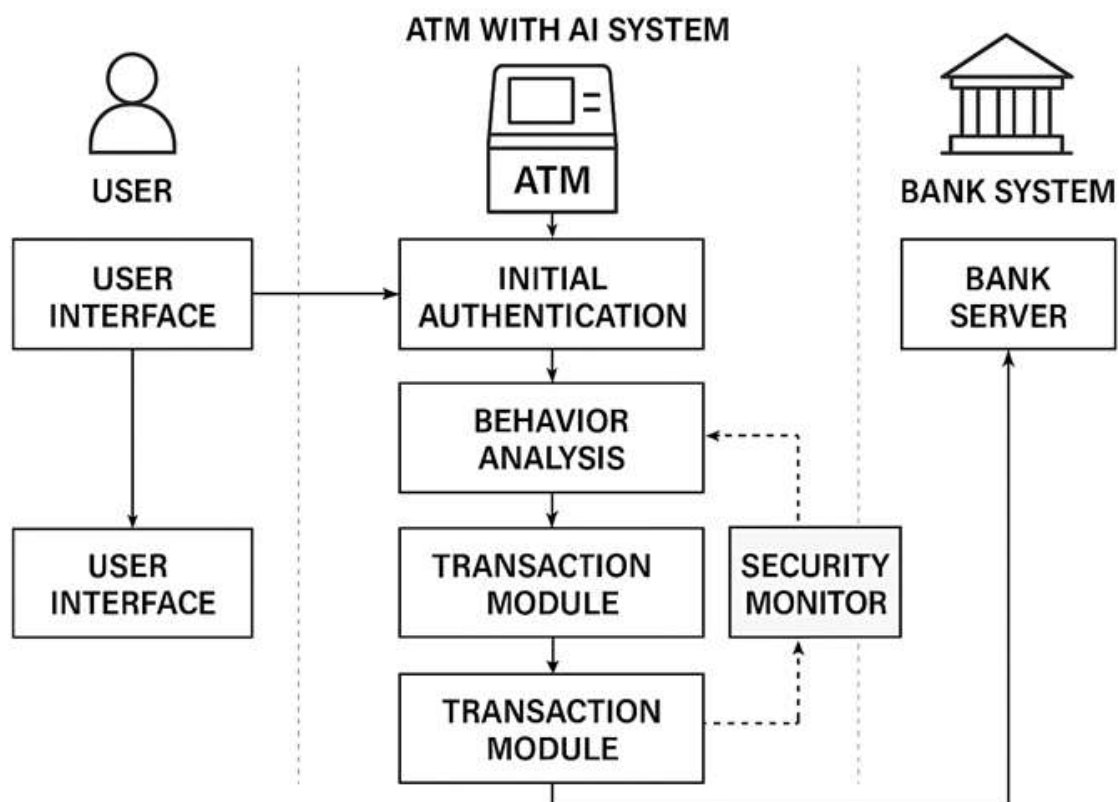
Figure 1

Sudarshana

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Appl No. -

Figure 2 of 2



Detailed Architecture

Figure 2

Sudarshana

Sudarshana Bandyopadhyay
Regn No.: IN/PA 2802
Agent for the Applicants

FORM 5
THE PATENTS ACT, 1970
(39 of 1970)
&
THE PATENTS RULES, 2003

Declaration as to Inventorship
[See section 10(6) and rule 13(6)]

1. NAME OF APPLICANT: SRJX RESEARCH AND INNOVATION LAB LLP,

hereby declare that the true and first inventor(s) of the invention disclosed in the complete specification filed in pursuance of our application numbered _____ dated 25 September 2025 are:

2. INVENTORS:

- I.** a) Name: **DR SOUMYA RANJAN JENA**
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Dated this 25th day of September 2025



Name of the signatory:

Signature Not Verified

Digitally Signed.
Name: Sudarshana
Bandyopadhyay
Date: 25-Sep-2025 22:23:10
Reason: Patent Filing

Dated this 25th day of September 2025

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Email: bandyopadhyay.sudarshana@gmail.com

Phn No: 9748818235

To,
The Controller of Patents,
The Patent Office
At Kolkata

UDYAM REGISTRATION CERTIFICATE

UDYAM REGISTRATION NUMBER

UDYAM-OD-07-0095836

NAME OF ENTERPRISE

SRJX RESEARCH AND INNOVATION LAB LLP

TYPE OF ENTERPRISE *

SNo.	Classification Year	Enterprise Type	Classification Date
1	2025-26	Micro	16/08/2025

MAJOR ACTIVITY

SERVICES

SOCIAL CATEGORY OF
ENTREPRENEUR

GENERAL

NAME OF UNIT(S)

S.No.	Name of Unit(s)
1	SRJX RESEARCH AND INNOVATION LAB LLP

OFFICAL ADDRESS OF ENTERPRISE

Flat/Door/Block No.	PLOT NO-3E/474	Name of Premises/ Building	SECTOR-9
Village/Town	CDA CUTTACK	Block	NA
Road/Street/Lane	Avinab Bidanasi	City	Cuttack Sadar
State	ODISHA	District	CUTTACK , Pin 753014
Mobile	9090255155	Email:	soumyajena1989@gmail.com

DATE OF INCORPORATION /
REGISTRATION OF ENTERPRISE

05/05/2025

DATE OF COMMENCEMENT OF
PRODUCTION/BUSINESS

05/05/2025

NATIONAL INDUSTRY
CLASSIFICATION CODE(S)

SNo.	NIC 2 Digit	NIC 4 Digit	NIC 5 Digit	Activity
1	72 - Scientific research and development	7210 - Research and experimental development on natural sciences and engineering	72100 - Research and experimental development on natural sciences and engineering	Services

DATE OF UDYAM REGISTRATION

16/08/2025

* In case of graduation (upward/reverse) of status of an enterprise, the benefit of the Government Schemes will be availed as per the provisions of Notification No. S.O. 2119(E) dated 26.06.2020 issued by the M/o MSME.

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Digitally Signed
Name: Sudarshana Bandyopadhyay
Date: 25-Sep-2025 22:31:13
Reason: Patent Filing

For any assistance, you may contact:

1. District Industries Centre: CUTTACK (ODISHA)

2. MSME-DFO: CUTTACK (ODISHA)

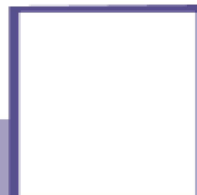
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Udyam Registration Number : UDYAM-OD-07-0095836

Type of Enterprise	MICRO	Major Activity	Services
Type of Organisation	Limited Liability Partnership	Name of Enterprise	SRJX RESEARCH AND INNOVATION LAB LLP
Owner Name	SRJX RESEARCH AND INNOVATION LAB LLP	PAN	AFPF54480L
Do you have GSTIN	No	Mobile No.	9090255155
Email Id	soumyajena1989@gmail.com	Social Category	General
Gender	Male	Specially Abled(DIVYANG)	No
Date of Incorporation	05/05/2025	Date of Commencement of Production/Business	05/05/2025

Bank Details

Bank Name	IFS Code	Bank Account Number
Punjab national bank	PUNB0787800	7878002100002490

Employment Details

Male	Female	Other	Total
3	2	0	5

Investment in Plant and Machinery OR Equipment (in Rs.)

S.No.	Financial Year	Enterprise Type	Written Down Value (WDV)	Exclusion of cost of Pollution Control, Research & Development and Industrial Safety Devices	Net Investment in Plant and Machinery OR Equipment[(A)-(B)]	Total Turnover (A)	Export Turnover (B)	Net Turnover [(A)-(B)]	Is ITR Filled?	ITR Type
1	2023-24	Micro	0.00	0.00	0.00	0.00	0.00	0.00	No	NA

Unit(s) Details

SN	Unit Name	Flat	Building	Village/Town	Block	Road	City	Pin	State	District
1	SRJX RESEARCH AND INNOVATION LAB LLP	PLOT NO-3E/474	SECTOR-9	CDA CUTTACK	NA	Avinab Bidanasi	Cuttack Sadar	753014	ODISHA	CUTTACK

Official address of Enterprise

Flat/Door/Block No.	PLOT NO-3E/474	Name of Premises/ Building	SECTOR-9
Village/Town	CDA CUTTACK	Block	NA
Road/Street/Lane	Avinab Bidanasi	City	Cuttack Sadar
State	ODISHA	District	CUTTACK , Pin : 753014
Mobile	9090255155	Email:	soumyajena1989@gmail.com
Latitude	20.5021859203546	Longitude:	85.88860428847029

National Industry Classification Code(S)

SNo.	Nic 2 Digit	Nic 4 Digit	Nic 5 Digit	Activity
1	72 - Scientific research and development	7210 - Research and experimental development on natural sciences and engineering	72100 - Research and experimental development on natural sciences and engineering	Services

Are you interested to get registered on Government e-Market (GeM) Portal	No
Are you interested to get registered on TReDS Portals(one or more)	No
Are you interested to get registered on National Career Service(NCS) Portal	No
Are you interested to get registered on NSIC B2B Portal	No
Are you interested in availing Free .IN Domain and a business email ID	N/A
Are you interested in getting registered on Skill India Digital Portal	No
District Industries Centre	CUTTACK (ODISHA)
MSME-DFO	CUTTACK (ODISHA)
Date of Udyam Registration	16/08/2025
Date of Printing	16/08/2025

IEC Details	
IEC Number	
IEC Status	Inactive
IEC Registration Date	
IEC Modification Date	

"FORM 1 THE PATENTS ACT 1970 (39 of 1970) and THE PATENTS RULES, 2003 APPLICATION FOR GRANT OF PATENT (See section 7, 54 and 135 and sub-rule (1) of rule 20)				(FOR OFFICE USE ONLY)	
				Application No.	
				Filing date:	
				Amount of Fee paid:	
				CBR No:	
				Signature:	
1. APPLICANT'S REFERENCE / IDENTIFICATION NO. (AS ALLOTTED BY OFFICE)					
2. TYPE OF APPLICATION [Please tick (✓) at the appropriate category]					
Ordinary (✓)		Convention ()		PCT-NP ()	
Divisional ()	Patent of Addition ()	Divisional ()	Patent of Addition ()	Divisional ()	Patent of Addition ()
3A. APPLICANT(S)					
Name in Full		Nationality	Country of Residence	Address of the Applicant	
SRJX RESEARCH AND INNOVATION LAB LLP		Indian	India	SRJX RESEARCH AND INNOVATION LAB LLP, Plot No - 3E/474, Sector-9, CDA, Post- Markat Nagar, Cuttack- 753014, Odisha, India	
3B. CATEGORY OF APPLICANT [Please tick (✓) at the appropriate category]					
Natural Person ()		Other than Natural Person			
		Small Entity (✓)	Startup ()	Others ()	
4. INVENTOR(S) [Please tick (✓) at the appropriate category]					
Are all the inventor(s) same as the applicant(s) named above?		Yes ()		No (✓)	

If “No”, furnish the details of the inventor(s)			
Name in Full	Nationality	Country of Residence	Address of the Inventor
DR SOUMYA RANJAN JENA	Indian	India	Plot No - 3E/474, Sector-9, CDA, Post-Markat Nagar, Cuttack-753014, Odisha, India
MR SANJOY SAHA	Indian	India	63/1, Thakur Para Road, P.O.- Naihati, North 24 Parganas, West Bengal-743165, India
DR SOHIT AGARWAL	Indian	India	D 388, Sarvanand Marg, Malviya Nagar, Jaipur-302017, Rajasthan, India
5. TITLE OF THE INVENTION			
AI-ENABLED ATM FOR INTELLIGENT TRANSACTION MANAGEMENT AND ENHANCED SECURITY ACCIDENT PREVENTION			
6. AUTHORISED REGISTERED PATENT AGENT(S)	IN/PA No.	2802	
	Name	Sudarshana Bandyopadhyay	
	Mobile No.	9748818235	
7. ADDRESS FOR SERVICE OF APPLICANT IN INDIA	Name	SUDARSHANA BANDYOPADHYAY	
	Postal Address	Ground Floor, S-456, LGF, Greater Kailash – II, New Delhi – 110048, India	
	Telephone No.	NA	
	Mobile No.	97488 18235	
	Fax No.	NA	
	E-mail ID	bandyopadhyay.sudarshana@gmail.com	
8. IN CASE OF APPLICATION CLAIMING PRIORITY OF APPLICATION FILED IN CONVENTION COUNTRY, PARTICULARS OF CONVENTION APPLICATION			

Country	Application Number	Filing date	Name of the applicant	Title of the invention	IPC (as classified in the convention country)
N.A.					
9. IN CASE OF PCT NATIONAL PHASE APPLICATION, PARTICULARS OF INTERNATIONAL APPLICATION FILED UNDER PATENT CO-OPERATION TREATY (PCT)					
International application number			International filing date		
10. IN CASE OF DIVISIONAL APPLICATION FILED UNDER SECTION 16, PARTICULARS OF ORIGINAL (FIRST) APPLICATION					
Original (first) application No.			Date of filing of original (first) application		
N.A.					
11. IN CASE OF PATENT OF ADDITION FILED UNDER SECTION 54, PARTICULARS OF MAIN					
Main application/patent No.			Date of filing of main application		
N.A.			N.A.		
12. DECLARATIONS					
(i) Declaration by the inventor(s) (In case the applicant is an assignee: the inventor(s) may sign herein below or the applicant may upload the assignment or enclose the assignment with this application for patent or send the assignment by post/electronic transmission duly authenticated within the prescribed period). We, the above-named inventor(s) is/are the true & first inventor(s) for this Invention and declare that the applicant(s) herein is/are my/our assignee or legal representative. (a) Date: (b) Signature: (c) Name: Dr Soumya Ranjan Jena (a) Date (b) Signature(s): (c) Name: Mr Sanjoy Saha (a) Date: (b) Signature: (c) Name: Dr Sohit Agarwal					

(ii) Declaration by the applicant(s) in the convention country

(In case the applicant in India is different than the applicant in the convention country: the applicant in the convention country may sign herein below or applicant in India may upload the assignment from the applicant in the convention country or enclose the said assignment with this application for patent or send the assignment by post/electronic transmission duly authenticated within the prescribed period)

I/We, the applicant(s) in the convention country declare that the applicant(s) herein is/are my/our assignee or legal representative. – **N.A.**

- (a) Date
- (b) Signature(s)
- (c) Name(s) of the signatory

(iii) Declaration by the applicant

We the applicant hereby declare that: -

- ☒ We are in possession of the above-mentioned invention.
- ☒ The complete specification relating to the invention is filed with this application.
- ☐ The invention as disclosed in the specification uses the biological material from India and the necessary permission from the competent authority shall be submitted by me/us before the grant of patent to me/us.
- ☒ There is no lawful ground of objection(s) to the grant of the Patent to us.
- ☐ We are the true & first inventor(s).
- ☒ We are the assignee or legal representative of true & first inventor(s).
- ☐ The application or each of the applications, particulars of which are given in Paragraph-8, was the first application in convention country in respect of my invention(s).
- ☐ We claim the priority from the above mentioned application(s) filed in convention country/countries and state that no application for protection in respect of the invention had been made in a convention country before that date by us or by any person from which I derive the title.
- ☐ Our application in India is based on international application under Patent Cooperation Treaty (PCT) as mentioned in Paragraph-9.
- ☐ The application is divided out of my /our application particulars of which is given in Paragraph-10 and pray that this application may be treated as deemed to have been filed on DD/MM/YYYY under section 16 of the Act.
- ☐ The said invention is an improvement in or modification of the invention particulars of which are given in Paragraph-11.

13. FOLLOWING ARE THE ATTACHMENTS WITH THE APPLICATION

(a) Form 2

<i>Item</i>	<i>Details</i>	<i>Fee</i>	<i>Remarks</i>
Complete/ provisional specification	No. of pages: 11	1600	Including Form 2, description,
No. of Claim(s)	No. of Claims = 11 No. of Pages = 3	-	Claim pages
Abstract	1		Abstract page
No. of Drawing(s)	No. of drawings = 2 and No. of pages = 2		Drawing sheets

In case of a complete specification, if the applicant desires to adopt the drawings filed with his provisional specification as the drawings or part of the drawings for the complete specification under rule 13(4), the number of such pages filed with the provisional specification are required to be mentioned here.

- b. Form 3: Statement and Undertaking
- c. Form 5: Declaration as to inventorship
- d. Power of Attorney
- e. Form 28
- f. Form 9

Total fee ₹1920/- is being paid online through electronic portal

We hereby declare that to the best of our knowledge, information and belief the fact and matters stated herein are correct and we request that a patent may be granted to us for the said invention.

Dated this 25th day of September 2025.

Signature:



Name: Sudarshana Bandyopadhyay

(Regn No: IN/PA 2802)

Agent for the Applicant

Phn no.: 97488 18235

email: bandyopadhyay.sudarshana@gmail.com

To,
The Controller of Patents
The Patent Office,
at Kolkata

FORM 28
THE PATENTS ACT,
1970 (39 of 1970)

AND

THE PATENTS
RULES, 2003

TO BE SUBMITTED BY A SMALL ENTITY /STARTUP/EDUCATIONAL
INSTITUTION

[See rules 2 (fa), 2(fb), 2(ca) and 7]

1	Name, address and nationality.	We, SRJX RESEARCH AND INNOVATION LAB LLP, of the address Plot No - 3E/474, Sector-9, CDA, Post- Markat Nagar, Cuttack-753014, Odisha, India, applicant in respect of the patent application no. _____ dated 25 September 2025 hereby declare that we are a micro entity in accordance with rule 2(fa) and submit the following document as a proof :
2	Documents to be submitted	
	i. For claiming the status of a micro entity:	
	A. For an Indian applicant: Evidence of registration under the Micro, Small and Medium Enterprises Act, 2006 (27 of 2006).	
3	To be signed by the applicant(s) / patentee (s) / authorised registered patent agent.	The information provided herein is correct to the best of my/our knowledge and belief. Dated this 25 th day of September 2025
4	Name of the natural person who has signed.	 Signature:

Signature Not Verified

Digitally Signed.
Name: Sudarshana
Bandyopadhyay
Date: 25-Sep-2025 22:31:13
Reason: Patent Filing

	Designation and official seal, if any, of the person who has signed.	Sudarshana Bandyopadhyay Regn. No.: IN/PA 2802 Agent for the applicant Phn No. 9748818235 Email: bandyopadhyay.sudarshana@gmail.com To The Controller of Patents, The Patent Office, At Kolkata
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FORM 9
THE PATENTS ACT, 1970
(39 of 1970)
&
THE PATENTS RULES, 2003
REQUEST FOR PUBLICATION
[See Section 11A(2); Rule 24A]

We, SRJX RESEARCH AND INNOVATION LAB LLP, of the address Plot No - 3E/474, Sector-9, CDA, Post- Markat Nagar, Cuttack-753014, Odisha, India, hereby request for an early publication of our Patent Application No. _____ filed on 25 September 2025 under Section 11A(2) of the Act.

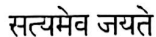
Dated this 25th day of September 2025



Sudarshana Bandyopadhyay
Regn No.: IN/PA 2802
Agent for the Applicants
Email: bandyopadhyay.sudarshana@gmail.com
Phn No: 9748818235

Signature Not Verified

Digitally Signed.
Name: Sudarshana
Bandyopadhyay
Date: 25-Sep-2025 22:28:16
Reason: Patent Filing



Government of National Capital Territory of Delhi

₹100

e-Stamp

Certificate No.	: IN-DL35961746213944X
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Account Reference	: IMPACC (IV)/ dl962703/ DELHI/ DL-ESD
Unique Doc. Reference	: SUBIN-DL96270305293890128756X
Purchased by	: SRJX RESEARCH AND INNOVATION LAB LLP
Description of Document	: Article 48(c) Power of attorney - GPA
Property Description	: Not Applicable
Consideration Price (Rs.)	: 0 (Zero)
First Party	: SRJX RESEARCH AND INNOVATION LAB LLP
Second Party	: ZAINAB SYED AND ASSOCIATES
Stamp Duty Paid By	: SRJX RESEARCH AND INNOVATION LAB LLP
Stamp Duty Amount(Rs.)	: 100 (One Hundred only)



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Statutory Alert:

1. The authenticity of this Stamp certificate should be verified at 'www.shcilestamp.com' or using e-Stamp Mobile App of Stock Holding. Any discrepancy in the details on this Certificate and as available on the website / Mobile App renders it invalid.
2. The onus of checking the legitimacy is on the users of the certificate.
3. In case of any discrepancy please inform the Competent Authority.

Signature Not Verified

Digitally Signed:
Name: Sudarshana
Bandyopadhyay
Date: 25-Sep-2025 22:25:48
Reason: Patent Filing

FORM-26
The Patents Act, 1970
(39 of 1970)
FORM FOR AUTHORIZATION OF A PATENT AGENT/OR ANY PERSON IN A
MATTER OR PROCEEDING UNDER THE ACT
[See Sections 127 and 132; Rule 135]

I, **SRJX RESEARCH AND INNOVATION LAB LLP**, Indian, of the address **SRJX RESEARCH AND INNOVATION LAB LLP, Plot No - 3E/474, Sector-9, CDA, Post- Markat Nagar, Cuttack-753014, Odisha, India**, hereby authorize **Zainab Syed & Associates** having address **3E, Nawab Bhagwanpora, Lal Bazar, Srinagar, Jammu & Kashmir, 190023, India** (**Mobile No.: +91 9748818235, Email: bandyopadhyay.sudarshana@gmail.com**) through **Ms. Sudarshana Bandyopadhyay (IN/PA 2802)** and **Ms. Meenu Sharma (IN/PA-2856)**, registered Indian Patent Agents, to act on our behalf and to further appoint attorney(s)/agent(s) in connection with the filing and prosecution of our patent applications for grant of Letters Patent, filing of request for examination, filing request for amendment, recordal of change of name and address, ownership, change of address of service in India, renewal of patent, recordal of assignments, filing and defending oppositions and infringement actions, restoration of patents, registration of documents and such other actions and all proceedings under the Patents Act, 1970 and the Patent Rules, 2003 and all such proceedings before the Patent Office or the Government of India or any Court in India and all acts and things as the said attorney may deem necessary or expedient in connection therewith or incidental thereto.

We further request that all notices, requisitions and communication relating thereto may be sent to such person/s at the corresponding address mentioned below:

Ground Floor, S-456, LGF, Greater Kailash – II, New Delhi – 110048, India,

(Contact No.: +91 9748818235; Email: bandyopadhyay.sudarshana@gmail.com)

We, hereby, revoke all previous authorizations, if any, in respect of the proceedings.



We, hereby, assent to the action already taken by the said person/s in the above matter.

Dated this 14th day of August, 2025

SRJX RESEARCH AND INNOVATION LAB LLP

Through:

Signature: *Soumya Ranjan Jena*

Name: Dr. Soumya Ranjan Jena

Company
Seal:

SRJX Research and Innovation Lab LLP
LLPIN: ACO-1435

To,
The Controller of Patents,
The Patent Office,
Kolkata



ATTESTED

Notary Public Delhi

16 AUG 2025

FORM 9
THE PATENTS ACT, 1970
(39 of 1970)
&
THE PATENTS RULES, 2003
REQUEST FOR PUBLICATION
[See Section 11A(2); Rule 24A]

We, SRJX RESEARCH AND INNOVATION LAB LLP, of the address Plot No - 3E/474, Sector-9, CDA, Post- Markat Nagar, Cuttack-753014, Odisha, India, hereby request for an early publication of our Patent Application No. _____ filed on 25 September 2025 under Section 11A(2) of the Act.

Dated this 25th day of September 2025



Sudarshana Bandyopadhyay
Regn No.: IN/PA 2802
Agent for the Applicants
Email: bandyopadhyay.sudarshana@gmail.com
Phn No: 9748818235

Signature Not Verified

Digitally Signed.
Name: Sudarshana
Bandyopadhyay
Date: 25-Sep-2025 22:23:10
Reason: Patent Filing

FORM 3 THE PATENTS ACT, 1970 (39 of 1970) and THE PATENTS RULES, 2003 STATEMENT AND UNDERTAKING UNDER SECTION 8 (See section 8; Rule 12)					
1. Name of the applicant(s).			We, SRJX RESEARCH AND INNOVATION LAB LLP, Plot No - 3E/474, Sector-9, CDA, Post-Markat Nagar, Cuttack-753014, Odisha, India hereby declare:		
2. Name, address and nationality of the joint applicant.			(i) that we have not made any application for the same/substantially the same invention outside India Or (ii) that we who have made this application No date 25 th September 2025 alone/ jointly with, made for the same/ substantially same invention, application(s) for patent in the other countries, the particulars of which are given below:		
Name of the country	Date of application	Application No.	Status of the application	Date of publication	Date of grant
N.A.					
3. Name and address of the assignee			(iii) that the rights in the application(s) have been assigned to SRJX RESEARCH AND INNOVATION LAB LLP, Plot No - 3E/474, Sector-9, CDA, Post-Markat Nagar, Cuttack-753014, Odisha, India		

Signature Not Verified

Digitally Signed.
 Name: Sudarshana Bandyopadhyay
 Date: 25-Sep-2025 22:23:10
 Reason: Patent Filing

	that we undertake that upto the date of grant of the patent by the Controller, we would keep him informed in writing the details regarding corresponding applications for patents filed outside India within six months from the date of filing of such application. Dated this 25th day of September 2025
4. To be signed by the applicant or his authorized registered patent agent.	 Signature.
5. Name of the natural person who has signed.	Sudarshana Bandyopadhyay Regn. No.: IN/PA 2802 Agent for the applicant Phn No. 9748818235 Email: bandyopadhyay.sudarshana@gmail.com
	To The Controller of Patents, The Patent Office, at Kolkata
Note.- Strike out whichever is not applicable;	