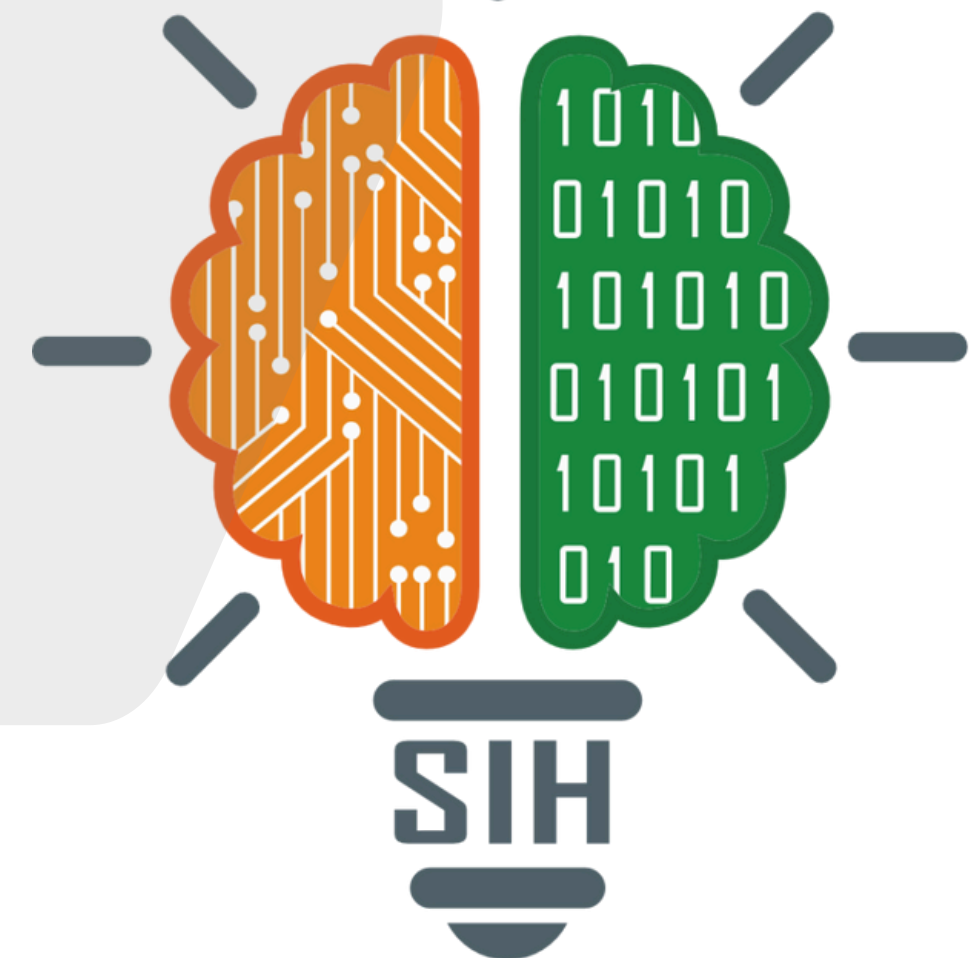


TITLE PAGE

- **Problem Statement ID – 1761**
- **Problem Statement Title–** AI based Customized time slot Delivery of Articles/Parcels " To align with the needs of the modern lifestyles of customers and their expected time of availability at the home or office address where an item needs to be delivered, the time slot can be decided in consultation with the customer based on an AI Driven correspondence system as per demand/request of the Sender or Receiver"
- **Theme–** Transportation & Logistics
- **PS Category–** Software
- **Team ID–**
- **Team Name :** Hawkeye



IDEA TITLE

Idea/solution:

- Create a **website** and **app** with **AI/ML** to optimize delivery time slots based on recipient behavior ,user collected data , historical data ,and traffic.
- Sender & recipient Portal: Select and **Adjust/modify** delivery **time slots**.
- **Real-Time Tracking**: Monitor postman location and estimated delivery time.
- Delivery **notifications via social media** platforms.
- **Incentives**: Based on delivery success rate, timeliness, and customer feedback reward points will be used for **discount** on next parcel.
- **AI Optimization**: Assign routes based on performance and complexity.
- AI Model: Learns from delivery patterns and performance data to **improve** over time.

Uniqueness:

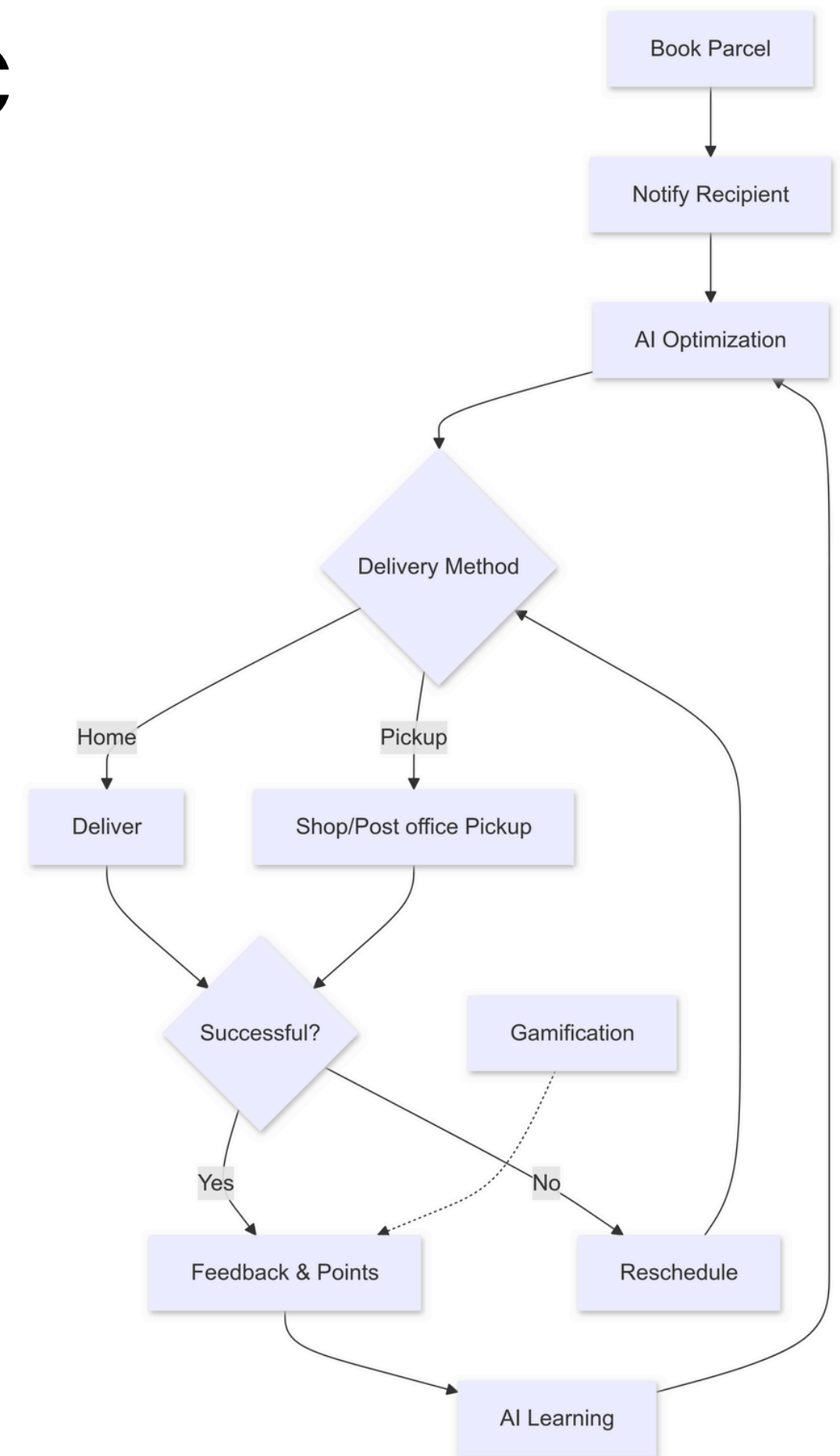
- **AI-Optimized Slots**: Custom delivery times using **AI/ML**.
- **Gamification : Rewards points** and incentives for both Sender & recipient who choose AI suggested time dosen't miss first delivery attempt and chooses off-peak time.
- **Partner with Local Stores** : Utilize local shops or community centers as **pickup points** in exchange they get reward points.
- Flexible Modifications: Sender & recipient can **adjust time** slots.
- Real-Time Tracking: Live **postman location** and delivery time.
- Performance Incentives: **Rewards** for postmen based on performance.
- **Social Media** Integration: Delivery notifications via social media platforms.
- **Multilingual** customer support

TECHNICAL APPROACH

Methodology:

- Time Slot Prediction: Use **Random Forest** for predicting optimal delivery time slots.
- Delivery Route Optimization: Apply **Linear Regression** to optimize delivery routes.
- Failure Prediction: Used **Logistic Regression** to predict potential delivery failures.
- Rescheduling Recommendation: Implement Collaborative Filtering for rescheduling suggestions.
- Postman Performance Incentive: Calculate incentives with **weighted scoring** based on performance metrics.

Tech Stack:



Analysis of the feasibility:

- Data and Cloud Integration: A **feasible** and implementable solution that requires integrating delivery, traffic, and recipient data with cloud infrastructure for scalable AI/ML deployment.
- Operational Efficiency: The system can effectively improve delivery efficiency, but will require implementable training for postmen and real-time coordination with customers.
- **Cost effective solution:** by using local shops as pickup points for parcels we have avoided expensive IoT lockers.
- Customer Satisfaction: Offering flexible, AI-driven delivery time slots is an **implementable solution** that will significantly enhance customer satisfaction, especially for tech-savvy recipients.

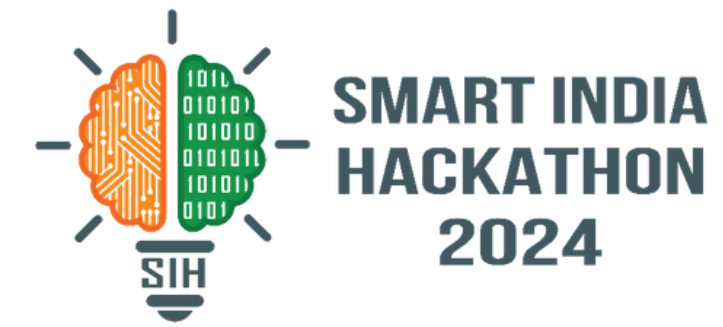
Potential challenges and risks:

- Ensuring accurate and real-time data, especially in rural areas, is challenging.
- Training postmen to use AI-powered tools and real-time coordination systems could face resistance or slow adoption due to lack of familiarity with technology.
- Implementing the system uniformly across diverse regions with varying infrastructure can be difficult.

Strategies for overcoming these challenges:

- Integrate web forms and APIs for real-time data capture; utilize cloud services to gather and process data efficiently.
- Develop online training modules and **user-friendly web** interfaces to assist postmen with the new system.
- Use scalable cloud services for web hosting and data management; ensure the system is designed to handle varying loads across regions.
- Design an intuitive web interface; provide online tutorials and customer support to assist users in navigating the new system.

IMPACT AND BENEFITS



Impact:

- Enhanced Customer Experience: Offers **flexible delivery times** and **notifications** via social media, tailored to recipient preferences.
- **Increased Delivery Efficiency**: Utilizes AI for optimized routing and scheduling, integrating real-time tracking and dynamic updates.
- **Reduced Failed Deliveries**: Gamification and performance **incentives** improve first-attempt delivery success and minimize returns.
- **Improved Postman Performance**: Rewards based on performance and customer feedback, with additional incentives for using local pickup points and optimal delivery choices.

Benefits:

- **Customer Satisfaction**: Enhanced with personalized delivery scheduling, real-time updates, and social media notifications.
- **Increased revenue of post department**, as both sender and receiver utilize their reward points again to send a parcel.
- **Operational Efficiency**: Improved through optimized routes, gamification incentives, and strategic partnerships with local stores for pickup points.
- **Better Resource Allocation**: Efficiently manages postman workload with performance-based incentives and AI-driven route updates.

- Title: "A random forest approach for predicting online buying behavior of Indian customers" –
Link: <https://www.sciencedirect.com/science/article/abs/pii/S0957417415001839>
- Title: "A linear regression based routing algorithm for urban traffic networks"
Link: <https://www.sciencedirect.com/science/article/abs/pii/S0968090X18301062>
- Real-time logistics with RFID: A review of applications"
Link: <https://www.sciencedirect.com/science/article/abs/pii/S0925527317301680>
- The impact of performance-based logistics on supply chain management"
Link: <https://onlinelibrary.wiley.com/doi/abs/10.1002/j.2158-1592.2007.tb00062.x>