**Application for patent filing**

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| **Date** | **D** | **D** | **M** | **M** | **Y** | **Y** | **Y** | **Y** |
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| Name of the Faculty | : |  |
| Department | : |  |
| Faculty ID Number | : |  |
| Official E-mail ID | : |  |
| Contact no. of all Inventors |  |  |
| Major area of invention | : |  |
| Narrow focus area of invention | : |  |
| **Title of the invention** |  | **IndiaRide: A Secure and Scalable Vehicle Rental Platform Using Microservices and Event-Driven Architecture** |
| Earlier status of research | : |  |
| How different your invention from similar research / others - **Novelty**? | : | **Secure and scalable architecture with real-time notifications.** |
| Possible domain for field application | : | **Transportation, ride-sharing, fleet management.** |
| Possible sector for commercialization | : | **Tourism and Travel, Business Rental, Public Transport Support** |
| Faculty Signature with date | : |  |

**Invention Disclosure Form**

**To be filled by the inventors**

Please provide highly relevant information for details asked below and use consistent language while describing the specific feature or element in the invention disclosure.

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| 1. | **Title of invention**  IndiaRide: A Secure and Scalable Vehicle Rental Platform Using Microservices and Event-Driven Architecture |
| 2. | **Describe the invention**.  IndiaRide is an advanced vehicle rental system designed to connect vehicle owners with renters through a web-based platform. The system leverages a **Microservices Architecture** to ensure scalability, **Event-Driven Mechanisms** for real-time updates, and **Serverless Computing** for cost optimization. The platform enables vehicle owners to list their vehicles, manage availability, and securely process transactions, while users can browse, book, and pay for rentals effortlessly. |
| 3. | Does the invention provide a **new use of or improvement to an existing product or process**?  IndiaRide introduces real-time notifications via Kafka/RabbitMQ, secure payment processing, and an optimized matching algorithm to connect renters with available vehicles more efficiently. Unlike traditional rental systems, IndiaRide enhances security with blockchain-based verification and supports a serverless infrastructure for lightweight, event-triggered processes. |
| 4. | State the **Novelty** of the invention and specify the claims in the invention   * **Microservices-based modular architecture** for independent scalability. * **Event-driven system** enabling real-time updates on vehicle availability and bookings. * **Serverless computing** to optimize operational costs. * **Blockchain-integrated vehicle verification** for enhanced security. * **Multi-database architecture (PostgreSQL & MongoDB)** for structured and unstructured data management. * **Cloud-based deployment with Docker & Kubernetes** for efficient scalability. |
| 5. | Describe the **advantages of the present invention over the existing technologies**   * **Higher security** with blockchain-based verification. * **Lower operational costs** due to serverless functions. * **Scalable infrastructure** supporting high-traffic demands. * **Real-time updates** for bookings, payments, and availability. * **User-friendly interface** built using HTML, CSS, and JavaScript. |
| 6. | Describe how the **present invention overcomes the drawbacks** of currently available technology related to your invention.  IndiaRide eliminates **manual verification delays**, **security vulnerabilities in payments**, and **rigid system structures** found in legacy vehicle rental platforms. By adopting a microservices approach, it allows independent scaling of different system components, reducing downtime and improving efficiency. |
| 7. | Describe **uses, applications and benefits** of the invention.   * **Transportation Industry**: Streamlines vehicle rentals for personal and business use. * **Ride-Sharing & Fleet Management**: Supports dynamic pricing and availability tracking. * **Smart Cities & IoT Integration**: Enables integration with smart transport systems. * **Tourism & Travel**: Offers seamless short-term and long-term rental options. |
| 8. | Does the focus of the invention result in **societal impact technology**?  IndiaRide supports **sustainable mobility** by integrating electric vehicle rentals and encouraging car-sharing models. It meets the **growing demand for flexible transportation**, ensuring **cost-effective mobility solutions** for urban and rural populations. The platform can be commercialized as a **B2B fleet management solution**, **peer-to-peer rental service**, or **subscription-based transport system**. |
| 9. | Characterize the **disadvantages and limitations** of the invention   * **Internet dependency** for real-time operations. * **Initial setup cost** for cloud infrastructure and blockchain integration. * **Regulatory compliance** required for vehicle rental services in different regions. |
| 10. | Enclose the **sketches, drawings, photographs** and other materials that help in better understating/ illustration of the novelty in the invention.    **Fig:** Architecture Diagram |
|  | **Fig:** Website Landing Page |
|  | **Fig:** Website Signup Page |
|  |  |
| 11  . | **Current development status of the invention**   1. Has your invention been tested experimentally   NO   1. Describe the experimental approach of the invention also state the methods adopted in the experiment.   NA   1. Are the experimental data is documented in a formal log or any instrumental confirmation available for the invention (kindly provide the details)   NA   1. Is further development of your invention being necessary or development of the invention is in progress (provide the relevant information)   The frontend website has been completed. |
| 12. | **Please list any of your publications** (including abstracts, posters, news releases, etc.) to emphasize the present invention background.   * [**A RENTAL SYSTEM WITH EVENT-DRIVEN ARCHITECTURE**](https://www.researchgate.net/publication/363541167_A_RENTAL_SYSTEM_WITH_EVENT-DRIVEN_ARCHITECTURE) * [**Online Vehicle Rental System**](https://ijcat.com/archieve/volume11/issue8/ijcatr11081005.pdf) * [**Real-Time Performance Optimization of Travel Reservation Systems Using AI and Microservices**](https://www.researchgate.net/publication/386964248_Real-Time_Performance_Optimization_of_Travel_Reservation_Systems_Using_AI_and_Microservices) |

13. **INVENTOR(S) AND/OR CONTRIBUTOR(S):**

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| --- | --- | --- | --- |
|  | INVENTOR (1) |  | INVENTOR (2) |
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| City and State: | Chennai and Tamil Nadu |  | Chennai and Tamil Nadu |
| Citizenship  (Country): | INDIAN |  | INDIAN |

**14. ASSIGNMENT DETAILS: Assignee is the entity or individual who holds the patent.**

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| --- | --- |
| Signature: (To be signed by the authorized signatory on behalf of the assignee) |  |
| Name of the Authorized Signatory and Designation |  |
| Address: |  |
| City and State: |  |
| Citizenship  (Country): |  |