# **1. Introduction**

Resolving parking congestion, transportation inefficiencies, and commuting difficulties on university campuses is the goal of the Campus Ride-Sharing Platform with Parking System Integration. With digital ID verification for safe access and integration with parking availability data, the system enables staff and students to share rides in real time. The interactions, system boundaries, and external entities that influence the platform's operational environment are listed in this paper.

# **2. Actors and External Entities**

|  |  |  |
| --- | --- | --- |
| Name | Description | Role |
| Student Users | Students who use the platform to offer or request rides within campus. | Primary users; interact via mobile/web app |
| Staff Users | University staff using the platform for commuting or parking information. | Secondary users |
| Campus Parking System | IoT-based system providing real-time parking lot availability data. | Supplies parking status to the platform |
| University Digital ID System | Identity verification system using student/staff digital credentials. | Authenticates users during registration |
| Security Personnel | |  | | --- | |  |  |  | | --- | | Campus authorities managing user verification and safety protocols. | | Monitor and approve new user access |
| Admin Interface | Management dashboard for system administrators. | Manage users, reports, and system settings |

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# **3. System Boundaries**

Inside the System (internal Components):

* Web/mobile front-end interface for students and staff
* Ride matching engine (driver-passenger pairing)
* Parking data integration module
* Digital ID verification module
* Admin panel/dashboard
* Database for user data, trip history, and ride offers

Outside the System (External Systems & Entities):

* University Digital ID Authentication Server
* Campus Parking IoT System
* University Staff and Students (as actors)
* Campus Security System

# **4. System Context Diagram**

Include diagram image (e.g., context diagram or simplified DFD Level 0).

# **5. Interaction Summary**

|  |  |
| --- | --- |
| **Actor / Entity** | **Interaction with System** |
| **Student Users** | Log in using Digital ID, request/offer rides, view parking data, rate other users. |
| **Staff Users** | Similar to student users with added options (e.g., designated staff parking zones). |
| **Campus Parking System** | Sends real-time parking availability data to the system’s integration module. |
| **Digital ID System** | Verifies identity of users during login and registration. |
| **Security Personnel** | Review flagged users, oversee identity authentication, and approve/ban suspicious accounts. |