### User Interface Mockups

We designed basic wireframes for the most essential screens of PackTrack. The UI aims to be simple, clean, and user-friendly with a dashboard-style layout.

Figure 1 shows the login form used by users and admins to access the system. The login process is secured using a JWT-based authentication mechanism, ensuring that access to the dashboards is restricted to logged-in users only.

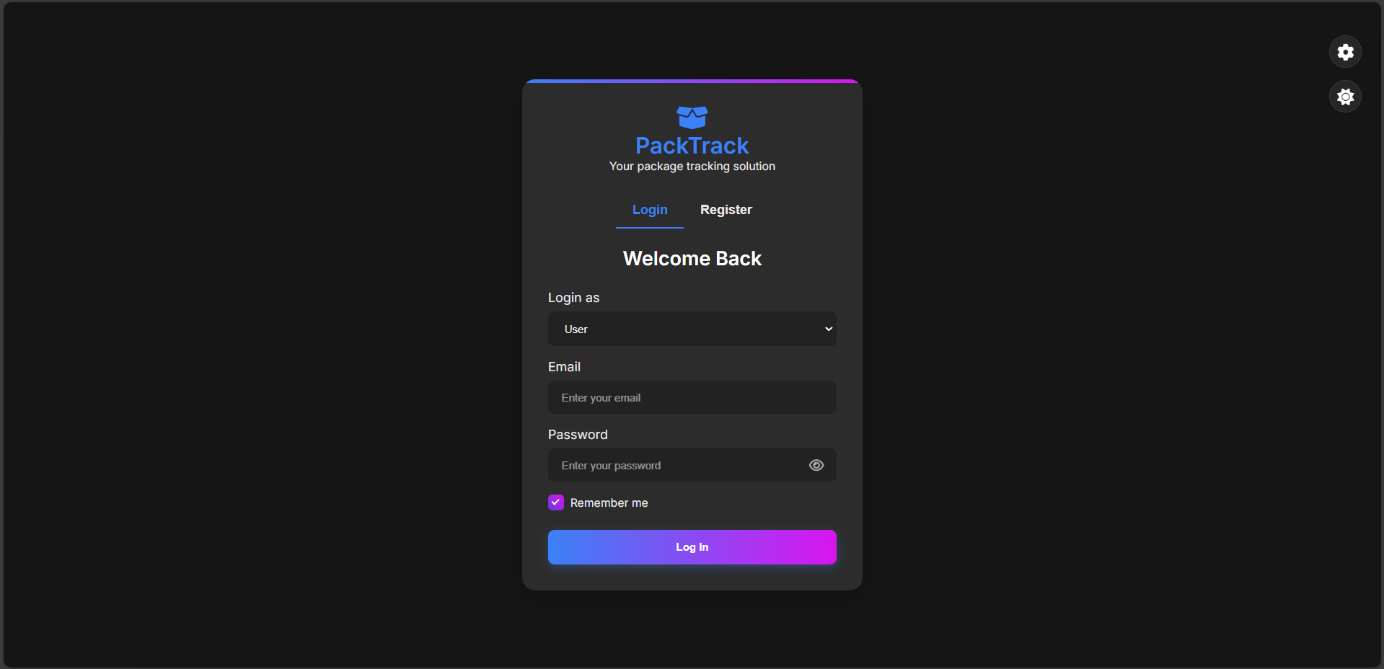


Figure 1 Login Form (JWT-Based Authentication)

Figure 2 displays the registration form. Users can sign up as either a User or an Admin. When selecting Admin, an additional field for Admin Secret Key appears. Only users with this key (provided by system owners or managers) can register as admins.

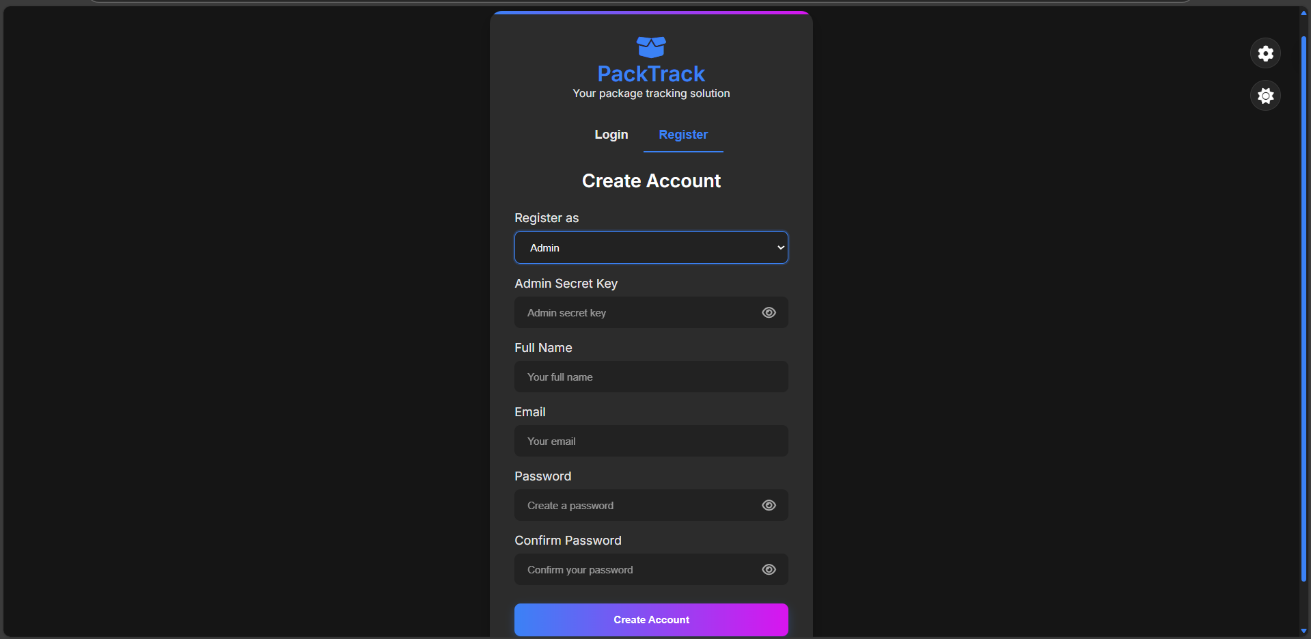


Figure 2 Registration Form with Role-Based Access

Figure 3 illustrates the User Dashboard, accessible exclusively to authenticated users, This dashboard provides an overview of package statuses for the current month, along with interactive data visualizations:

* Package Activity Chart (line chart): Tracks the number of received and delivered packages over a selected period (week, month, or year).
* Package Status Chart (donut chart): Displays the distribution of package statuses, including delivered, in transit, out for delivery, and delayed.

The dashboard also features an Add Delivery Form for submitting new package details and a Delivery Logs Table for tracking past deliveries. A navigation menu ensures seamless interaction with other sections of the application.



Figure 3 User Dashboard

Figures 4 and 5 present the Admin Panel, which is accessible exclusively to authenticated administrators. The panel provides a comprehensive dashboard for managing users, tracking package statuses, and monitoring system performance. Key functionalities include:

* User Management: View registered users, track their last login activity, and manage their accounts.
* System Statistics: Displays key metrics, like total users, total packages, active users, and delayed packages, with percentage-based trend indicators.
* Analytics & Reports: Interactive charts supporting data-driven decision-making.
* Activity Logs: Logs recent user actions, including login timestamps and packages status changes.

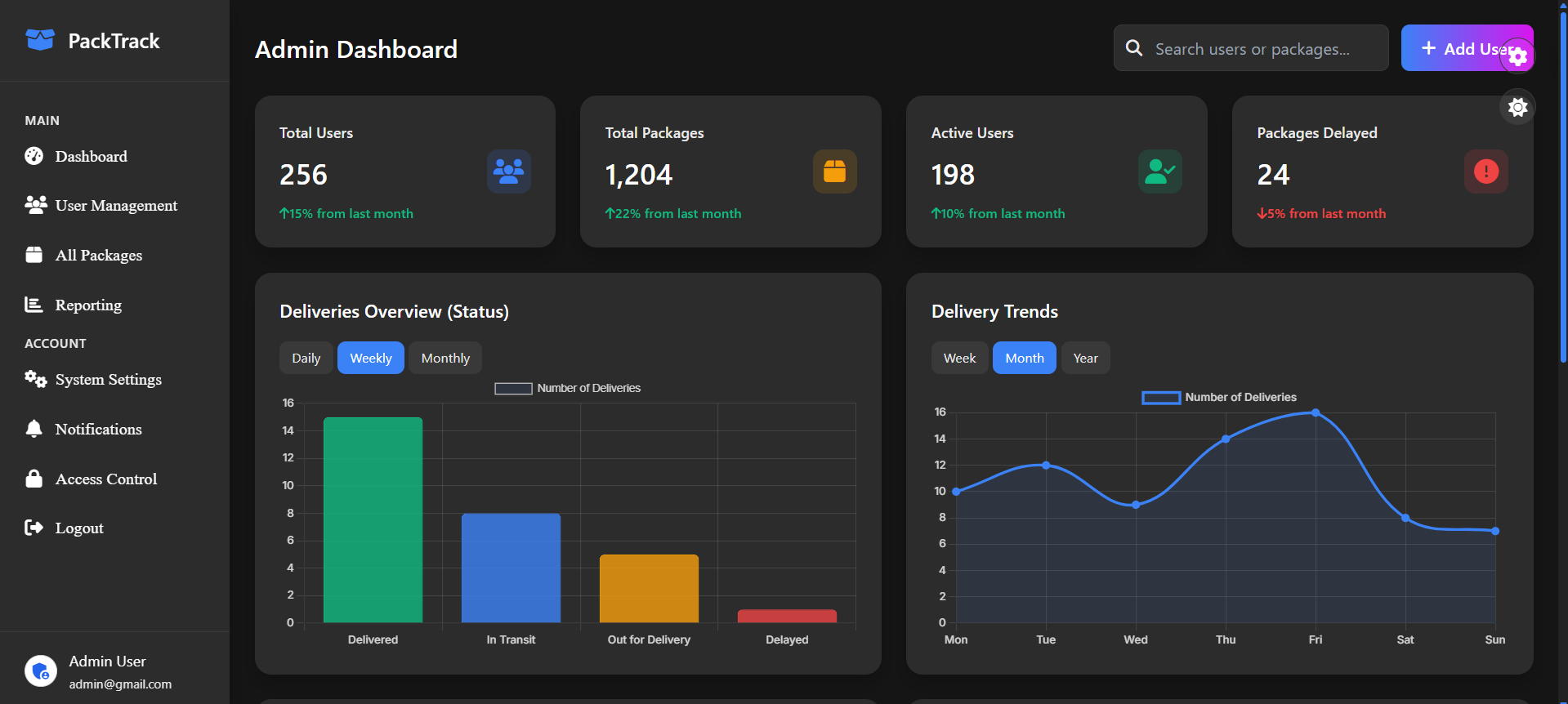


Figure 4: Admin panel Overview

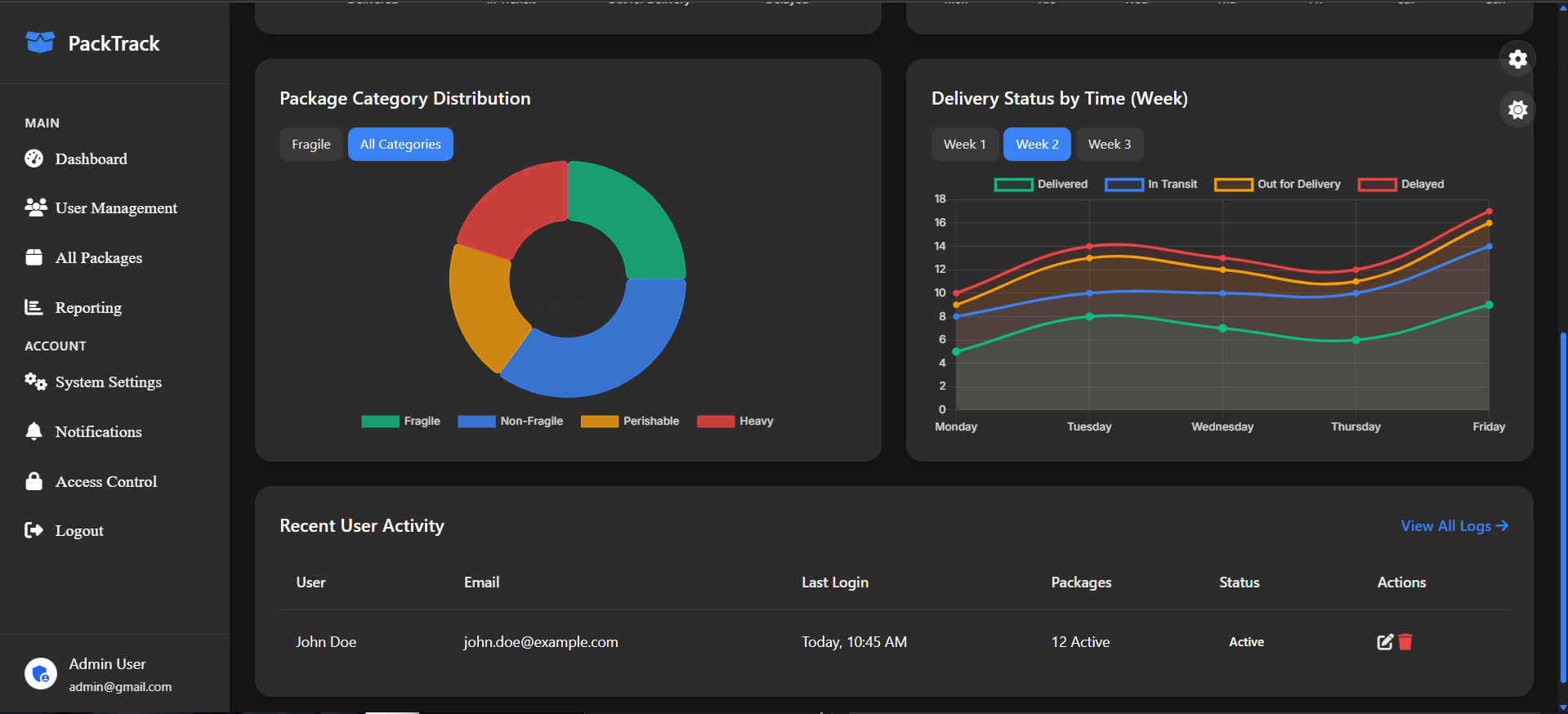


Figure 5 Admin panel User Management & Activity Logs

Figure 6 appears when a user tries to access a protected route without the required permissions (e.g., accessing the admin panel as a regular user). It enforces role-based access control and ensures only authorized users can view sensitive content.

Key Points:

* Security Enforcement: Blocks unauthorized access based on user roles validated through JWT tokens.
* Clear User Feedback: Friendly error message and provides quick navigation to login or dashboard.

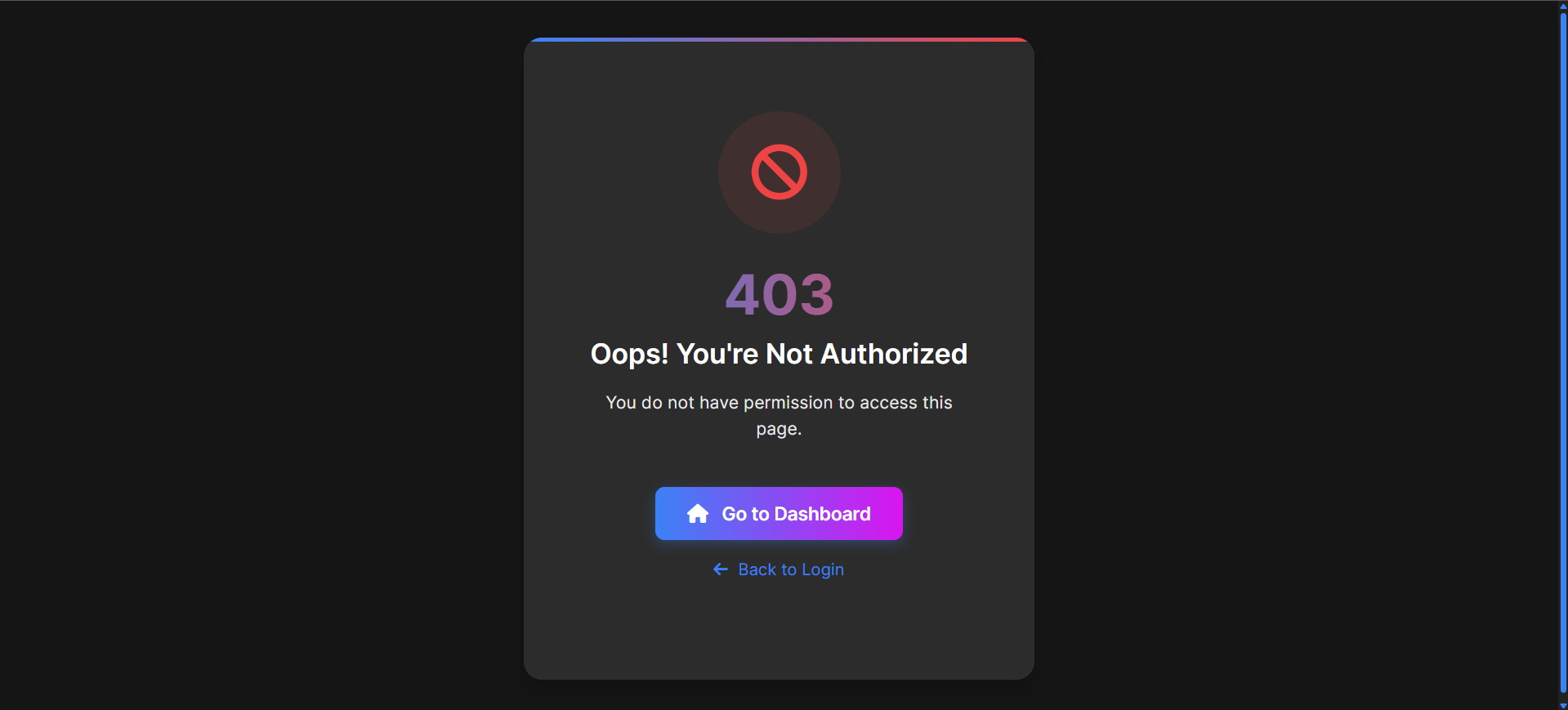


Figure 6 Forbidden Access Page (403)

Figure 7 is displayed when an unexpected issue occurs on the server side, preventing the requested operation from being completed.

Key Points:

* Error Handling: Captures server-side issues and displays an informative error message to users.
* User Experience: Offers options to navigate back to the dashboard or reload the page, ensuring users can recover from errors quickly.
* Security: Does not reveal sensitive server details, protecting the system from potential exploits.

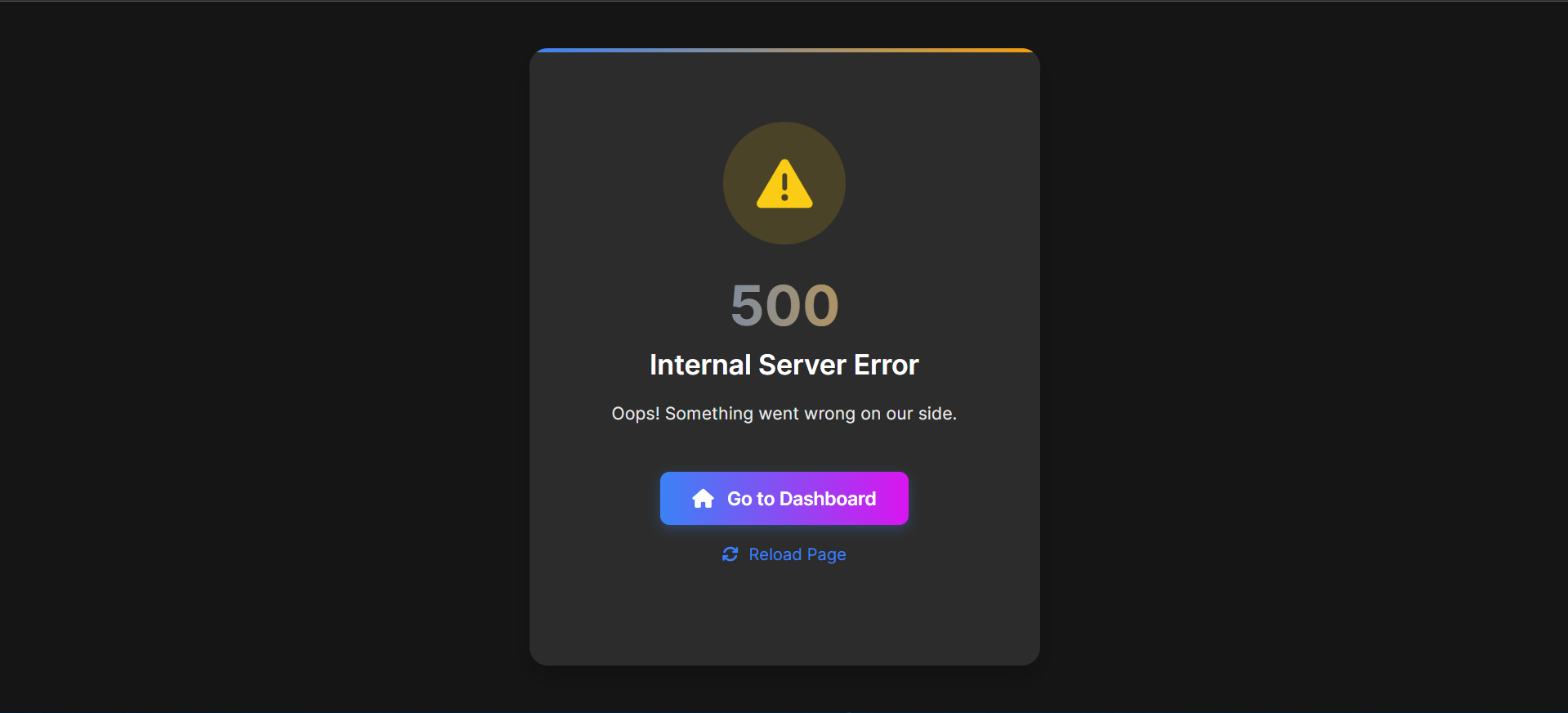


Figure 7 Internal Server Error (500)

Figure 8 enhances the user experience by displaying an animated loading screen during page transitions or while retrieving user data. With dynamic messages and helpful tips, it keeps users informed and engaged, effectively reducing perceived wait time.

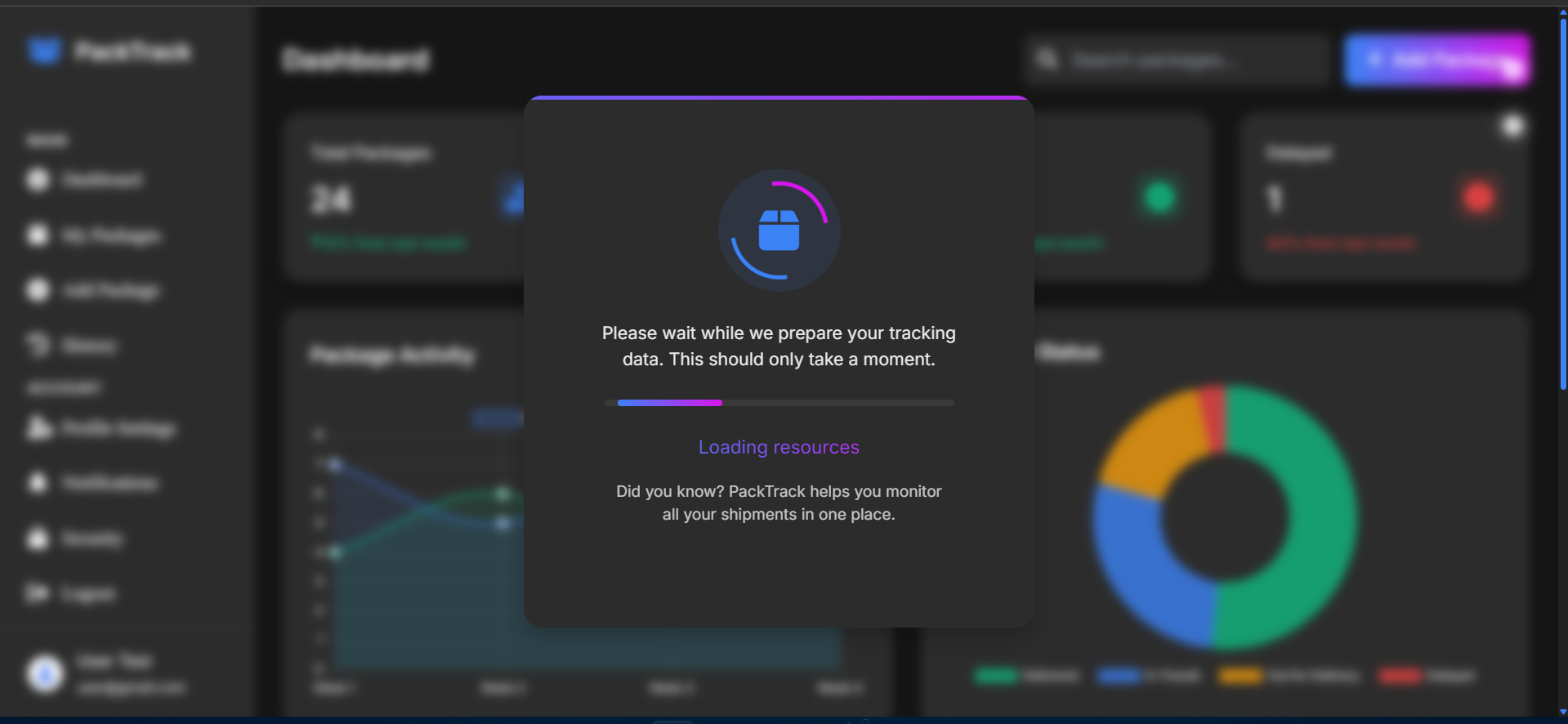


Figure 8 Loading Animation