

**IoT-Vision Enabled Assistant for Epileptic Patients**

**Prototype Report**



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# 1 Introduction

## 1.1 Executive Summary

IoT-Vision Enabled Assistant for Epileptic Patients is an innovative and comprehensive solution that aims to detect, prevent and forecast seizures in real time to improve the lives of epileptic patients. The system uses cameras to monitor patient's activities in real time then send it to cloud server to analyze the data where it detects any abnormal patterns or symptoms that can lead to seizure. The system generates an alert notification if any seizure or its symptoms are detected and send it to its caretakers or family members through mobile and web application.

The main objective is to detect and forecast seizures by utilizing a personalized model technique which improves the accuracy of seizure detection and forecast and reduce false positive rate. System uses machine learning algorithms to learn activities and symptoms of each patient. This personalized model technique enables learning models to identify and understand unique behavioral patterns and triggering activities of each individual patient, which helps in forecasting and improving user's outcome with epileptic disease.

The system has user-friendly and accessible mobile, web and desktop application which provides a high level of flexibility and convenience to patients, their family members and caretakers. The applications are simple to use, interactive and provides real time monitoring which makes it easier for caretakers to give response in case of any emergency. The system is designed to be cost-effective. It provides round -the-clock safety and comfort and assistance only when epileptic patient needs it. Hence, it reduces the burden on caretakers and nursing sector and maintains an independent, comfortable, healthy and private life of epileptic patients.

In conclusion, it is revolutionary system that uses cameras and machine learning algorithms to detect and forecast the seizures. Personalized model technique used in this system helps in improving the accuracy of seizure detection and reduce false positives. The user-friendly and accessible mobile, desktop, and web applications provide a high degree of flexibility and convenience to patients, their family members and caretakers, making it easier for them to respond in case of any emergency hence improves the quality of life of patients and caretakers. Overall this project has potential to make significant impact on the lives of millions of people suffering with epilepsy.

## 2 User Interface

### 2.1 Desktop Application

#### 2.1.1 Splash Screen



FIGURE 1: Splash Screen

TABLE 1: Splash Screen

Tasks	Patient
T1	I shall the view the splash screen on the start of application.

#### 2.1.2 Sign In

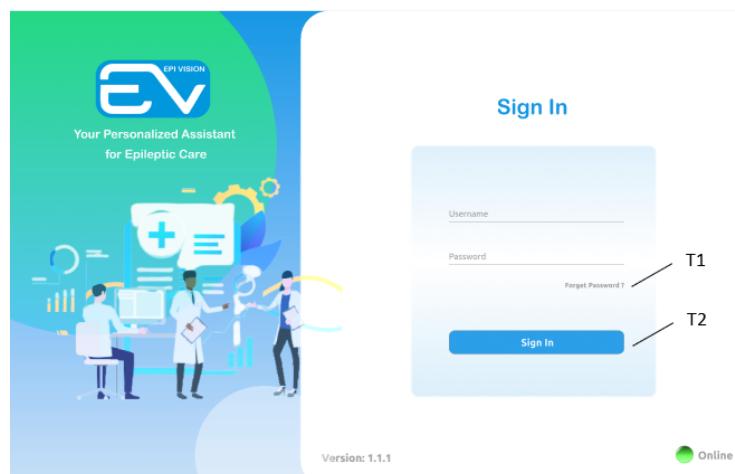


FIGURE 2: Sign In

TABLE 2: Sign In

Tasks	Patient
T1	I shall be able to initiate the account recovery process.
T1	I shall be able to log into my account.

### 2.1.3 Forget Password

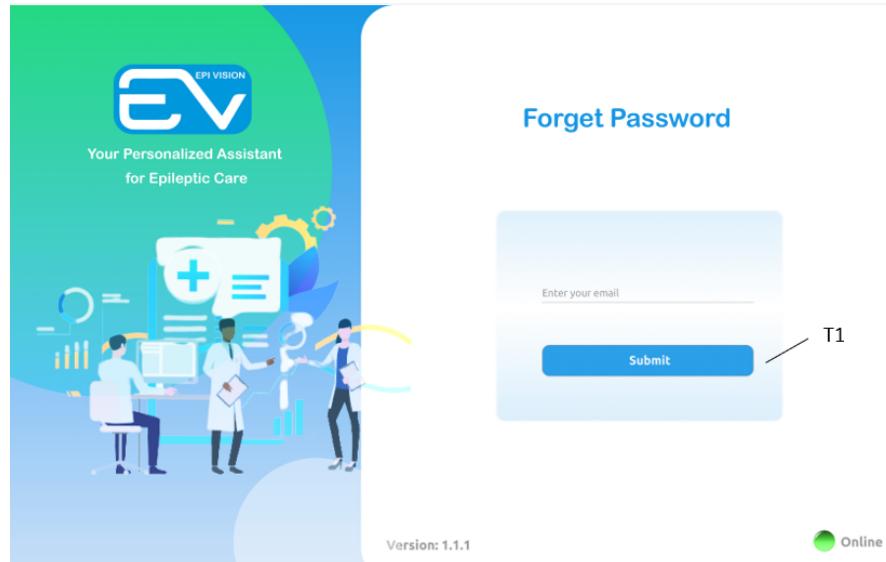


FIGURE 3: Forget Password

TABLE 3: Forget Password

Tasks	Admin	Patient
T1	I shall be able to provide a link through email to reset password.	I shall be able to access a page to update my password.

### 2.1.4 Dashboard



FIGURE 4: Dashboard

TABLE 4: Dashboard

Tasks	Patient
T1	I shall be able to access my profile and log out from the system.
T2	I shall be able to see my all notifications.
T3	I shall be able to see all the statistics related to patients.

### 2.1.5 Stream

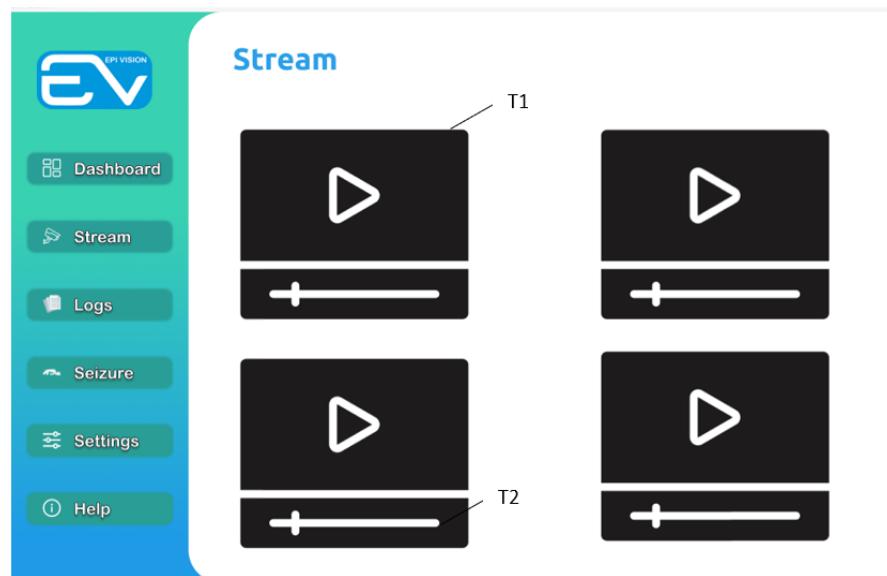


FIGURE 5: Stream

TABLE 5: Stream

Tasks	Patient
T1	I shall be able to visualize all the streams of cameras
T2	I shall be able to control the streams using video controls.

### 2.1.6 Activity Logs



FIGURE 6: Activity Logs

TABLE 6: Activity Logs

Tasks	Patient
T1	I shall be able to search all the logs of patients based on some provided filters.
T2	I shall be able to see all the activities/logs with the timestamps of the patient.

### 2.1.7 Seizure History

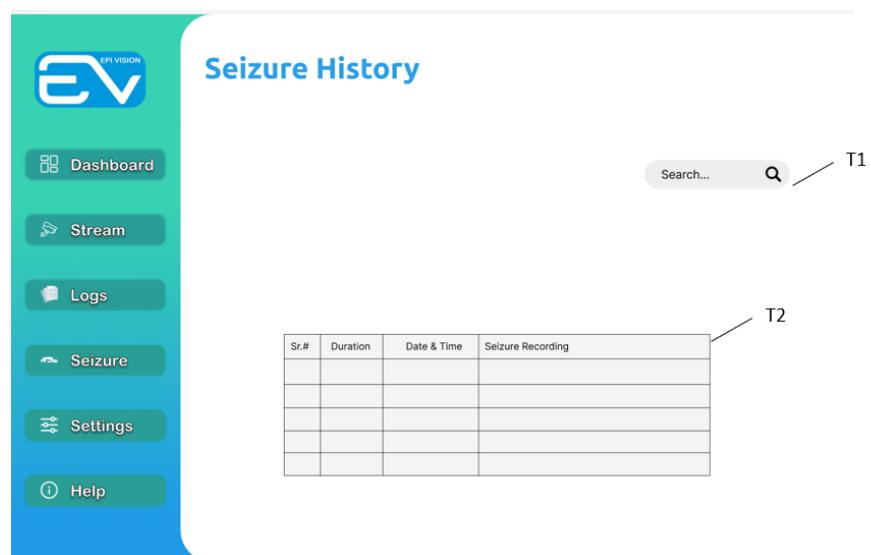


FIGURE 7: Seizure History

TABLE 7: Seizure History

Tasks	Patient
T1	I shall be able to search all the seizures occurred to the patient
T2	I shall see the data including the seizure duration, date and time and seizure recording link if any.

### 2.1.8 Settings

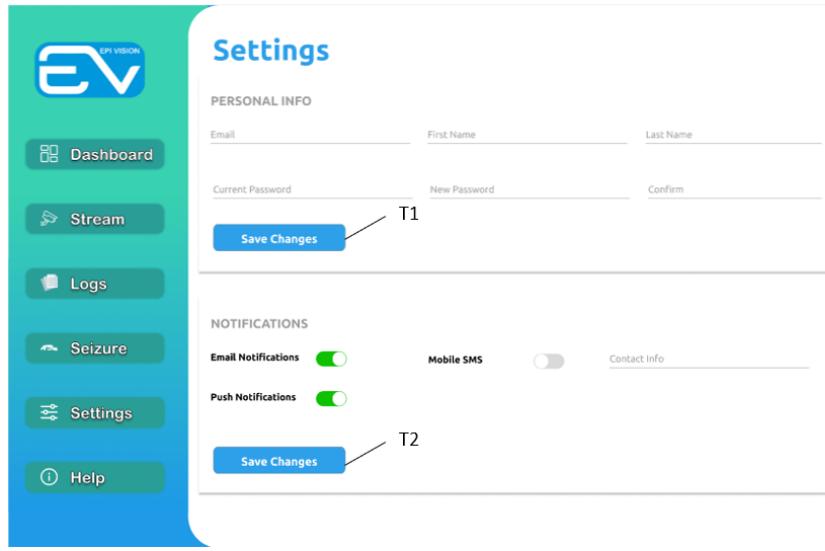


FIGURE 8: Settings

TABLE 8: Settings

Tasks	Patient
T1	I shall be able to update my personal information including change of password, first and last name.
T2	I shall be able to change my notifications settings including email, push, and mobile notifications.

### 2.1.9 Help

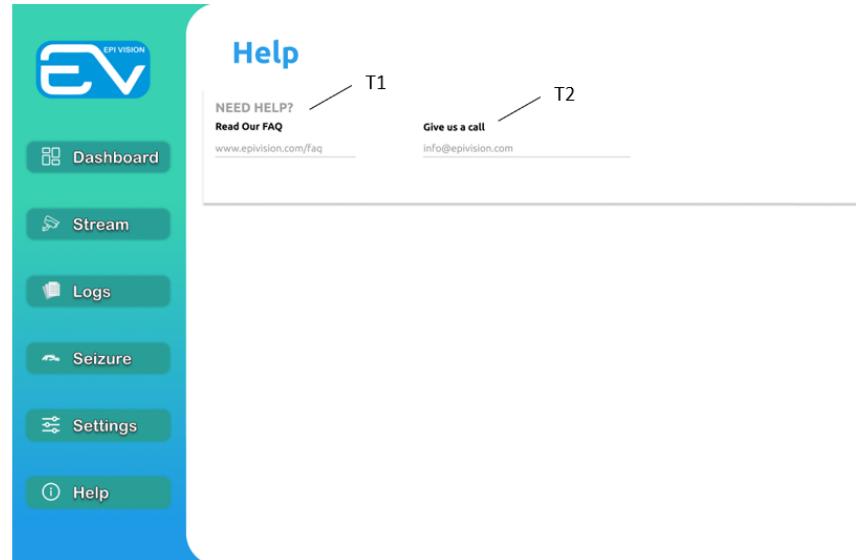


FIGURE 9: Help

TABLE 9: Help

Tasks	Patient
T1	I shall be able to click a link and redirected to a website where all the faqs are listed
T2	I shall able to see a link to your website and your email to contact you.

## 2.2 Web Application

### 2.2.1 Acquisition Portal

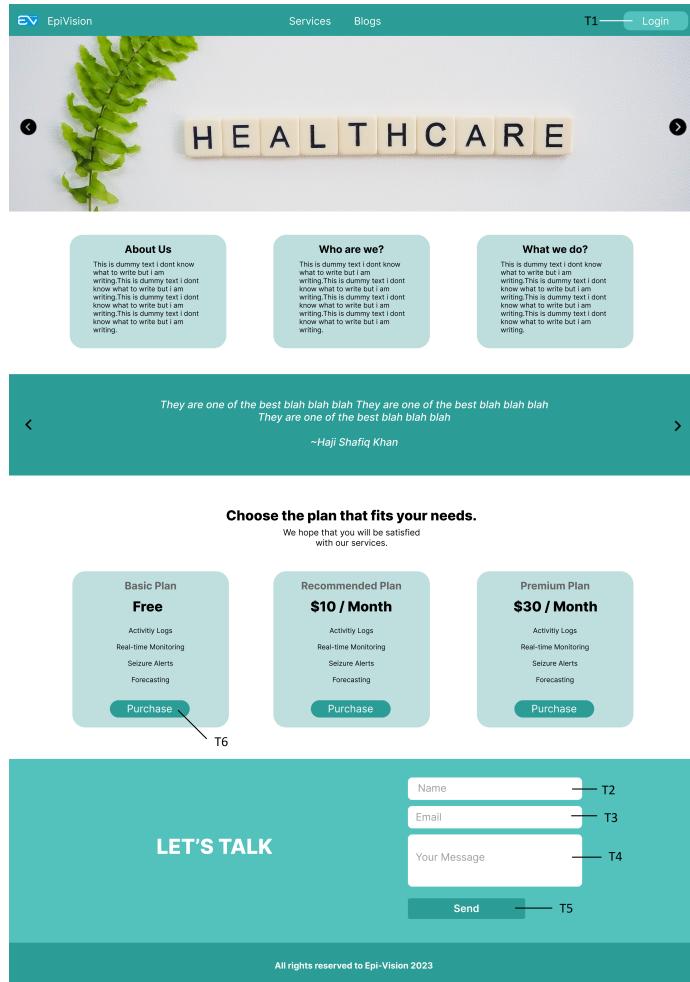


FIGURE 10: Acquisition Portal

TABLE 10: Acquisition Portal

Tasks	Admin	Patient
T1	I shall be able to redirect to the login page.	I shall be able to redirect to the login page.
T2	I shall be able to see a user's name.	I shall be able to write a name.
T3	I shall be able to see a user's email.	I shall be able to write an email.
T4	I shall be able to see a user's message.	I shall be able to write a message.
T5	I shall be able to receive a message from the user.	I shall be able to send a message to the organization.
T6	I shall be able to redirect the user to the sign-up page.	I shall be able to create a new account with the selected plan.

### 2.2.2 Sign Up

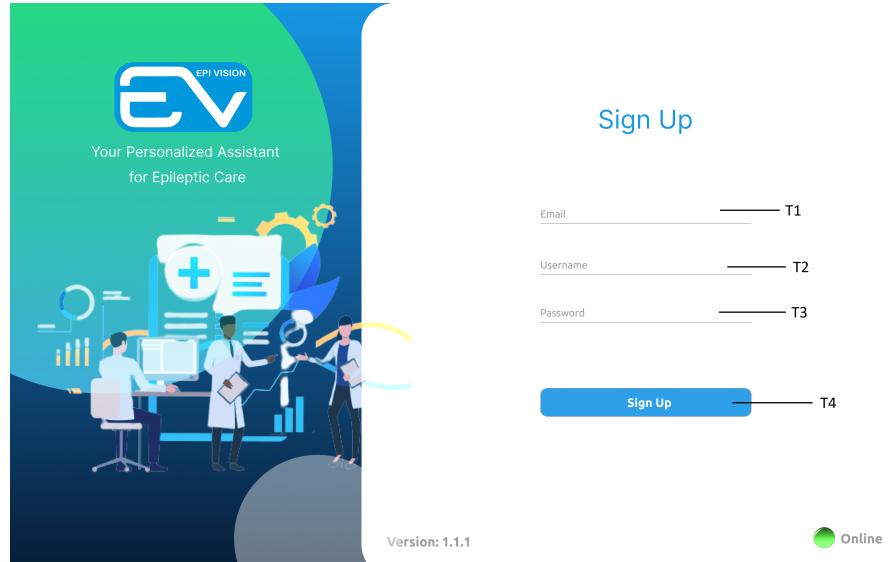


FIGURE 11: Sign Up

TABLE 11: Sign Up

Tasks	Admin	Patient
T1	I shall be able to see a user's email.	I shall be able to write an email.
T2	I shall be able to see a user's username.	I shall be able to write a username.
T3	I shall be able to see a user's hidden password.	I shall be able to write a password.
T4	I shall be able to send an activation link to user by using email services.	I shall be able to create a new account.

### 2.2.3 Sign In

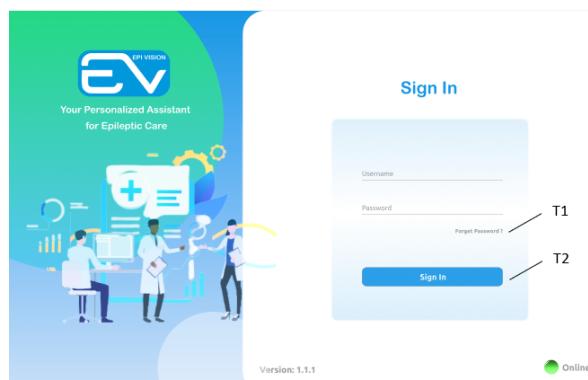


FIGURE 12: Sign In

TABLE 12: Sign In

Tasks	Admin	Patient
T1	I shall be able to navigate to Forget Password screen and reset my password.	I shall be able to access a page to update my password.
T2	I shall be able to sign in to sign in to my account by entering admin credentials.	I shall be able to sign in to sign in to my account by entering patient credentials.

## 2.2.4 Password Recovery

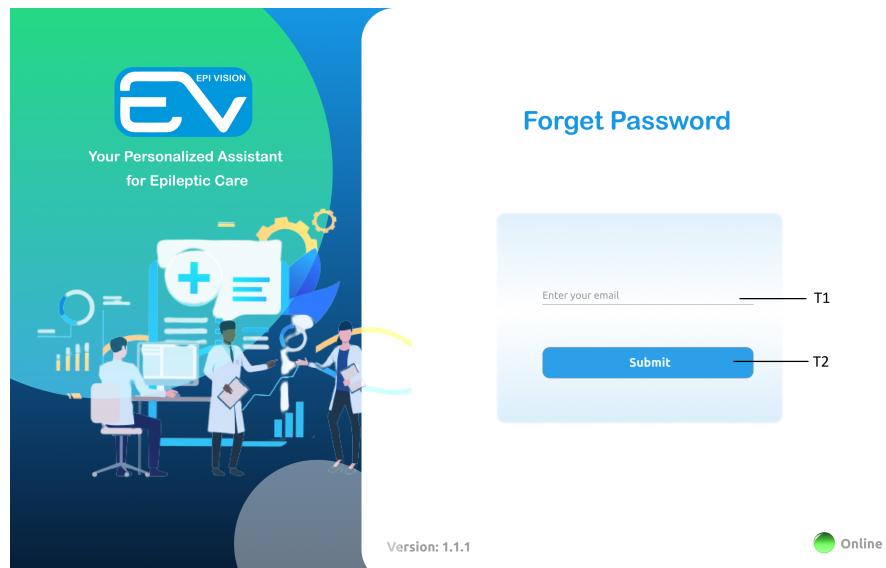


FIGURE 13: Password Recovery

TABLE 13: Password Recovery

Tasks	Admin	Patient
T1	I shall be able to see a user's email.	I shall be able to write an email.
T2	I shall be able to send a password reset link to the user by using email services.	I shall be able to initiate the account recovery process.

### 2.2.5 Checkout

The screenshot shows the EpiVision Web Portal's checkout interface. The top navigation bar includes the logo, 'Services', 'Blogs', and 'Login'. The main content area is divided into several sections: 'Billing Details' (Name, Email, Country, City, Zip/Postal Code), 'Coupon Code' (with a question 'Do you have any coupon code?' and a 'Enter Code' input field with an 'Apply' button), and 'Purchase Summary' (listing Recommended Plan (\$10), Sub Total (\$10), Discount Applied (\$2), and a final Total of \$8). A green 'Checkout' button is located at the bottom left, and a footer note at the bottom center states 'All rights reserved to Epi-Vision 2023'.

FIGURE 14: Checkout in Web Portal

TABLE 14: Checkout

Tasks	Patient
T1	I shall be able to enter my billing details.
T2	I shall be able to checkout with my billing details.
T3	I shall be able to enter coupon details.
T4	I shall be able to apply my coupon code.

### 2.2.6 Stream

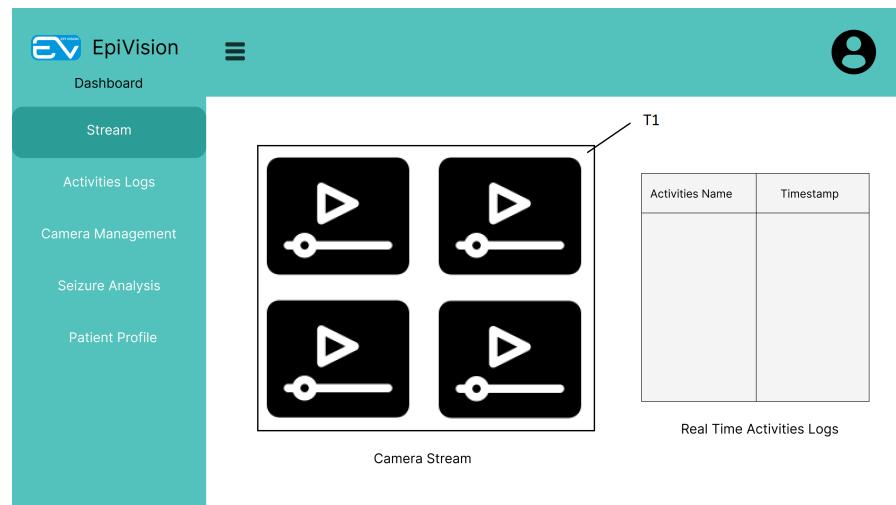


FIGURE 15: Stream in Web Portal

TABLE 15: Stream

<b>Tasks</b>	<b>Admin</b>	<b>Patient</b>
T1	I shall be able to see the activity logs of patient.	I shall be able to select one of the multiple streams coming to the portal and current activity logs.

### 2.2.7 Activity Logs

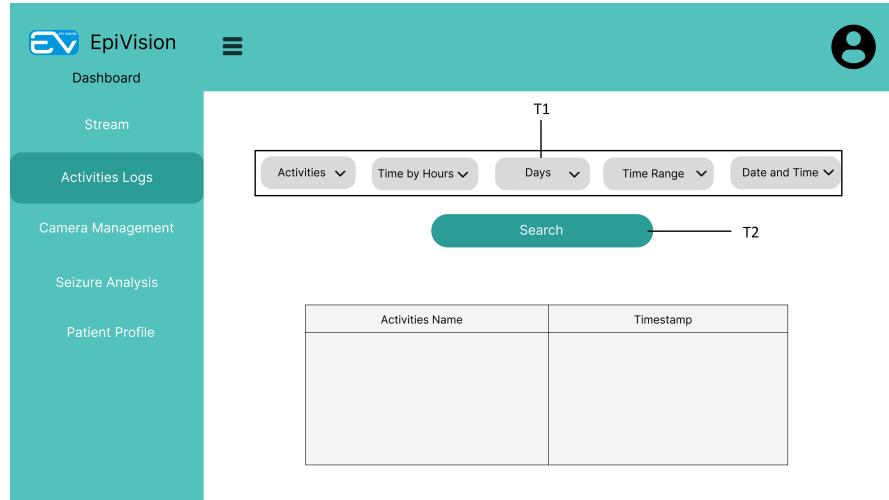


FIGURE 16: Activity Logs in Web Portal

TABLE 16: Activity Logs

<b>Tasks</b>	<b>Admin</b>	<b>Patient</b>
T1	I shall be able to select filters for activity logs.	I shall be able to select filters for activity logs.
T2	I shall be able to search for activity logs for selected filters.	I shall be able to search for activity logs for selected filter.

### 2.2.8 Camera Management

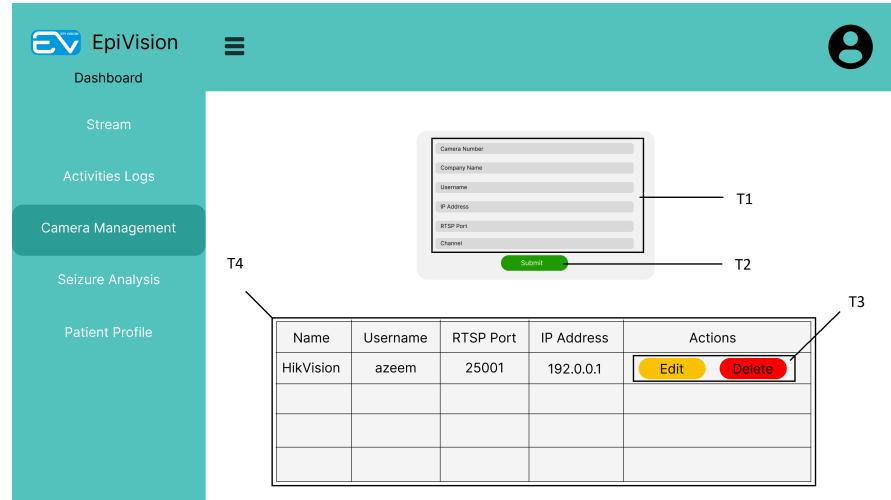


FIGURE 17: Camera Management in Web Portal

TABLE 17: Camera Management

Tasks	Admin	Patient
T1	I shall have no access.	I shall be able to enter information for new camera device registration.
T2	I shall have no access.	I shall be able to save information for new camera device registration.
T3	I shall have no access.	I shall be able to edit or delete information for registered camera devices.
T4	I shall be able to view camera devices entered by the patient.	I shall be able to view all registered camera devices.

### 2.2.9 Activity Analysis

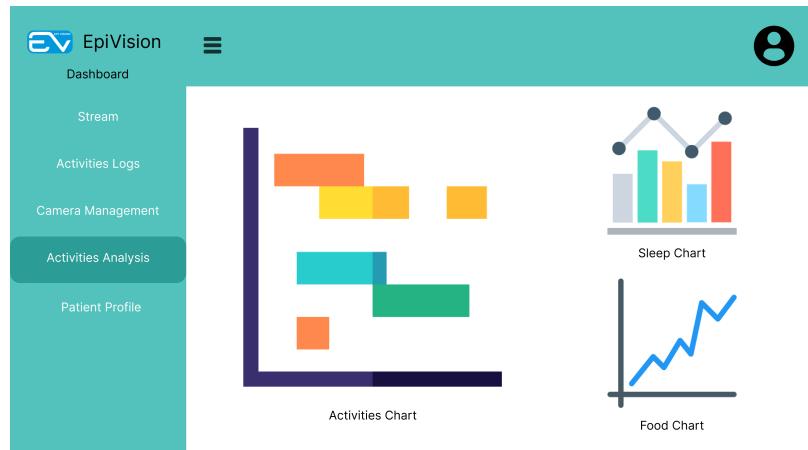


FIGURE 18: Activity Analysis in Web Portal

TABLE 18: Activity Analysis

Tasks	Patient
T1	I shall be able to see pattern graphs for my different activities

### 2.2.10 Patient Profile

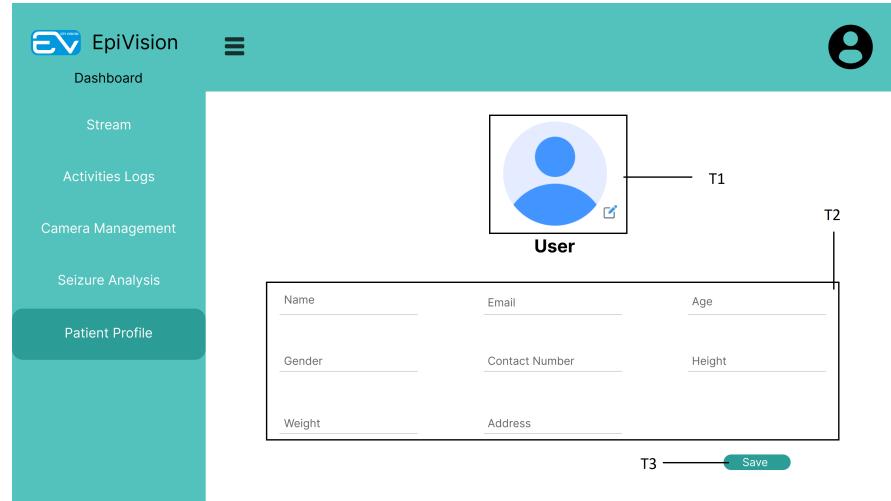


FIGURE 19: Patient Profile in Web Portal

TABLE 19: Profile

Tasks	Patient
T1	I shall be able to upload my profile picture.
T2	I shall be able to enter my profile information.
T3	I shall be able to save my profile information.

### 2.2.11 Patient Management

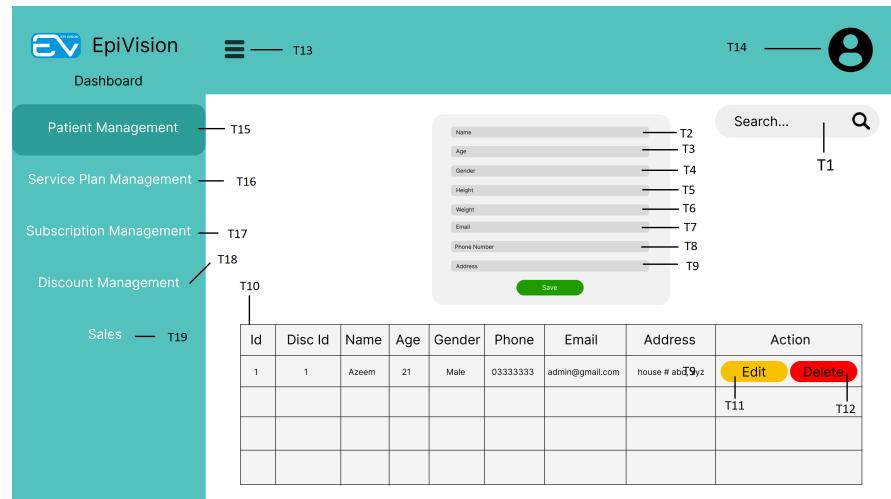


FIGURE 20: Patient Management

TABLE 20: Patient Management

Tasks	Admin
T1	I shall be able to filter out the patients' record based on the patient's name and phone number.
T2	I shall be able to write the name of the patient.
T3	I shall be able to write the age of the patient.
T4	I shall be able to select the gender of the patient.
T5	I shall be able to write the height of the patient.
T6	I shall be able to write the weight of the patient.
T7	I shall be able to write the email of the patient.
T8	I shall be able to write the phone number of the patient.
T9	I shall be able to write the address of the patient.
T10	I shall be able to view all patients in a record.
T11	I shall be able to edit a specific patient's record.
T12	I shall be able to delete a specific patient's record.
T13	I shall be able to collapse the sidebar.
T14	I shall be able to logout from the system by selecting an option from the drop-down menu.
T15	I shall be able to redirect to the patient management page.
T16	I shall be able to redirect to the service plan management page.
T17	I shall be able to redirect to the subscription management page.
T18	I shall be able to redirect to the discount management page.
T19	I shall be able to redirect to the sales page.

### 2.2.12 Service Plan Management

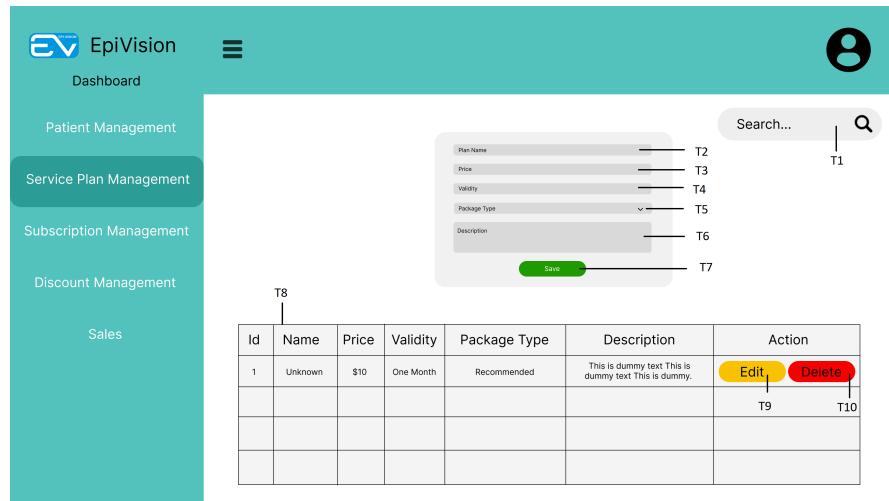


FIGURE 21: Service Plan Management

TABLE 21: Service Plan Management

Tasks	Admin
T1	I shall be able to filter the plans based on their names, validity, and package type.
T2	I shall be able to write the name of a plan.
T3	I shall be able to write the price of a plan.
T4	I shall be able to write the validity of a plan.
T5	I shall be able to select the package type of a plan.
T6	I shall be able to write the description of a plan.
T7	I shall be able to save a new plan in the system.
T8	I shall be able to view the list of all service plans.
T9	I shall be able to edit a specific plan.
T10	I shall be able to delete a specific plan.

### 2.2.13 Sales

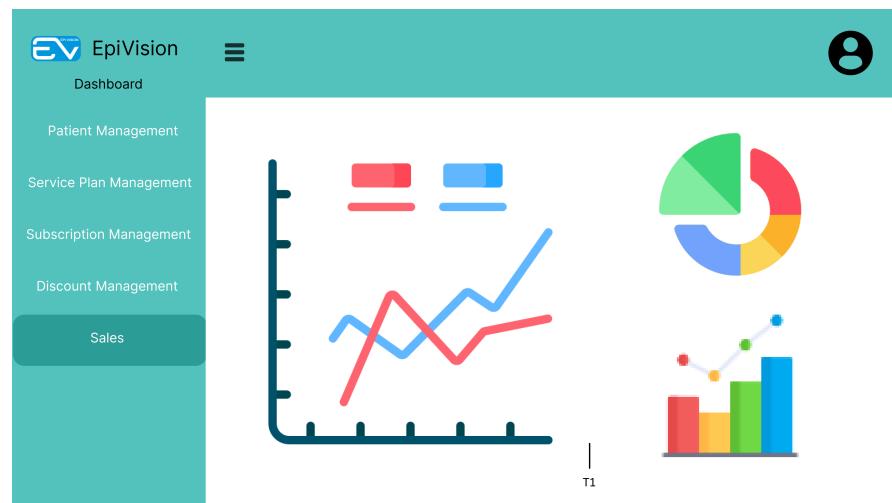


FIGURE 22: Sales

TABLE 22: Sales

Tasks	Admin
T1	I shall be able to view the statistics of sales based on different criteria such as week, month, and service plan type.

### 2.2.14 Subscription Plan Management

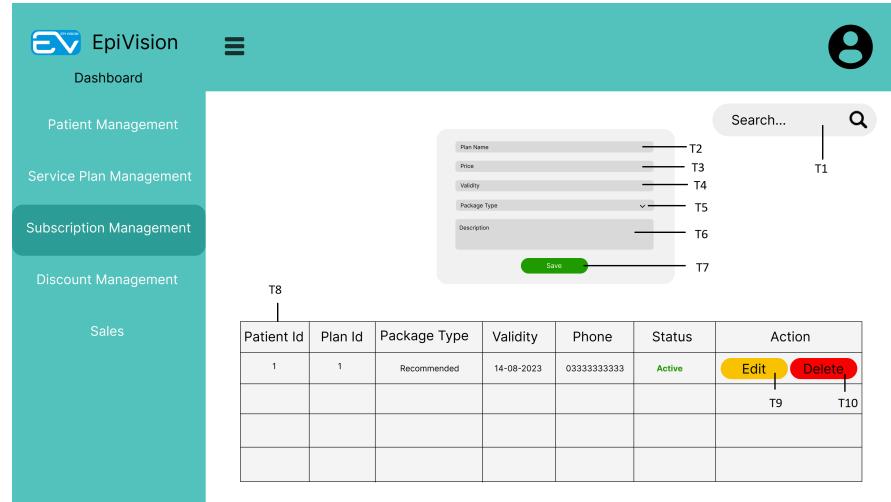


FIGURE 23: Subscription Plan Management

TABLE 23: Subscription Management

Tasks	Admin
T1	I shall be able to filter the subscription plans based on their names, validity, and package type.
T2	I shall be able to select a service plan.
T3	I shall be able to see the price of the selected service plan.
T4	I shall be able to select the expiration deadline of the selected service plan.
T5	I shall be able to see the package type of the selected plan.
T6	I shall be able to see the description of the selected plan.
T7	I shall be able to save a new expiration of a subscription availed by a patient in the system.
T8	I shall be able to view the list of all patients having subscription plans.
T9	I shall be able to edit the subscription plan of a specific patient.
T10	I shall be able to delete the subscription plan of a specific patient.

### 2.2.15 Discount Management

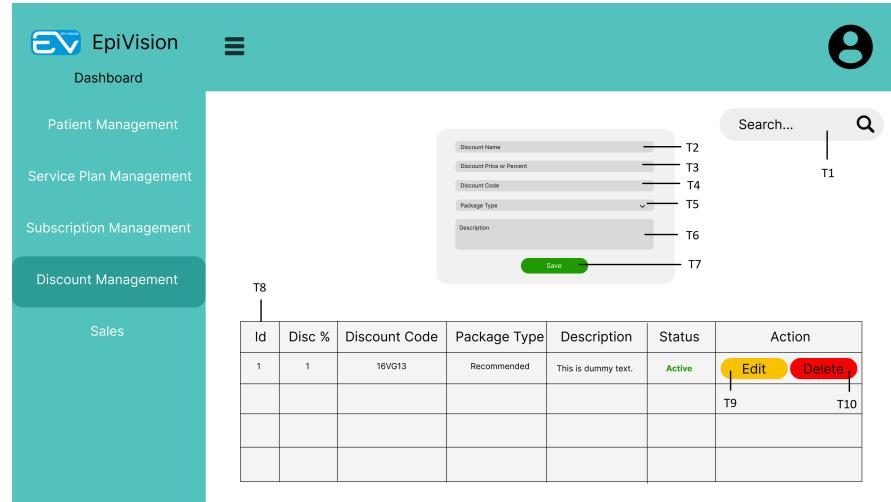


FIGURE 24: Discount Management

TABLE 24: Discount Management

Tasks	Admin
T1	I shall be able to filter the discount plans based on their status and package type.
T2	I shall be able to write a discount plan name.
T3	I shall be able to write the discounted price or percentage.
T4	I shall be able to write the discount code.
T5	I shall be able to select the package type.
T6	I shall be able to write the description.
T7	I shall be able to save a new or edited discount plan in the system.
T8	I shall be able to view the list of all discount plans.
T9	I shall be able to edit the specific discount plan.
T10	I shall be able to delete the specific discount plan.