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| **Use case name:** | **UC01 - User Registration & Login** | |
| **Scenario:** | A new or returning user wants to access their Skinnovate dashboard. | |
| **Triggering event:** | User clicks “Register” or “Login” on the Skinnovate home page. | |
| **Brief description:** | Enables new users to create an account (via email/OTP or social login) and existing users to authenticate, then redirects them to their personalized dashboard. | |
| **Actors:** | * Patient * Dermatologist * Administrator | |
| **Related use cases:** | * UC02 – AI Skin Analysis (requires user to be authenticated) * UC03 – Appointment Booking & Management * UC04 – Dermatologist Review & Treatment Update | |
| **Stakeholders:** | * End users (patients, doctors, admins) * Clinic operations team | |
| **Preconditions:** | * System is online and accessible. * For registration: user email not already in database. * For login: user already has valid credentials. | |
| **Postconditions:** | * The user is logged in and gains access to their personalized dashboard. * Access control is applied based on the user’s role (e.g., patient, doctor, administrator). | |
| **Flow of activities:** | **Actor** | **System** |
| 1. Accesses Skinnovate portal 2. Selects Register 3. Enters registration details 4. — 5. Or selects Login 6. Enters credentials 7. — | Displays “Register” and “Login” options  Prompts for email, OTP/social login, and profile data  Validates inputs; if valid, creates new User record; sends confirmation  Redirects to dashboard  Prompts for email/password  Validates credentials  On success, redirects to dashboard |
| **Exception conditions:** | * **Invalid credentials:** display error “Email or password incorrect”—allow retry. * **Registration error:** for missing/invalid fields, highlight errors and block submission until corrected. | |

Figure 1: Fully developed use case description for ***User Registration & Login***

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| **Use case name:** | **UC02 –** **AI Skin Analysis** | |
| **Scenario:** | A logged-in patient wants a quick preliminary diagnosis of a skin condition using the AI engine. | |
| **Triggering event:** | Patient selects “AI Skin Analysis” from their dashboard. | |
| **Brief description:** | Patient uploads a skin image; the system checks quality, sends it to AI, then displays the AI’s diagnosis and confidence score. | |
| **Actors:** | * Primary: Patient * Secondary: AI System (automated) | |
| **Related use cases:** | * UC01 – User Registration & Login (must be logged in) * UC03 – Appointment Booking & Management (if AI suggests consultation) | |
| **Stakeholders:** | * Patients seeking fast insights * Dermatologists (for follow-up review) | |
| **Preconditions:** | * Patient is authenticated (UC01). * Device can capture/upload high-resolution images. | |
| **Postconditions:** | * A preliminary AI diagnosis (with confidence) is recorded. * Patient can choose to book a consultation based on results. | |
| **Flow of activities:** | **Actor** | **System** |
| 1. Clicks “AI Skin Analysis” 2. Uploads skin image 3. — 4. — 5. — 6. — | Prompts for image upload  Validates image quality  If valid, forwards image to AI engine  If poor, returns error “Please upload clearer image”  Runs AI analysis (≤ 5 sec) and returns diagnosis + confidence  Displays results with option “Book Consultation” if confidence < threshold |
| **Exception conditions:** | * **Poor image quality:** reject and prompt re-upload. * **Low AI confidence:** show “Low confidence—please book consultation.” | |

Figure 2: Fully developed use case description for ***AI Skin Analysis***

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| **Use case name:** | **UC03 – Appointment Booking & Management** | |
| **Scenario:** | A patient schedules, reschedules, or cancels a clinic appointment; admins monitor and adjust bookings. | |
| **Triggering event:** | Patient navigates to “Appointments” or admin opens the daily dashboard. | |
| **Brief description:** | Allows patients to view available slots, book/reschedule/cancel appointments, and triggers emergency handling when needed; administrators oversee and adjust schedules. | |
| **Actors:** | * Primary: Patient * Secondary: Clinic Administrator | |
| **Related use cases:** | * UC01 – User Registration & Login * UC02 – AI Skin Analysis (may prompt booking) * UC04 – Dermatologist Review & Treatment Update | |
| **Stakeholders:** | * Patients * Clinic staff (admins, doctors) | |
| **Preconditions:** | * User is authenticated (UC01). * Scheduling system is online and reflects real-time availability. | |
| **Postconditions:** | * Appointment is created, updated, or canceled. * Notifications sent to patient, admin, and dermatologist as appropriate. | |
| **Flow of activities:** | **Actor** | **System** |
| 1. Opens “Appointments” page 2. Selects desired slot 3. Confirms booking 4. Or selects “Reschedule” 5. Or selects “Cancel” 6. Admin views dashboard 7. Admin adjusts slot (if needed) | Displays calendar with available time slots  Checks slot availability  Creates Appointment record; sends confirmation notification  Prompts new slot selection; updates record; notifies parties  Marks appointment canceled; notifies parties  Displays all today’s appointments and statuses  Updates appointment records; notifies impacted patients |
| **Exception conditions:** | * **Slot already booked:** show “Selected slot unavailable—choose another.” * **Emergency booking:** if patient marks “Emergency,” triggers emergency workflow (reprioritize slots, bump non-urgent bookings, notify). | |

Figure 3: Fully developed use case description for ***Appointment Booking & Management***

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| **Use case name:** | **UC04 – Dermatologist Review & Treatment Update** | |
| **Scenario:** | A dermatologist examines AI-generated skin analysis results, confirms or modifies the diagnosis, and records a treatment plan. | |
| **Triggering event:** | An AI diagnosis report becomes available for a patient’s uploaded skin image (or a video consultation concludes). | |
| **Brief description:** | Enables the dermatologist to review AI suggestions, adjust the diagnosis if needed, and document a treatment plan in the patient’s record. | |
| **Actors:** | * Primary: Dermatologist * Secondary: AI System (automated process) | |
| **Related use cases:** | * UC02 – AI Skin Analysis * UC03 – Appointment Booking & Management | |
| **Stakeholders:** | * Patients (for accurate treatment) * Clinic staff (for scheduling follow-ups) * IT/QA (for ensuring AI accuracy) | |
| **Preconditions:** | * The patient’s AI analysis report exists and is accessible (UC02). * The dermatologist is authenticated and has appropriate role privileges. | |
| **Postconditions:** | * The finalized diagnosis and treatment plan are saved to the patient’s record. * Automated follow-up reminders are scheduled if required. | |
| **Flow of activities:** | **Actor** | **System** |
| 1. Opens patient’s AI report 2. Reviews diagnosis suggestion 3. Adjusts or confirms diagnosis 4. Selects or enters treatment plan details 5. Saves treatment plan | Retrieves AI suggestions and patient history  Displays confidence score and recommended options  Validates and logs the dermatologist’s decision  Presents treatment template and input fields  Persists data to EHR and schedules follow-up |
| **Exception conditions:** | * **AI report missing:** system displays “Report unavailable—please retry later. * **Validation error:** if required treatment fields are blank, system highlights missing items and blocks save. | |

Figure 4: Fully developed use case description for ***Dermatologist Review & Treatment Update***

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| **Use case name:** | **UC08 – Two‐Factor Authentication Setup** | |
| **Scenario:** | A user enhances account security by enabling two‐factor authentication (2FA), choosing a delivery method, and verifying ownership. | |
| **Triggering event:** | User selects “Enable Two‐Factor Authentication” from their account security settings. | |
| **Brief description:** | Guides the user through selecting a 2FA method (SMS, email, or authenticator app), verifying the chosen channel, and activating 2FA for subsequent logins. | |
| **Actors:** | * Primary: User (Patient, Dermatologist, Administrator) * Secondary: Email/SMS Service | |
| **Related use cases:** | * UC01 – User Registration & Login * UC07a – Forgot Password | |
| **Stakeholders:** | * All users (for account security) * IT security team | |
| **Preconditions:** | * The user is authenticated and on their security settings page. * The user’s contact information (email or phone) is verified and up-to-date. | |
| **Postconditions:** | * Two‐factor authentication is enabled on the user’s account. * Future logins will require a second factor. | |
| **Flow of activities:** | **Actor** | **System** |
| 1. Navigates to Security Settings 2. Clicks “Enable Two‐Factor Authentication” 3. Selects preferred method (e.g., SMS) 4. Confirms contact info 5. Retrieves code (or scans QR in Auth App) 6. Enters setup code (or confirms app token) 7. Clicks “Activate 2FA” 8. — | Displays “Enable Two‐Factor Authentication” option  Presents choice of methods: SMS, Email, Auth App  Prompts for/validates phone number  Sends 2FA setup code or provisioning QR code  —  Verifies code/token  Updates security settings; marks 2FA as active  Displays “2FA Enabled” confirmation and backup codes |
| **Exception conditions:** | * **Invalid contact info:** “Phone number/email not recognized—please update profile.” * **Delivery failure:** on SMS/email bounce, system offers “Resend Code” and logs the failure. * **Invalid setup code**: “Code incorrect—try again” (up to 3 attempts), then abort back to method selection. * **Timeout:** if no code entered within 5 minutes, session expires and user must restart setup. | |

Figure 5: Fully developed use case description for ***Two‐Factor Authentication Setup***