

AI Model Management System - Test Cases

Document Information

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Test Case Overview

Test Case Template

Field	Description
Test Case ID	Unique identifier for the test case
Test Case Title	Brief description of what is being tested
Module	System module being tested
Priority	High/Medium/Low
Preconditions	Prerequisites that must be met
Test Steps	Step-by-step instructions
Expected Result	Expected outcome
Actual Result	Actual outcome (to be filled during execution)
Status	Pass/Fail/Blocked
Test Data	Data required for test execution
Environment	Test environment requirements

Test Categories

- **Functional Tests:** Verify functional requirements
- **Integration Tests:** Test module interactions
- **Security Tests:** Verify security requirements
- **Performance Tests:** Test system performance
- **Usability Tests:** Test user experience
- **API Tests:** Test API endpoints
- **Regression Tests:** Ensure existing functionality works

Authentication & Authorization Test Cases

TC-AUTH-001: Valid User Login

Field	Value
Test Case ID	TC-AUTH-001
Title	Verify successful login with valid credentials
Module	Authentication
Priority	High
Preconditions	User account exists and is active
Test Steps	1. Navigate to login page 2. Enter valid email and password 3. Click login button
Expected Result	User successfully logged in and redirected to dashboard
Test Data	Email: <u>test@example.com</u> , Password: ValidPass123!
Environment	All environments

TC-AUTH-002: Invalid User Login

Field	Value
Test Case ID	TC-AUTH-002
Title	Verify login failure with invalid credentials
Module	Authentication
Priority	High
Preconditions	User attempts login
Test Steps	1. Navigate to login page 2. Enter invalid email or password 3. Click login button
Expected Result	Login fails with appropriate error message
Test Data	Email: <u>invalid@example.com</u> , Password: WrongPass
Environment	All environments

TC-AUTH-003: MFA for Admin Users

Field	Value
Test Case ID	TC-AUTH-003
Title	Verify MFA requirement for admin users
Module	Authentication
Priority	High
Preconditions	Admin user account exists with MFA enabled
Test Steps	1. Login with admin credentials 2. Enter MFA code when prompted 3. Verify access granted
Expected Result	Admin user cannot access system without valid MFA code
Test Data	Admin email, password, MFA code
Environment	All environments

TC-AUTH-004: Session Timeout

Field	Value
Test Case ID	TC-AUTH-004
Title	Verify session timeout after inactivity
Module	Authentication
Priority	Medium
Preconditions	User is logged in
Test Steps	1. Login successfully 2. Remain inactive for session timeout period 3. Attempt to perform an action
Expected Result	User is logged out and redirected to login page
Test Data	Valid user credentials
Environment	All environments

TC-AUTH-005: Role-Based Access Control

Field	Value
Test Case ID	TC-AUTH-005
Title	Verify users can only access authorized functionalities
Module	Authorization
Priority	High
Preconditions	Users with different roles exist
Test Steps	1. Login as end user 2. Attempt to access admin functionality 3. Verify access denied
Expected Result	Access denied with appropriate error message
Test Data	End user credentials
Environment	All environments

Admin Module Test Cases

TC-ADM-001: Master Admin System Access

Field	Value
Test Case ID	TC-ADM-001
Title	Verify Master Admin can access all system modules
Module	Admin Module
Priority	High
Preconditions	Master Admin account exists
Test Steps	1. Login as Master Admin 2. Navigate to each module 3. Verify access to all functionalities
Expected Result	Master Admin can access all modules and functionalities
Test Data	Master Admin credentials
Environment	All environments

TC-ADM-002: Create Sub-Master Admin

Field	Value
Test Case ID	TC-ADM-002
Title	Verify Master Admin can create sub-master administrators
Module	Admin Module
Priority	High
Preconditions	Master Admin is logged in
Test Steps	1. Navigate to sub-master admin management 2. Fill in required details 3. Assign role and permissions 4. Submit form
Expected Result	Sub-master admin account is created successfully
Test Data	Sub-admin details: email, name, role
Environment	All environments

TC-ADM-003: Institution Enrollment Approval

Field	Value
Test Case ID	TC-ADM-003
Title	Verify Institution Approval Admin can approve enrollment requests
Module	Admin Module
Priority	High
Preconditions	Institution enrollment request exists
Test Steps	1. Login as Institution Approval Admin 2. Navigate to enrollment requests 3. Review request details 4. Approve with comments
Expected Result	Institution enrollment is approved and institution gains access
Test Data	Institution enrollment request data
Environment	All environments

TC-ADM-004: Institution Enrollment Rejection

Field	Value
Test Case ID	TC-ADM-004
Title	Verify Institution Approval Admin can reject enrollment requests
Module	Admin Module
Priority	High
Preconditions	Institution enrollment request exists
Test Steps	1. Login as Institution Approval Admin 2. Navigate to enrollment requests 3. Review request details 4. Reject with detailed reasoning
Expected Result	Institution enrollment is rejected with feedback sent
Test Data	Institution enrollment request data
Environment	All environments

TC-ADM-005: Institution Suspension

Field	Value
Test Case ID	TC-ADM-005
Title	Verify Institution Approval Admin can suspend institutions
Module	Admin Module
Priority	High
Preconditions	Active institution exists
Test Steps	1. Login as Institution Approval Admin 2. Navigate to active institutions 3. Select institution to suspend 4. Provide justification and suspend
Expected Result	Institution is suspended and loses system access
Test Data	Active institution data
Environment	All environments

TC-ADM-006: User Registration Approval

Field	Value
Test Case ID	TC-ADM-006
Title	Verify User Approval Admin can approve user registrations
Module	Admin Module
Priority	High
Preconditions	User registration request exists
Test Steps	1. Login as User Approval Admin 2. Navigate to user registration requests 3. Review user details 4. Approve registration
Expected Result	User registration is approved and user gains access
Test Data	User registration request data
Environment	All environments

TC-ADM-007: AI Model Inventory Management

Field	Value
Test Case ID	TC-ADM-007
Title	Verify AI Model Admin can view all AI models
Module	Admin Module
Priority	High
Preconditions	AI models exist in system
Test Steps	1. Login as AI Model Admin 2. Navigate to AI model inventory 3. Apply various filters 4. Verify all models are visible
Expected Result	All AI models are visible with filtering capabilities
Test Data	Various AI models from different institutions
Environment	All environments

TC-ADM-008: AI Model Download

Field	Value
Test Case ID	TC-ADM-008
Title	Verify AI Model Admin can download AI models
Module	Admin Module
Priority	High
Preconditions	AI models exist in system
Test Steps	1. Login as AI Model Admin 2. Navigate to AI model inventory 3. Select model to download 4. Initiate download
Expected Result	AI model is downloaded successfully with metadata
Test Data	AI model data
Environment	All environments

TC-ADM-009: Blockchain Model Aggregation

Field	Value
Test Case ID	TC-ADM-009
Title	Verify AI Model Admin can upload aggregated models to blockchain
Module	Admin Module
Priority	High
Preconditions	Multiple AI models exist for aggregation
Test Steps	1. Login as AI Model Admin 2. Select models for aggregation 3. Configure aggregation settings 4. Upload to blockchain
Expected Result	Aggregated model is successfully uploaded to blockchain
Test Data	Multiple AI models, blockchain configuration
Environment	All environments

Hospital/Research Institute Module Test Cases

TC-INS-001: Department Registration Approval

Field	Value
Test Case ID	TC-INS-001
Title	Verify Institution Admin can approve department registrations
Module	Institution Module
Priority	High
Preconditions	Department registration request exists
Test Steps	1. Login as Institution Admin 2. Navigate to department registration requests 3. Review department details 4. Approve registration
Expected Result	Department registration is approved and department gains access
Test Data	Department registration request data
Environment	All environments

TC-INS-002: AI Model Approval by Institution

Field	Value
Test Case ID	TC-INS-002
Title	Verify Institution Admin can approve AI models from departments
Module	Institution Module
Priority	High
Preconditions	AI model submitted by department
Test Steps	1. Login as Institution Admin 2. Navigate to pending AI models 3. Review model documentation 4. Approve model
Expected Result	AI model is approved and advances to next stage
Test Data	AI model from institutional department
Environment	All environments

TC-INS-003: Latest Aggregate Model Download

Field	Value
Test Case ID	TC-INS-003
Title	Verify Institution can download latest aggregate models
Module	Institution Module
Priority	High
Preconditions	Aggregate models are available
Test Steps	1. Login as Institution Admin 2. Navigate to aggregate models 3. Select latest model 4. Download model
Expected Result	Latest aggregate model is downloaded successfully
Test Data	Available aggregate models
Environment	All environments

TC-INS-004: Research Scholar Onboarding

Field	Value
Test Case ID	TC-INS-004
Title	Verify Institution can approve research scholar onboarding
Module	Institution Module
Priority	High
Preconditions	Scholar onboarding request exists
Test Steps	1. Login as Institution Admin 2. Navigate to scholar onboarding requests 3. Review scholar credentials 4. Approve onboarding
Expected Result	Scholar onboarding is approved and scholar gains access
Test Data	Scholar onboarding request data
Environment	All environments

TC-INS-005: Research Scholar Suspension

Field	Value
Test Case ID	TC-INS-005
Title	Verify Institution can suspend research scholars
Module	Institution Module
Priority	High
Preconditions	Active research scholar exists
Test Steps	1. Login as Institution Admin 2. Navigate to active scholars 3. Select scholar to suspend 4. Provide justification and suspend
Expected Result	Scholar is suspended and loses appropriate access
Test Data	Active scholar data
Environment	All environments

Department-Research Labs Module Test Cases

TC-DEPT-001: Department Information Update

Field	Value
Test Case ID	TC-DEPT-001
Title	Verify Department HOD can update department information
Module	Department Module
Priority	Medium
Preconditions	Department HOD is logged in
Test Steps	1. Login as Department HOD 2. Navigate to department settings 3. Update department information 4. Save changes
Expected Result	Department information is updated successfully
Test Data	Updated department information
Environment	All environments

TC-DEPT-002: Scholar Onboarding Process

Field	Value
Test Case ID	TC-DEPT-002
Title	Verify Department can initiate scholar onboarding
Module	Department Module
Priority	High
Preconditions	Department HOD is logged in
Test Steps	1. Login as Department HOD 2. Navigate to scholar management 3. Initiate new scholar onboarding 4. Fill required details and submit
Expected Result	Scholar onboarding request is submitted to institution
Test Data	New scholar details
Environment	All environments

TC-DEPT-003: Departmental AI Model Review

Field	Value
Test Case ID	TC-DEPT-003
Title	Verify Department can review AI models from scholars
Module	Department Module
Priority	High
Preconditions	AI model submitted by scholar
Test Steps	1. Login as Department HOD 2. Navigate to pending AI models 3. Review model details 4. Approve or reject model
Expected Result	AI model is reviewed and decision is recorded
Test Data	AI model from departmental scholar
Environment	All environments

TC-DEPT-004: Scholar Suspension Management

Field	Value
Test Case ID	TC-DEPT-004
Title	Verify Department can suspend scholars
Module	Department Module
Priority	High
Preconditions	Active scholar exists in department
Test Steps	1. Login as Department HOD 2. Navigate to scholar management 3. Select scholar to suspend 4. Document justification and suspend
Expected Result	Scholar is suspended at departmental level
Test Data	Active scholar data
Environment	All environments

TC-DEPT-005: Model Quality Assurance

Field	Value
Test Case ID	TC-DEPT-005
Title	Verify Department implements model quality assurance
Module	Department Module
Priority	High
Preconditions	AI model submitted for review
Test Steps	1. Login as Department HOD 2. Navigate to model review 3. Apply quality standards checklist 4. Document quality assessment
Expected Result	Model quality is assessed against defined standards
Test Data	AI model with quality metrics
Environment	All environments

Research Scholar Module Test Cases

TC-SCHOL-001: Scholar Profile Management

Field	Value
Test Case ID	TC-SCHOL-001
Title	Verify Research Scholar can manage profile information
Module	Research Scholar Module
Priority	Medium
Preconditions	Research Scholar is logged in
Test Steps	1. Login as Research Scholar 2. Navigate to profile settings 3. Update personal information 4. Save changes
Expected Result	Profile information is updated successfully
Test Data	Updated profile information
Environment	All environments

TC-SCHOL-002: AI Model Upload

Field	Value
Test Case ID	TC-SCHOL-002
Title	Verify Research Scholar can upload AI models
Module	Research Scholar Module
Priority	High
Preconditions	Research Scholar is logged in
Test Steps	1. Login as Research Scholar 2. Navigate to model upload 3. Select model file and provide metadata 4. Submit model
Expected Result	AI model is uploaded successfully for review
Test Data	AI model file and metadata
Environment	All environments

TC-SCHOL-003: Model Submission History

Field	Value
Test Case ID	TC-SCHOL-003
Title	Verify Research Scholar can view model submission history
Module	Research Scholar Module
Priority	Medium
Preconditions	Scholar has submitted models previously
Test Steps	1. Login as Research Scholar 2. Navigate to model history 3. Apply filters to view specific models 4. Review submission details
Expected Result	Model submission history is displayed with filtering options
Test Data	Historical model submissions
Environment	All environments

TC-SCHOL-004: Model Version Management

Field	Value
Test Case ID	TC-SCHOL-004
Title	Verify Research Scholar can manage model versions
Module	Research Scholar Module
Priority	Medium
Preconditions	Scholar has existing model
Test Steps	1. Login as Research Scholar 2. Navigate to existing model 3. Upload new version 4. Compare versions
Expected Result	New model version is uploaded and version history is maintained
Test Data	Model file versions
Environment	All environments

TC-SCHOL-005: Model Status Tracking

Field	Value
Test Case ID	TC-SCHOL-005
Title	Verify Research Scholar can track model approval status
Module	Research Scholar Module
Priority	High
Preconditions	Scholar has submitted models
Test Steps	1. Login as Research Scholar 2. Navigate to submitted models 3. Check approval status 4. View feedback comments
Expected Result	Model approval status is clearly displayed with feedback
Test Data	Submitted models with various statuses
Environment	All environments

End User Module Test Cases

TC-USER-001: User Self-Registration

Field	Value
Test Case ID	TC-USER-001
Title	Verify End User can register for system access
Module	End User Module
Priority	High
Preconditions	None
Test Steps	1. Navigate to registration page 2. Fill all required fields 3. Upload required documents 4. Accept terms and submit
Expected Result	Registration is submitted successfully for approval
Test Data	User registration details and documents
Environment	All environments

TC-USER-002: Registration Status Tracking

Field	Value
Test Case ID	TC-USER-002
Title	Verify End User can track registration status
Module	End User Module
Priority	Medium
Preconditions	User has submitted registration
Test Steps	1. Navigate to registration status page 2. Enter registration reference 3. Check current status 4. View any feedback
Expected Result	Registration status is displayed with timeline
Test Data	Registration reference number
Environment	All environments

TC-USER-003: AI Model Discovery

Field	Value
Test Case ID	TC-USER-003
Title	Verify End User can discover available AI models
Module	End User Module
Priority	High
Preconditions	End User is logged in
Test Steps	1. Login as End User 2. Navigate to model catalog 3. Browse available models 4. Apply filters to refine search
Expected Result	Available AI models are displayed with filtering options
Test Data	Available AI models
Environment	All environments

TC-USER-004: Model Documentation Access

Field	Value
Test Case ID	TC-USER-004
Title	Verify End User can access model documentation
Module	End User Module
Priority	High
Preconditions	End User is logged in
Test Steps	1. Login as End User 2. Select an AI model 3. View model documentation 4. Review usage guidelines
Expected Result	Comprehensive model documentation is accessible
Test Data	AI model with documentation
Environment	All environments

TC-USER-005: Image Upload for Prediction

Field	Value
Test Case ID	TC-USER-005
Title	Verify End User can upload images for prediction
Module	End User Module
Priority	High
Preconditions	End User is logged in
Test Steps	1. Login as End User 2. Select AI model 3. Upload image file 4. Submit for prediction
Expected Result	Image is uploaded successfully and prediction is initiated
Test Data	Valid image files (JPEG, PNG)
Environment	All environments

TC-USER-006: Prediction Results Display

Field	Value
Test Case ID	TC-USER-006
Title	Verify End User can view prediction results
Module	End User Module
Priority	High
Preconditions	Prediction has been processed
Test Steps	1. Login as End User 2. Navigate to prediction results 3. View prediction outcome 4. Check confidence scores
Expected Result	Prediction results are displayed with confidence scores
Test Data	Processed predictions
Environment	All environments

TC-USER-007: Prediction History Management

Field	Value
Test Case ID	TC-USER-007
Title	Verify End User can manage prediction history
Module	End User Module
Priority	Medium
Preconditions	User has previous predictions
Test Steps	1. Login as End User 2. Navigate to prediction history 3. Filter by date and model 4. Export or delete predictions
Expected Result	Prediction history is displayed with management options
Test Data	Historical predictions
Environment	All environments

TC-USER-008: Invalid Image Upload

Field	Value
Test Case ID	TC-USER-008
Title	Verify system handles invalid image uploads
Module	End User Module
Priority	High
Preconditions	End User is logged in
Test Steps	1. Login as End User 2. Attempt to upload invalid file format 3. Try uploading oversized file 4. Upload corrupted image
Expected Result	Appropriate error messages are displayed for invalid uploads
Test Data	Invalid image files
Environment	All environments

Integration Test Cases

TC-INT-001: Cross-Module User Data Consistency

Field	Value
Test Case ID	TC-INT-001
Title	Verify user data consistency across modules
Module	Integration
Priority	High
Preconditions	User exists across multiple modules
Test Steps	1. Update user profile in one module 2. Check if changes reflect in other modules 3. Verify data synchronization
Expected Result	User data is consistent across all modules
Test Data	User data in multiple modules
Environment	All environments

TC-INT-002: Approval Workflow Integration

Field	Value
Test Case ID	TC-INT-002
Title	Verify approval workflow across modules
Module	Integration
Priority	High
Preconditions	Approval workflow is configured
Test Steps	1. Submit request in one module 2. Verify approval appears in appropriate admin module 3. Complete approval process 4. Verify status updates across modules
Expected Result	Approval workflow functions seamlessly across modules
Test Data	Approval workflow test data
Environment	All environments

TC-INT-003: AI Model Lifecycle Integration

Field	Value
Test Case ID	TC-INT-003
Title	Verify AI model lifecycle across modules
Module	Integration
Priority	High
Preconditions	AI model upload and approval process
Test Steps	1. Upload model as scholar 2. Verify department can review 3. Check institutional approval 4. Confirm admin visibility 5. Verify end user access
Expected Result	AI model progresses through complete lifecycle
Test Data	AI model test data
Environment	All environments

TC-INT-004: Blockchain Integration

Field	Value
Test Case ID	TC-INT-004
Title	Verify blockchain integration for model aggregation
Module	Integration
Priority	High
Preconditions	Blockchain network is available
Test Steps	1. Aggregate multiple models 2. Upload to blockchain 3. Verify transaction success 4. Check model availability
Expected Result	Model aggregation and blockchain upload successful
Test Data	Multiple AI models for aggregation
Environment	All environments

TC-INT-005: Authentication System Integration

Field	Value
Test Case ID	TC-INT-005
Title	Verify external authentication system integration
Module	Integration
Priority	High
Preconditions	External authentication system configured
Test Steps	1. Attempt SSO login 2. Verify LDAP authentication 3. Test fallback authentication 4. Check role mapping
Expected Result	External authentication works correctly with fallback
Test Data	SSO and LDAP credentials
Environment	All environments

Performance Test Cases

TC-PERF-001: Page Load Performance

Field	Value
Test Case ID	TC-PERF-001
Title	Verify page load times meet requirements
Module	Performance
Priority	High
Preconditions	System is running under normal load
Test Steps	1. Load various pages 2. Measure load times 3. Verify all pages load within 3 seconds
Expected Result	All pages load within 3 seconds
Test Data	Various page URLs
Environment	Production-like environment

TC-PERF-002: API Response Time

Field	Value
Test Case ID	TC-PERF-002
Title	Verify API response times meet requirements
Module	Performance
Priority	High
Preconditions	APIs are available
Test Steps	1. Call various API endpoints 2. Measure response times 3. Verify responses within 200ms
Expected Result	API responses within 200ms for standard operations
Test Data	API endpoint test data
Environment	Production-like environment

TC-PERF-003: Concurrent User Load

Field	Value
Test Case ID	TC-PERF-003
Title	Verify system supports concurrent users
Module	Performance
Priority	High
Preconditions	Load testing tools configured
Test Steps	1. Simulate 10,000 concurrent end users 2. Monitor system performance 3. Verify response times maintained
Expected Result	System maintains performance with 10,000+ concurrent users
Test Data	Load testing scripts
Environment	Production-like environment

TC-PERF-004: