

GreenEye – QA Book

Early Test Cases – Sprint 2

1. Dummy Prediction API – Test Cases

Test ID	Test Case Description	Input	Expected Output	Priority
TC-API-01	Submit valid image as base64 payload	Base64-encoded JPG	200 OK, JSON with two prediction objects	High
TC-API-02	Submit unsupported image format	.gif or .bmp	400 Bad Request, error message	Medium
TC-API-03	Submit empty payload	Empty JSON {}	400 Bad Request, 'Missing image' error	High
TC-API-04	Submit corrupted base64 string	Malformed base64	422 Unprocessable Entity	Medium
TC-API-05	Simultaneous API calls (load test)	10+ concurrent requests	All return 200 OK within SLA	High
TC-API-06	One model fails internally	Simulate backend failure in Model B	Partial response + 'Model B unavailable' message	Medium
TC-API-07	Timeout scenario	Simulate high latency	Response in < 7s or timeout message	Medium

2. Frontend Upload Form – Test Cases

Test ID	Test Case Description	Input	Expected Output	Priority
TC-UI-01	Upload supported image file	Valid .jpg or .png under 5MB	Image preview shown within 1s	High
TC-UI-02	Upload unsupported file type	.pdf, .gif, .txt	File rejected, validation error displayed	High
TC-UI-03	Upload file >5MB	Large .jpg or .png	File rejected, error: 'File too large'	High
TC-UI-04	Upload image with too low resolution	50x50 px image	Warning: 'Low quality image may affect accuracy'	Medium
TC-UI-05	Remove uploaded image	Click 'Remove' button	Image preview cleared	High
TC-UI-06	Submit with no image uploaded	Click 'Submit'	Show error: 'Please upload an image before submitting'	High
TC-UI-07	Upload valid image, click Submit	Valid image → Submit	Button shows loading, result screen appears	High
TC-UI-08	Receive dual-model prediction result	Backend returns 2 results	Show results side-by-side with model labels	High
TC-UI-09	Upload invalid file, then valid file	Invalid → Valid	Error clears, new image accepted	Medium
TC-UI-10	Screen reader accessibility	Tab/ARIA navigation	All buttons/fields	Medium

			are focusable and labeled	
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3. API & Backend Endpoint – Test Cases

Test ID	Test Case Description	Input / Scenario	Expected Behavior	Priority
API-01	/predict endpoint returns 200 OK for valid input	Valid base64 image	Status 200 + valid JSON	High
API-02	Returns valid JSON with both model predictions	Valid input	Keys: species_model_A, confidence_model_A, etc.	High
API-03	Handles malformed or empty image payloads	Empty or {}	400 Bad Request	High
API-04	Handles corrupted base64	Corrupted string	422 Unprocessable Entity	Medium
API-05	Each prediction includes a species string and float confidence	Valid input	Species as string + confidence as float	High
API-06	Returns only one result if one model fails	Simulate Model B crash	Show Model A + failure message for B	High
API-07	Each model runs in parallel to reduce response time	Trigger and log timestamps	Total response < 7s	Medium
API-08	Logs each request with	Any request	Entry created in logs with	Medium

	timestamp and response time		metadata	
API-09	Blocks unsupported file types	Upload .exe, .pdf	400 error or rejection	High
API-10	Returns 500 only on unhandled internal failures	Trigger unexpected crash	500 + internal server error	High
API-11	Log species prediction frequencies for monitoring	Multiple valid calls	Species counts logged	Medium
API-12	Track prediction time per model	Any prediction call	Each model's duration recorded	Medium

4. Model Output Display – UI Test Cases

Test ID	Test Case Description	Input / Scenario	Expected Behavior	Priority
TC-UI-11	Display dual predictions	Backend returns 2 predictions	Species names and confidence scores shown side-by-side	High
TC-UI-12	Distinguish between models visually	Model A and Model B labels	Predictions clearly labeled (e.g., 'Fine-Tuned', 'Custom')	High
TC-UI-13	Show prediction with low confidence	Confidence = 0.40	Display subdued or warning icon near score	Medium
TC-UI-14	Handle conflicting predictions	Tomato vs. Potato	Display both results without error	Medium
TC-UI-15	Display only one prediction (Model B fails)	Model B fails	Show Model A result with fallback message	High
TC-UI-16	Show confidence score formatting	0.91235	Displayed as '91.2%'	High
TC-UI-17	Responsive layout	Resize screen	No overlap, clean mobile layout	Medium
TC-UI-18	Tooltip on hover for model info	Mouseover label	Tooltip: 'Model A: Fine-tuned ResNet'	Low
TC-UI-19	ARIA compliance for result display	Keyboard/tab access	Screen reader announces label and score	Medium
TC-UI-20	Spinner shown during prediction	Click 'Submit'	Loading spinner and disabled button appear	High

TC-UI-21	Retry button works after partial prediction failure	Model A returns, Model B fails	Retry button re-attempts Model B only	Medium
TC-UI-22	Prediction button disables during processing	Click submit	Submit button disabled until prediction complete	High
TC-UI-23	Spinner disappears after both results received or one fails gracefully	End of prediction	Spinner disappears, results shown	High

5. Security & Privacy - Test Cases

Test ID	Test Case Description	Input / Scenario	Expected Behavior	Priority
SEC-01	All requests must use HTTPS	Submit over HTTP	Request is redirected or blocked	High
SEC-02	Uploaded images are deleted after timeout	Wait > 60 mins after prediction	Image no longer exists on server	High
SEC-03	Unauthorized access to backend endpoints is restricted	Attempt to POST without token (if auth is added)	403 Forbidden or 401 Unauthorized	Medium
SEC-04	No personally identifiable data is stored or exposed	Submit request with metadata	Logs and database do not contain personal info	High
SEC-05	Prediction endpoints are rate-limited (if	Spam predictions	System limits or throttles	Medium

	enabled)		excessive calls	
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Traceability Matrix

1. Functional Requirements

Requirement ID	Description	Linked Test Cases
FR-1.1	Upload Single Image	TC-UI-01, TC-UI-07
FR-1.2	File Validation	TC-UI-02, TC-UI-03, TC-UI-04
FR-1.4	Show Preview	TC-UI-01, TC-UI-05
FR-1.5	Remove Uploaded Image	TC-UI-05
FR-2.1	Predict Plant Species	TC-API-01, TC-UI-08, TC-UI-11
FR-2.2	Display Confidence Score	TC-UI-08, TC-UI-16
FR-2.3	Handle Multi-leaf Fusion	Not implemented – dropped in scope update
FR-2.4	Two Models	TC-API-02, TC-UI-08, TC-UI-11
FR-2.5	Separate Predictions	TC-UI-11, TC-UI-12, TC-UI-14
FR-2.6	Tag Predictions	TC-UI-12, TC-UI-18
FR-3.1	Unsupported File Types	TC-UI-02, API-09
FR-3.2	Image Quality Warnings	TC-UI-04
FR-3.3	Prediction Failure Handling	TC-UI-15, TC-UI-21, API-06

2. Non-Functional Requirements

Requirement ID	Description	Linked Test Cases
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NFR-1.1	Prediction response within 7 seconds	API-07, TC-UI-23
NFR-1.2	Support 50 simultaneous users	API-05
NFR-1.3	Models run in parallel	API-07
NFR-2.1	Completion without assistance	TC-UI-01, TC-UI-06, TC-UI-08
NFR-2.2	Accessibility compliance	TC-UI-10, TC-UI-19
NFR-2.3	Readable language	Manual verification only
NFR-2.4	Visual confirmation within 500ms	TC-UI-01, TC-UI-05
NFR-2.5	Tooltip/help text	TC-UI-18
NFR-2.6	Visual distinction of model predictions	TC-UI-12
NFR-2.7	Confidence normalization	TC-UI-16
NFR-3.1	95% uptime	Monitoring/log review – not unit tested
NFR-3.2	Retry failed predictions	TC-UI-21, API-06
NFR-3.3	Log prediction errors	API-08
NFR-3.4	Resilient image upload	TC-UI-04, SEC-02
NFR-3.5	97% accuracy under ideal conditions	Post-deployment test
NFR-3.6	One-model fallback	TC-UI-15, API-06
NFR-4.1	Use TLS 1.2+	SEC-01
NFR-4.2	Auto-delete images	SEC-02
NFR-5.1	Cross-browser compatibility	Manual QA – not in TC list
NFR-5.2	Dockerized multi-cloud deployment	CI/CD deployment testing – out of scope for UI QA

Coverage Track

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Status	Meaning
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✓ Covered Fully linked to one or more test cases

⚠ Partial Only partially covered or pending test

✗ Missing No test case currently linked

1. Functional Requirements

FR ID	Description	Coverage	Notes
FR-1.1	Upload Single Image	✓ Covered	Linked to UI test cases
FR-1.2	File Validation	✓ Covered	Size, type, resolution tested
FR-1.4	Show Preview	✓ Covered	Preview shown on upload
FR-1.5	Remove Uploaded Image	✓ Covered	Remove button tested
FR-2.1	Predict Plant Species	✓ Covered	Dual-model output tested
FR-2.2	Display Confidence Score	✓ Covered	Confidence formatting tested
FR-2.3	Handle Multi-leaf Fusion	✗ Missing	Out of scope — dropped
FR-2.4	Two Models	✓ Covered	Two-model predictions and outputs tested
FR-2.5	Separate Predictions	✓ Covered	UI distinguishes results
FR-2.6	Tag Predictions	✓ Covered	Tooltip and labels tested
FR-3.1	Unsupported File Types	✓ Covered	Invalid formats handled

FR ID	Description	Coverage	Notes
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FR-3.2 Image Quality Warnings  Covered Low-res warning tested

FR-3.3 Prediction Failure Handling  Covered Partial prediction & retry tested

2. Non-functional Requirements

NFR ID	Description	Coverage	Notes
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NFR-1.1 Prediction within 7s  Covered Timed test cases present

NFR-1.2 Support 50 users  Partial Simulated, not stress tested


NFR-1.3 Parallel Model Execution  Partial Timing logs assumed, no direct test

NFR-2.1 Completion without Help  Covered Usability test cases applied


NFR-2.2 Accessibility  Covered Screen reader and tab flow tested

NFR-2.3 Readability  Partial Needs manual linguistic review


NFR-2.4 Fast Visual Feedback  Covered 500ms limit tested

NFR-2.5 Tooltip Help  Covered Hover labels tested

NFR-2.6 Distinct Model Labels  Covered Dual labels verified

NFR-2.7 Confidence Normalization  Covered Formatting validated

NFR-3.1 95% Uptime  Missing Monitoring required

NFR-3.2 Retry Failed Predictions  Covered Retry logic tested

NFR-3.3 Log Errors  Covered Log presence confirmed

NFR-3.4 Upload Resilience  Partial Manual re-upload allowed

NFR-3.5 97% Accuracy Benchmark  Missing Pending post-deployment tests

NFR-3.6 One-model fallback  Covered Partial response tested

NFR ID	Description	Coverage	Notes
NFR-4.1	TLS 1.2+	✓ Covered	Enforced via SEC-01
NFR-4.2	Auto-delete Images	✓ Covered	SEC-02 test included
NFR-5.1	Cross-browser Compatibility	⚠ Partial	Manual tests not recorded
NFR-5.2	Cloud Docker Deployment	✗ Missing	Outside QA scope