Texas Christian University Department of Computer Science

BatLab

User Acceptance Test

Version 1.0

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Project: BatLab

Team Members: Rachel Rajamoney, Elijah Yoo, Riley Phan, Mati Davis, Ally Schmidt, Zach Campbell, Stryder Schossberger

Clients: Dr. Victoria Bennett, Kate Davis

1. Test Case Overview

Test Case ID	Functionality Area	Description	Test Priority
TC-001	Login & Authentication	Verify that users can log in with valid credentials and that invalid credentials are rejected	High
TC-002	Classify — Model Selection	Verify that available ML models are listed in the dropdown and can be selected before classification	High
TC-003	Classify — Source Folder Path Input	Verify that the source folder path exists and that there are valid .wav files within it, which are detected before classification	High
TC-004	Classify — Audio File Classification	Verify that loaded .wav files are classified by the ML model and results are displayed in the correct tables	High
TC-005	Classify — Identified Species Folder Export	Verify that identified species .wav files can be moved to a user-specified folder, either to an existing one or to a new one, with organized species subfolders	Medium
TC-006	Classify — Unknown Species Folder Export	Verify that unknown species .wav files can be moved to a user-specified	Medium

		folder, either to an existing one or to a new one	
TC-007	Classify — Session Management	Verify the Start New Session button clears all classification results and resets the Classify tab interface	Medium
TC-008	Add Detector	Verify that new acoustic detectors can be registered with valid inputs and that duplicate or invalid entries are rejected	High
TC-009	Manage Detectors	Verify that existing detectors can be edited and deleted directly in the Registered Detectors table	Medium
TC-010	Add Species	Verify that bat species can be registered with valid inputs and that duplicate or invalid entries are rejected	High
TC-011	Manage Species	Verify that registered species can be edited and deleted directly in the Registered Species table	Medium
TC-012	Add Training Data	Verify that .wav training audio files can be uploaded and correctly linked to a selected species and detector	High
TC-013	Train New Model	Verify that a new subset model can be trained from selected detectors and species and becomes available for classification	High

2. Detailed Test Cases

Test Case ID: TC-001
Functionality: Login & Authentication

Test Steps:

1. Navigate to the BatLab login page
2. Enter valid username (admin) and valid password (password)

3. Click Login and verify the user is redirected to the main application dashboard
4. Refresh the page to return to the login screen
5. Enter the correct username with an incorrect password and click Login
6. Verify the error message 'Invalid login credentials. Please try again.' is displayed and access is denied

Expected Result: Valid credentials grant access to the main application. Invalid credentials display an error message and do not grant access to the application.
Status: Pending / Pass / Fail

Test Case ID: TC-002
Functionality: Classify — Model Selection

Test Steps:

7. Log in and navigate to the Classify tab
8. Locate the Step 1 — Select a Model section
9. Verify the base model (Colab) appears in the dropdown when best_model.pt exists at model_checkpoints/colab/
10. Verify any previously trained subset models appear as 'Subset: <name>' entries in the dropdown
11. Select each available model option and confirm no error occurs
12. With no model files present, verify the warning message is displayed and classification cannot proceed

Expected Result: All available models appear in the dropdown and can be selected. A warning message is shown when no model files are found.
Status: Pending / Pass / Fail

Test Case ID: TC-003
Functionality: Classify — Source Folder Path Input

Test Steps:

13. Log in and navigate to the Classify tab
14. Leave the source folder path field empty and click Verify Path & Load Files
15. Verify an error message prompts the user to enter a path
16. Enter a path that does not exist on the machine and click Verify Path & Load Files
17. Verify an error message indicates the path was not found
18. Enter a valid folder path that contains no .wav files and verify a warning is shown
19. Enter a valid folder path that contains .wav files and click Verify Path & Load Files
20. Verify a success message shows the number of .wav files found and the files are ready for classification

Expected Result: Empty and non-existent paths produce appropriate error messages. A valid folder with no .wav files shows a warning. A valid folder with .wav files loads them and shows a file count confirmation.
Status: Pending / Pass / Fail

Test Case ID: TC-004
Functionality: Classify — Audio File Classification

Test Steps:

21. Log in, select a model in Step 1, and verify a source folder with .wav files in Step 2
22. Click Classify in Step 3 and wait for processing to complete
23. Verify that files identified to a species appear in the Identified Species table with Filename, Species Prediction, and Confidence Level columns
24. Verify that files the model could not classify appear in the Unknown Species table
25. Verify the Classification Results CSV table is populated with detailed acoustic metadata
26. Click Download Classification Results CSV and confirm the file downloads successfully

Expected Result: Identified files appear in the Known Species table with species and confidence data. Unclassified files appear in the Unknown Species table. A full CSV of results can be downloaded.
Status: Pending / Pass / Fail

Test Case ID: TC-005
Functionality: Classify — Identified Species Folder Export

Test Steps:

27. Run a classification that produces identified species results
28. Click Create New Folder for Identified Sound Files
29. Enter a valid destination folder path that is different from the source folder
30. Click Create Folder & Move Files and verify a success message showing the count of moved files
31. Verify that within the destination folder, files are organized into subfolders named by species (e.g., Identified_Bats/Myotis lucifugus/)
32. Attempt to use the source folder as the destination and verify an error is displayed
33. Click Cancel and verify no files are moved and the form closes

Expected Result: Identified files are moved into species-named subfolders at the destination path. Using the source folder as the destination produces an error. Cancel closes the form with no changes.
Status: Pending / Pass / Fail

Test Case ID: TC-006
Functionality: Classify — Unknown Species Folder Export

Test Steps:

34. Run a classification that produces unknown species results
35. Click Create New Folder for Unknown Sound Files
36. Enter a valid destination folder path that is different from the source folder
37. Click Create Folder & Move Files and verify a success message showing the count of moved files
38. Attempt to use the source folder as the destination and verify an error is displayed
39. Click Cancel and verify no files are moved and the form closes

Expected Result: Unknown files are moved to the destination folder. Using the source folder as the destination produces an error. Cancel closes the form with no changes.
Status: Pending / Pass / Fail

Test Case ID: TC-007
Functionality: Classify — Session Management

Test Steps:

40. Log in and perform at least one classification run so results are visible in the tables
41. Verify the Start New Session button appears at the top of the Classify tab
42. Click Start New Session
43. Verify the Identified Species table, Unknown Species table, and Classification Results CSV table are all cleared
44. Verify the source folder path field is reset to empty
45. Confirm the interface is ready to accept a new folder path and model selection

Expected Result: All classification results and session data are cleared. The interface returns to its initial empty state ready for a new session.
Status: Pending / Pass / Fail

Test Case ID: TC-008
Functionality: Add Detector

Test Steps:

46. Log in and navigate to the Add Detector tab
47. Enter a valid Detector ID (e.g., Detector-A1), Latitude (e.g., 32.7555), and Longitude (e.g., -97.3308)

48. Click Save Detector and verify a success message and the new detector appears in the Registered Detectors table
49. Attempt to save the exact same Detector ID, Latitude, and Longitude again and verify a duplicate error message
50. Submit with an invalid latitude value and verify the validation error
51. Submit with an invalid longitude value and verify the validation error
52. Submit with the Detector ID field left empty and verify the required field error

Expected Result: Valid detectors are saved to the database and appear in the table. Duplicate entries, out-of-range coordinates, non-numeric values, and missing required fields each produce a descriptive error message.
Status: Pending / Pass / Fail

Test Case ID: TC-009
Functionality: Manage Detectors

Test Steps:

53. Log in and navigate to the Add Detector tab with at least two detectors already registered
54. Click on the Latitude or Longitude cell of an existing detector and edit the value
55. Confirm the change is saved and persisted in the database
56. Delete a detector row using the row deletion control in the table
57. Confirm the detector is removed from both the table and the database
58. Attempt to edit the Detector ID column and verify it is read-only

Expected Result: Coordinate edits are saved to the database. Deleted detectors are removed. The Detector ID column cannot be modified.
Status: Pending / Pass / Fail

Test Case ID: TC-010
Functionality: Add Species

Test Steps:

59. Log in and navigate to the Add Species tab
60. Enter a valid Abbreviation (e.g., MYLU), Latin Name (e.g., Myotis lucifugus), and an optional Common Name (e.g., Little brown bat)
61. Click Save Species and verify a success message and the species appears in the Registered Species table
62. Attempt to register the same Abbreviation and Latin Name again and verify a duplicate error message
63. Enter an abbreviation longer than 16 characters and verify the length validation error

64. Enter an abbreviation containing special characters (e.g., MY-LU) and verify the alphanumeric-only error
65. Submit without a Abbreviation and verify the required field error
66. Submit without a Latin Name and verify the required field error

Expected Result: Valid species are saved to the database and appear in the table. Duplicates, abbreviations over 16 characters, non-alphanumeric abbreviations, and missing Abbreviations and Latin Names each produce a descriptive error message.
Status: Pending / Pass / Fail

Test Case ID: TC-011
Functionality: Manage Species

Test Steps:

66. Log in and navigate to the Add Species tab with at least two species already registered
67. Click on the Latin Name or Common Name cell of an existing species and edit the value
68. Confirm the change is saved and persisted in the database
69. Delete a species row using the row deletion control in the table
70. Confirm the species is removed from both the table and the database
71. Attempt to edit the Abbreviation column and verify it is read-only

Expected Result: Edits to Latin Name and Common Name are saved to the database. Deleted species are removed. The Abbreviation column cannot be modified.
Status: Pending / Pass / Fail

Test Case ID: TC-012
Functionality: Add Training Data

Test Steps:

72. Log in and navigate to the Add Training Data tab
73. Use the species search field to filter and select a species from the species list
74. Use the detector search field to filter and select a detector from the detector list
75. Upload one or more .wav files using the file uploader (max 200MB per file)
76. Click Submit Training Data and verify a success message
77. Verify the uploaded files appear in the Training Records table linked to the correct species and detector
78. Attempt to submit without selecting a species and verify a warning message is shown
79. Attempt to submit without selecting a detector and verify a warning message is shown

Expected Result: Training files are linked to the selected species and detector and persisted in the database. Warnings are shown when species or detector selections are missing.
Status: Pending / Pass / Fail

Test Case ID: TC-013
Functionality: Train New Model

Test Steps:

80. Log in and navigate to the Train New Model tab
81. Verify the Train Model button is disabled when no detectors or species are selected
82. Use the detector search to find and check at least one detector that has training data
83. Verify that only species with training data for the selected detector(s) appear in the species checklist
84. Check at least one species from the species checklist
85. Optionally enter a custom model name in the model name field
86. Click Train Model and observe the training log output in the expanded Training Output section
87. After training completes, verify the success message shows the model name, number of training examples used, and the saved file path
88. Navigate to the Classify tab and verify the new model appears in the model selection dropdown

Expected Result: The Train Model button is disabled without valid selections. Training completes and produces a success summary. The new model is immediately available in the Classify tab model dropdown.
Status: Pending / Pass / Fail