Module 5- Computer Systems (2023-24)

Project

Project Name: Bird Activity Detection	***Team Members:*** Lucas Fuertes, Thomas van der Boon, Dinh Thuy Nhat Vy, Carmen Asbreuk, Dimitri von Benckendorff, Duong Thu Huyen
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Refer to the below table and complete all the sections with clarity.

2. Select those test strategies that are applicable to test your application.

3. Make sure to refer to the "Development-Security by Design Checklist" to see the possible vulnerabilities in your application.

4. Feel free to add features and test cases in the table that are essential to test your application.

5. You can use Selenium, SonarQube, and/or GitLab CI/CD to perform source code review, static and dynamic application testing, etc

Test strategy	Date	Process/ Function	Test case	Step	Description	Status	Expected results	Actual results	Mitigation plan /solution	Review on the mitigation plan	Remarks on the failed mitigation plan
Unit test > blurring for privacy	N.D.	Privacy	Blurring captured individuals	1	The system should feature a component has anonymizes captured individuals by blurring their face.	Open	The images that do not contain a person should be unchanged and the images that contain a person need to be changed by	We did not implement this feature so we could not get the expected result.			We did not implement this feature so we could not get the expected result.

							blurring their face.				
Unit test > ML model	2023-11-01	Input	Different input size	1	Can our model handle different sized input images? We developed our model with images that are 1024 by 1024 pixels.	Open	We expect that our model is not robust enough to handle different sized inputs. So, we expect different predictions and lower test accuracy.		Rescale the input image to 1024 by 1024 pixels before predicting the image class using the ML model.		
Unit test > ML model	November 1st, 2023	Binary classification	Detect whether there is (not) a bird on the image	1	We want to detect whether there is (not) a bird on the image. We want to perform this task with 95% accuracy.	Failed	We expect that the test accuracy of our model is greater than random (50%). We aim for a 95% test accuracy on this task.	50% test accuracy after two epochs of training the model.	Continue training the model. Finetune the architecture. Perform K-fold validation to select the best performing initialization of the model. Etc. Check the test accuracy before and after training.	Open	
Unit test > ML model	November 1st, 2023	Multi-class classification	Detect which bird species is on the image	1	We want to detect the species of bird on the image. We want to perform this task with 50% accuracy.	Failed	We expect that the test accuracy of our model is greater than random (5%). We train the model on 20 bird species, so we have 20 classes. We aim for a 50% test accuracy on this task.	5% test accuracy after two epochs of training the model.	Continue training the model. Finetune the architecture. Perform K-fold validation to select the best performing initialization of the model. Etc. Check the test accuracy before and after training.	Open	

Unit test > ML model	November 1st, 2023	Condensation window	Detect birds in ‘blurry’ images	1	We want the ML model to properly class images even when they are blurry due to condensation.	Open	We expect the model to have a lower accuracy when the pictures are blurry		If needed: Improve by hardware, so making sure the window does not get condensed by e.g., temperature control or different glass		
Unit test > ML model	November 1st, 2023	Rainy circumstances	Detect birds during rain	1	We want the ML model to properly class images even when it is raining.	Open	We expect pictures with rain droplets to have a lower accuracy		If needed: prevent droplets from getting on the glass by e.g., a small roof		
Unit test > Hardware	November 1st, 2023	Taking pictures through a glass-window	Produce high quality images	1	We want the camera to remain stable within online processes with a good Wi-Fi connection and be able to produce clear enough pictures.	Passed	Users can have clear pictures in their library	50% pictures in library have a good quality			
Unit test > Hardware	November 1st, 2023	Motion Detection	Detect movement happens in front of camera	1	We want the sensor to detect all movements which happen in front of the camera properly.	Passed	Every movement can be detected in 1 second and store at least 1 frame to database.	90% movement can be detected during a video last 8 minutes			
Automated unit test > Back-end API	October 1st, 2023	API Resources for login, registration, logout, etc...	API Calls to each of the resource methods with varying inputs	1	All API calls to AccountResource should respond with expected status codes and correct data.	Passed	All JUnit tests pass. Invalid or empty inputs are rejected by the server.	2/2 JUnit tests pass.			
Automated unit test > Back-end API	October 1st, 2023	API Resources for accessing and filtering bird images.	API Calls to each of the resource methods with varying inputs	1	All API calls to BirdImageResource should respond with expected status codes and correct data.	Passed	All JUnit tests pass. Invalid or empty inputs are rejected by the server.	5/5 JUnit tests pass.			

Automated application test	November 1st, 2023	Registration and login	Selenium performs registration, login and logout	1		Passed		3/3 JUnit tests pass			
Automated application test	November 1st, 2023	Filtering and archiving images. Recovering archived images.	Selenium performs all the filtering functions and archives images.	1		Open	3/3 JUnit tests pass, and no exceptions are thrown by the Selenium web driver.	The front-end has not reached the stage where automated testing is practical for those features.	Work will continue on the front end, and the JUnit tests can be written as usual.		
Manual application test > Security	November 1st, 2023	Token authentication for API Resources	Use Postman with/without valid authentication and attempt accessing all API endpoints	1	The AuthorizationFilter is responsible for token authentication.	Passed	The server only grants access to restricted API endpoints when the authentication token is in the database.	Access was granted and denied as intended, and all API endpoints have correctly set access levels.			
Manual application test > Security	November 1st, 2023	Filters for incoming requests	Pass in dirty request headers or query parameters containing code (like HTML)	1	XXSRequestFilter should sanitize the request headers and parameters.	Passed	HTML Code in both the headers and query params have been stripped, and the sanitized request is then handled.	HTML Code was removed as expected.			
Automated static code analysis > Security	November 1st, 2023	Security of the overall system	IntelliJ dependency checker finds known vulnerabilities in the	1	We can look at the information Intellij gave us and determine if we exposed that vulnerability in our code.	Passed	Dependencies with vulnerabilities, if they exist in our project, do not affect the overall security	Five dependencies with vulnerabilities were detected. These			

			dependencies.				of our application.	vulnerabilities are not exposed in our code.			
Coverage testing > Back-end	November 1st, 2023	Code coverage for the automated tests	The JUnit tests with coverage in Intellij	1	Coverage gives us a way to gauge how comprehensive our automated testing is so we can improve the system's testing capabilities.	Failed	Near 100% coverage (>90%)	dao = 66% model = 100% resources = 75%	Coverage is mainly lacking in the dao, resource classes. This is because not all of the newer methods have their own JUnit tests yet. The solution is to finish writing these tests.		