

Crowdsourced Species Identification for Camera Traps

Team Roles

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Wyatt Fleming:

- Back-end Implementation
- Database changes

Alex Makepeace:

- Project Management
- Front-End Implementation
- UI Design

Sarah Morris:

- Back-end Implementation
- Database changes

Leah Olexson:

- UI Design
- Front-end Implementation

Megan Sumner

- Integration of front and back end (Does that make sense?)
- Back-end if that doesn't make sense

Project Plan

Sprint 2

Create a Novice User

Expected Completion Date: October 17

Create a new class of user that does not have the ability to manually identify the animal. Add appropriate changes to the database to hold the information needed for the novice user to function.

Dependent On:

- Account Creation

Create an Expert User

Expected Completion Date: October 17

Create a specific new class of user that has the ability to manually identify animals. Add appropriate database classifications needed for the expert user to perform as expected.

Dependent On:

- Account Creation

Account Creation

Expected Completion Date: October 17

Build off existing account creation tools to allow for different types of user account creation.

Dependent On:

- Pre Existing implementations
- Create a Novice User
- Create an Expert User
- Create an Administrator User

Create an Administrator User

Expected Completion Date: October 17

When user accounts are being created, make appropriate database changes to account for an administrator type of user.

Dependent On:

- Account Creation

Sprint 3

Users Can Sign In

Expected Completion Date: October 24

Users will be able to sign into and create accounts that keep track of their identification progress and badges earned from identification. It will keep track of how many identifications they've

done. Points earned from identifications and profile details. A user will have a profile picture saved to their account. Users can view other users profiles.

Dependent On:

- Create a Novice User
- Create an Expert User
- Create an Administrator User
- Account Creation

Grab Photo From Database Based on Animal Species

Expected Completion Date: October 31

We need to be able to grab a specific photograph from the database upon request. The request in this case must specifically based upon the type of animal we are looking for.

Dependent On:

- Pre Existing Implementations

User Can Submit Their Animal Identification

Expected Completion Date: October 31

When a user is certain of their identification they can submit it to the database.

Dependent On:

- Pre Existing Implementations

Tab Interface to Swap Identification Method

Expected Completion Date: November 4

When a user is attempting to identify an animal they are able to tab through different options that allow differing classification styles. These classification styles vary from the expert exclusive text identification to identifying by coat type, common local animals, and animal size.

Dependent On:

- Create an Expert User
- An Expert User Can Identify Animals By Text
- A User is Given a List of Suggested Animals Based Upon Their Photo
- A Novice User Will be Given a List of Suggested Animals Based Upon the Body Size in The Photo
- A User Will be Given a List of Suggested Animals Based Upon the Coat Pattern in Their Photo

An Expert User Can Identify Animals By Text

Expected Completion Date: November 4

Expert users will have the option to identify the animal that they are examining by text entry. That text entry can be the common name or the latin name of the animal in question. Text Identification is a separate tab that is the expert users first option when a new identification set is given to them.

Dependent On:

- Create a Novice User
- Create an Expert User
- Tab Interface to Determine Identification Method

A User Is Shown Three Consecutive Picture of the Same Animal

Expected Completion Date: November 4

A user, for each animal identification, will be given a sequence of three photos that are related to the animal that they are trying to identify. These photos will be a slice of time from when the camera trap was first triggered by the animal forward. They can be differing picture qualities and distance from the camera. The user can move backwards and forwards through the series of photos at will, and be able to skip between them.

Dependent On:

- Pre Existing Implementation

A User is Given a List of Suggested Animals Based Upon Their Photo

Expected Completion Date: November 4

When a user is given a photo they will be able to switch tabs to display different types of suggestions of what the animal is. Based upon our animal recognition libraries the user will be given a list of possible categories that their assigned animal could fall into. These suggestions are meant to be broad, with the most relevant options at the top of the list. If struggling with image recognition libraries, we can suggest the most common types of animals found using CamTraps.

Dependent On:

- Tab Interface to Swap Identification Method
- Parse Animal Photo Database for Possible Matches

- Parse Animal Photo Database Based on CamTraps Geolocation

Parse Animal Photo Database for Possible Identifications

Expected Completion Date: November 4

We need to parse existing photo databases and see if there are any image patterns in our identifying photo that match existing animals. If there are any similarities between our animal and those in the database we return the suggested animal type of the database photo. We compile a list of the most likely matches and return it for the user.

Dependent On:

- Pre-existing Implementations

Once One Animal is Identified Another Identification Will Appear

Expected Completion Date: November 4

Once the user identifies one animal, the next set of three photos will appear. This will allow the user to infinitely complete animal identification. An identification will be saved to the user's account so they can come back to it later.

Dependent On:

- User Can Submit Their Animal Identification

Sprint 4

Show Picture of a Selected Animal

Expected Completion Date: November 14

When a novice user selects a suggested animal a photograph of the animal will appear in a pop-up window to let the user decide if it matches their identification photograph. The suggestion photograph will have a variety of editable parameters that the user can select to alter the photograph to better match their identification photo.

Dependent On:

- Grab Photo From Database Based on Animal Species
- A User is Given a List of Suggested Animals Based Upon Their Photo

Create a Tutorial for First Time Users

Expected Completion Date: November 21

In order to make user actions clear to new users we will create an interactive tutorial for the first time users. This will go over the functionality of the site and basic navigation. It will happen everytime the user visits a new page for the first time, it will reappear if the user hits a help button. It will go over the workflow of identifying the animal for the first time. It will similar to the style of a Google tutorial.

Dependent On:

- Create a Novice User
- Create a Tutorial for Novice Users
- Create an Expert User
- Create a Tutorial for Expert Users
- Tab Interface to Determine Identification Method
- Show Picture of a Selected Animal
- Novice Users Will Have a Confirmation of Their Animal Identification Appear
- A User is Given a List of Suggested Animals Based Upon Their Photo

Create a Tutorial for Novice Users

Expected Completion Date: November 21

Create a novice user specific tutorial, this will go through the specific walkthrough of identifying animals as a novice user as well as all the core functionality of the site. It will more in depth on how to start identifying animals. The user can press a button on the page at any time in order to remind themselves of how to use the identification process.

Dependent On:

- Create a Novice User
- Tab Interface to Determine Identification Method
- Show Picture of a Selected Animal
- Novice Users Will Have a Confirmation of Their Animal Identification Appear
- A User is Given a List of Suggested Animals Based Upon Their Photo

Create a Tutorial for Expert Users

Expected Completion Date: November 21

Create an expert user specific tutorial, this will go through the specific walkthrough of identifying animals as an expert user as well as the core functionality of the site. It will give a brief overview of identifying animals as an expert user. The user can press a button on the page to redisplay the tutorial at any point.

Dependent On:

- Create an Expert User
- Tab Interface to Determine Identification Method
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Novice Users Will Have a Confirmation of Their Animal Identification Appear

Expected Completion Date: November 21

When a novice user believes they have correctly identified an animal they will be directed to a page that has a picture of the animal they are identifying and a photo of their chosen identification animal next to it to compare. The user will be asked to confirm their identification, or given the choice to return to the possible animal selection screen.

Dependent On:

- Create a Novice User
- Show Picture of a Selected Animal

Parse Animal Photo Database Based on CamTraps Geolocation

Expected Completion Date: November 21

When the user is unable to identify a photo, the suggested possibilities can be drawn from a list of animals found within a specific radius of the geolocation of the CamTrap that captured the photo. These suggestions are pulled from the database using the geotag of the photo.

Dependent On:

- Pre Existing Implementations

Sprint 5

A User Can Draw Boxes Around Animals If They Are Unable to Identify Them

Expected Completion Date: November 27

Users should be able to draw boxes around animals if they are unable to categorize them. The box that they draw should be passed into our machine learning algorithms that will process it, so we can build better identification databases. The boxes should be able to be drawn in small and large sizes. They can be drawn around, blurry and clear images. This functionality can be accessed in any tab at any time on the identification pages by pressing a button.

Dependent On:

A Novice User Will be Given a List of Suggested Animals Based Upon Their Body Size

Expected Completion Date: November 27

When a user is given a photo they will be able to switch tabs to display different types of suggestions of what the animal is. Based on the size of the animal in the photo, our animal recognition software will try and narrow down the suggestions to the most relevant ones to compile a list for our user. If no matches can be found the user will be directed to the overall suggestions of regional animals list.

Dependent On:

- Tab Interface to Swap Identification Method

A User Will be Given a List of Suggested Animals Based Upon the Coat Pattern in Their Photo

Expected Completion Date: November 27

When a user is given a photo they will be able to switch tabs to display different types of suggestions of what the animal is. Based on the coat pattern of the animal in the photo, our animal recognition software will try and match the coat to a preexisting database. Based on possible matches the user will have a generated list of possible animals that could be in their photo. If no matches can be found the user will be directed to the overall suggestions of regional animals list.

Dependent On:

- Tab Interface to Swap Identification Method

Show Different Physical Variations of an Animal

Expected Completion Date: November 27

When a novice user selects an animal from the suggestions list, a pop up window will appear that contains the animal's photograph. The user will be able to choose to cycle through different photos of different genders of animal as well as different ages. This will allow the user to be able to account for if their animal differs in appearance from the norm.

Dependent On:

- Show Picture of a Selected Animal

Show Different Behavioural Variations of an Animal

Expected Completion Date: November 27

When a novice user selects an animal from the suggestions list, a pop up window will appear with a photograph of what the animal looks like. The user will be able to cycle through different photos of the animal in different actions. There will be photos that illustrate the animal walking, running, etc.

Dependent On:

- Show Picture of a Selected Animal

User Gains Points and Badges

Expected Completion Date: November 27

Users can gain points and badges from different types of identifications that they accomplish. They can earn these points for each identification they complete. These points can be used to unlock bonus' and special badges.

Dependent On:

- Account Creation
- Users Can Login

Users Have Profile Pictures

Expected Completion Date: November 27

Users can set a profile picture for their account. This profile picture can be a custom picture or it can be potentially one of the animals that they come across when identifying. It can be set by drawing a box inside one of their identification photos.

Dependent On:

- Account Creation
- Users Can Login

Administrators Can Manually Filter Out Photos that Don't Contain Animals

Expected Completion Date: November 27

Administrators can have the option if they notice photos that do not contain animals to delete those photos from the identification process. These non animal photos can contain machinery, cars, humans, etc. They include close up and far away photos on non-animal subjects.

Dependent On:

- Create a Administrator User

Administrators Can Filter Out False Identifications

Expected Completion Date: November 27

If an administrator chooses they can manually filter out false identifications. Every identification should be checked against the photo databases, to check if it correlates to preexisting identification markers. If the photo is flagged by software as potentially incorrect it will be directed to administrators who can confirm or deny the false identification.

Dependent On:

- Create a Administrator User

Administrators Can Promote People to Experts

Expected Completion Date: November 27

Administrators will receive requests from people to promote them to expert, they can increase a person's privileges to expert levels.

Dependent On:

- Create a Administrator User

GANTT

<https://docs.google.com/spreadsheets/d/12o3CwVTSQzoodZb8a-E1VfiVV8noHI7BqO6GgbQDwTE/edit?usp=sharing>

