



Moth Classification

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Reese Jones

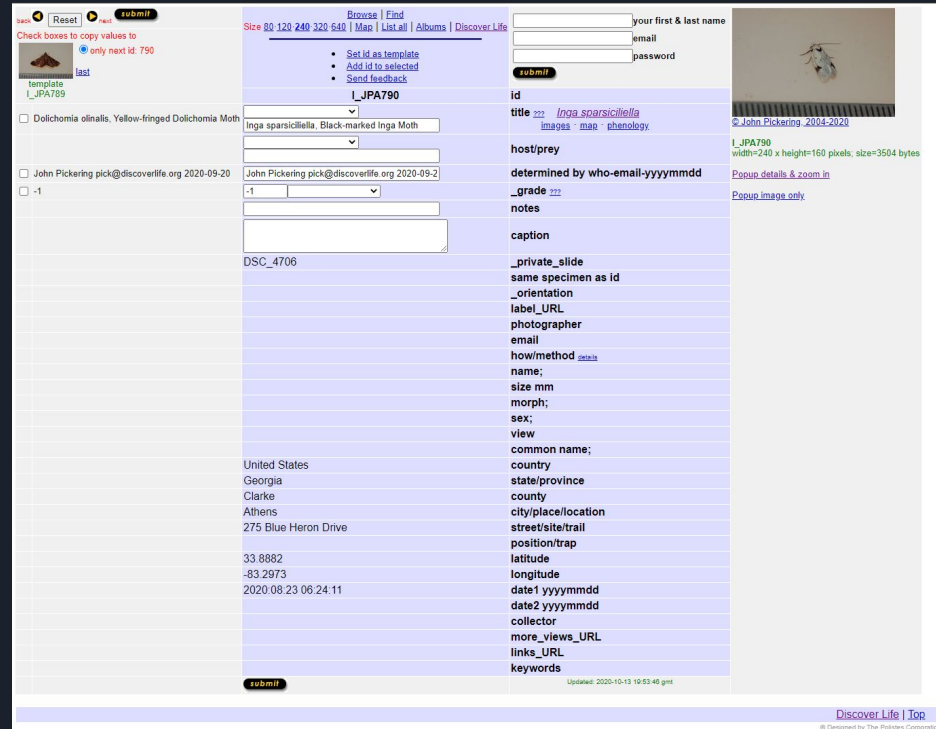


Project Context

- Work alongside Dr. Pickering and his team to benefit the research community
 - Allow more researchers to be involved in the same project
 - Contribute to a greater understanding of moth populations
- Develop a system of utilities that helps to advance the aims of the Discover Life project
 - The team led by Dr. Pickering has an immense amount of data to process
 - Integrate our technology with his team to make the operation run more efficiently
- Discover Life is a massive project and with our product's completion they will have access to a virtually unlimited pool of data points for current and future research

Solving Current Problems

- Reducing the labor hours for classifying moths
 - Automated classification instead of manual classification
 - Automated recording of metadata instead of manual recording
- Streamlining and simplifying the process of collecting moth images
 - Easy to navigate mobile application
 - Take a picture and upload right away
- Diversifying and expanding current moth data
 - Scaling the product and using it in different areas
 - Being simple to use will attract more users
 - Allow the average person to take pictures of moths



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☐ Dolichomia olinalis, Yellow-fringed Dolichomia Moth

☐ John Pickering pick@discoverlife.org 2020-09-20

☐ -1

DSC_4706

United States
Georgia
Clarke
Athens
275 Blue Heron Drive
33 8882
-83 2973
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collector

more_views_URL

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keywords

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Impacts

- Saving researcher time and improving research efficiency
 - Automated classification allows researchers to focus on other things
- Furthering moth research with more and varied information
 - Scaling the application and expanding its reach feeds more information to the system
- Moth research contributes to environmental research
 - Moths are indicators of environmental health
 - Moths are indicators of climate change

Novel Image Classification Techniques

- Removes Discover Life's by-hand image classification approach
 - Old image processing technique takes 35 seconds on average per picture
 - Images will be classified instantaneously with machine learning model
- Using new data to build machine learning model
 - Model will be trained with Discover Life images as well as external sources
 - User-submitted pictures will increase accuracy of model
- Identifications of rulers in images
 - Detects images with rulers placed next to moths
 - Uses the millimeter markings from the image to measure the moth in the same image

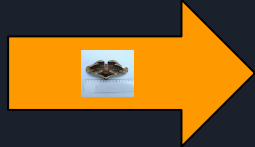
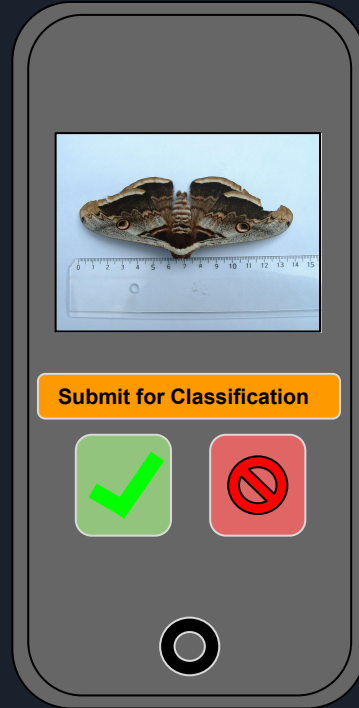
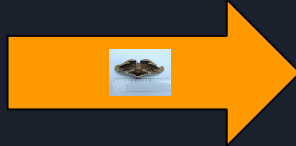
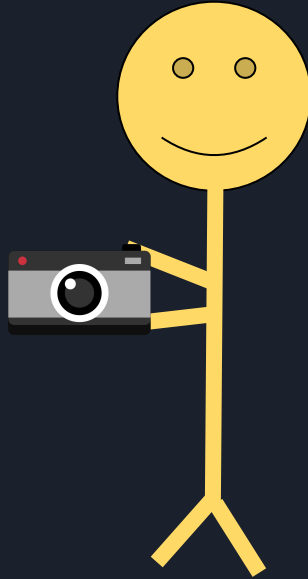




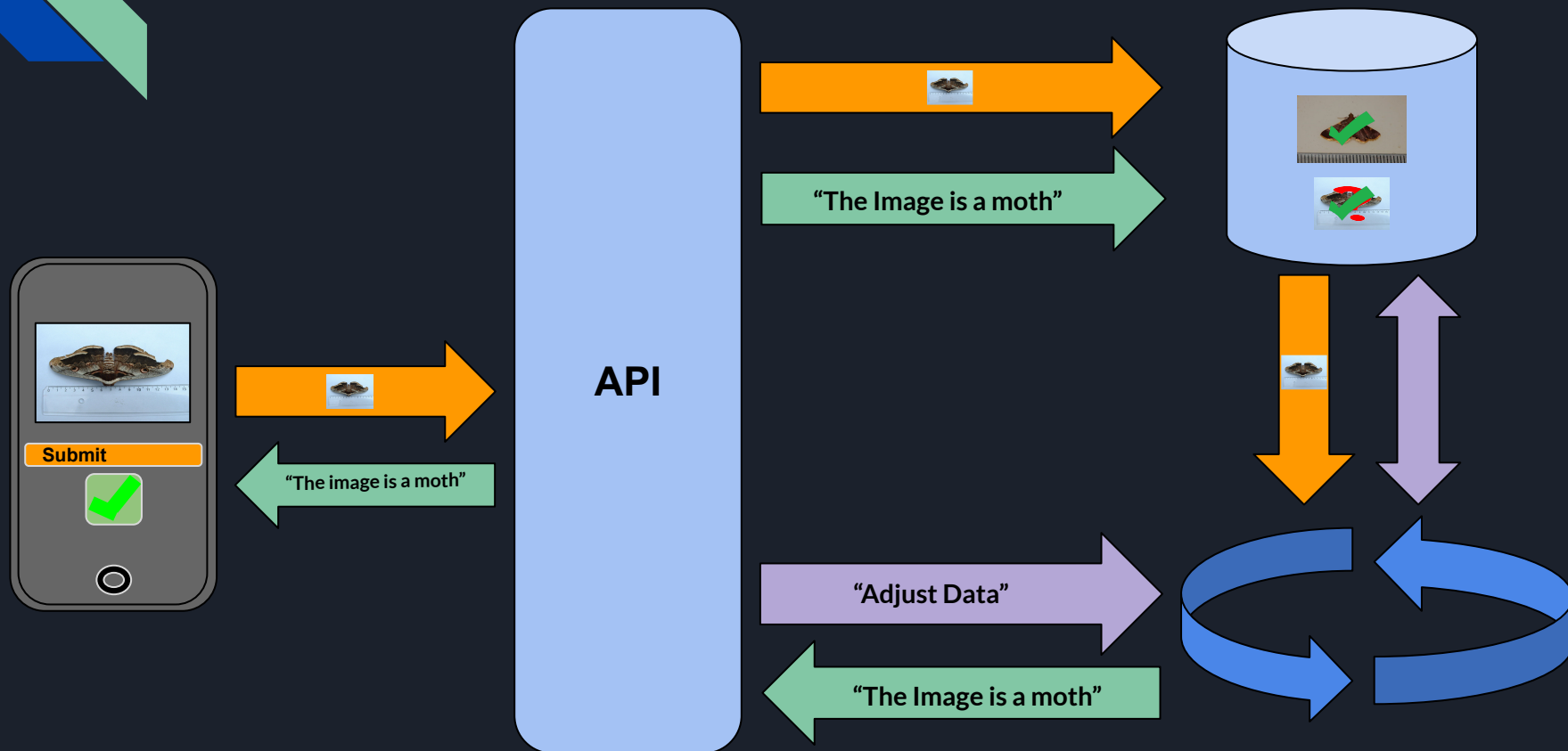
Using the Project

- Machine Learning and Discover Life
 - Classified pictures from the model will be given a confidence grade
 - Results will be updated on their webpage
- Species information through mobile application
 - Any user can classify moth images
 - Picture submissions can be from photo gallery or camera
 - Species name will be displayed to the user if successfully classified
 - If the picture does not have a sufficient confidence grade, it will be bookmarked for a professional review, and the user will be notified when it is classified

Use Case Example



Use Case Example





Sources

Moth Identification Time - <https://www.discoverlife.org/moth/identification.html>

Moth with Ruler Picture -

https://www.discoverlife.org/mp/20p?act=zoom&img=/DL/IM/I_JPA/0007/640/Dolichomia_olinalis_Yellow-fringed_Dolichomia_Moth.I_JPA789.jpg

Moth Importance-

<https://www.theguardian.com/environment/2009/jan/29/moths-climate-change-tropics>

<https://www.theguardian.com/commentisfree/2014/dec/22/moths-loved-not-loathed-only-few-after-clothes>



Questions?