AntBiosecurity Auto data strure and annotation user manual

Author: Md Redwan Hossain

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Contact:

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# How to Auto-Annotate Images.

## Open conda Jupyter

Run Jupyter notebook using conda and go to the folder with the code and dataset (use the custom conda env, see the setup section if conda env is not set up).

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All the code should be in the same directory as the dataset.

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## Stage 1:

* Using Jupyter, run the Auto\_data\_structure\_ToAnnotate code.

# Copies images from the selected dataset to the annotated folder, avoiding photos in the "not good images" folder.

# Run the code, it will ask to enter the dataset folder name.

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## Stage 2:

1. Run the “AutoAnnotate\_from\_ToAnnotated\_To\_AutoAnnoated” code

# This code auto-annotates images from the To Annotate folder and moves images to the Auto Annotated folder.

# No input needed, you can only change the dataset\_root, but dataset\_root has no action, just for reporting where the original datasets were before copying images to To Annotated folder

After this, it is all done, you will find the images and annotations in the Auto Annotated folder.

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# Manual annotation check and edit using LabelImg :

1. Follow the “Open conda Jupyter” step shown above if not opened.
2. Open the “AutoAnnotate\_from\_ToAnnotated\_To\_AutoAnnoated” and run the lablelImg code line.

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1. Using open dir open the species folder you want to work on, selected the image folder.

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1. Now you have to select the annotation folder for the program. Press Ctrl + r on key board and navigate to the annotation folder of the images and select XML and TXT folder.

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1. Make sure you have auto-save on

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1. Delete the annotation by selecting and pressing the delete button on the keyboard.
2. To annotate another ant, select an annotated ant, then use the duplicate Rectbox feature of the app and then drag the copied box. Or use the create box and select the ant species. But ant species selection is hard-coded, new added species will not be in the option, new species can be added in the option by editing in the CustomLabelImg/data/predefinted\_classes.txt
3. A screenshot of a computer

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# Set up a conda environment using it for the first time (Installing it on your own PC)

1. Install Anaconda
2. Make an environment using the environment yml for this project.

This setup should be done by technical person, below are instruction in case.

* Install anaconda:  
  <https://www.anaconda.com/docs/getting-started/anaconda/install#windows-installation>
* Install either jupyter lab or jupyter notebook
  + Open anaconda prompt
  + For jupyterlab, Run: pip install jupyterlab
* Create a virtual environment from the yml file

conda env create -f ant\_environment.yml -n ant\_env

* Conda activate ant\_env

# start it up

jupyter notebook mynotebook

# Go to 'Kernel->Change kernel' and select auto-annotator as your kernel

# select it (restart kernel etc if needed) and you should be good

**When using it**

1. Open Anaconda Prompt
2. Activate the auto-annotation environment using the command: **activate** ant\_env
3. Switch to the auto-annotator directory using the command: **cd ant\_auto-annotation**
4. Open jupyter notebook using the command: **jupyter notebook**
5. Launch the auto annotator script by opening [**Auto\_Annotator.ipynb**](http://localhost:8888/notebooks/ant_auto-annotation/Auto_Annotator.ipynb)
6. Clear all cells by opening the Kernal menu and selecting **Restart & Clear Output**
7. Run the “Import packages” cell by clicking into the cell and pressing **Shift+Enter**
8. In the “Load auto-annotation model” cell, rename the “class\_mapping” line to the species name you will be working on (e.g. Pheidole\_megacephala)
9. Copy the species name into the “dataset\_path” line in the next cell and then run both cells as well as the confidence\_threshold cell
10. Check the datasets folder location in Windows Explorer to see if a folder with the species name has been created (Andreas is working on automating the folder creation process)
11. If not, create a folder with the species name (e.g. Pheidole\_megacephala)
12. Make sure you have images in the folder before running the “for loop” cell and labelImg
13. Check for false positives and delete anything that isn’t an ant (including blurry ants)
14. Add boxes around ants that were missed by the auto-annotator
15. Once finished, upload the images folder and XML files to SharePoint