Deep-Pollination: A series of ML challenges for multi-class insects classification

Ihsan Ullah, Mohammed Lansari, Thibaut Soulard, Vaibhav Arora, Xavier Bou, Eric Santiago
Supervisor: Professor Isabelle GUYON, LISN, Université Paris-Saclay, ChaLearn
ihsan.ullah@universite-paris-saclay.fr

Motivation

Insects are very important for biodiversity, food chains, and pollination. It is of great importance to recognize insects, their habitats and to secure their natural environment. Machine learning, especially deep learning techniques can be used to recognize and classify various insects. We introduce ***Deep-Pollination***, a series of three machine learning challenges organized on Codalab for insects classification. A preprocessed version of the insects dataset is used for these challenges which consists of five classes and more than 200,000 images.

Data Preparation

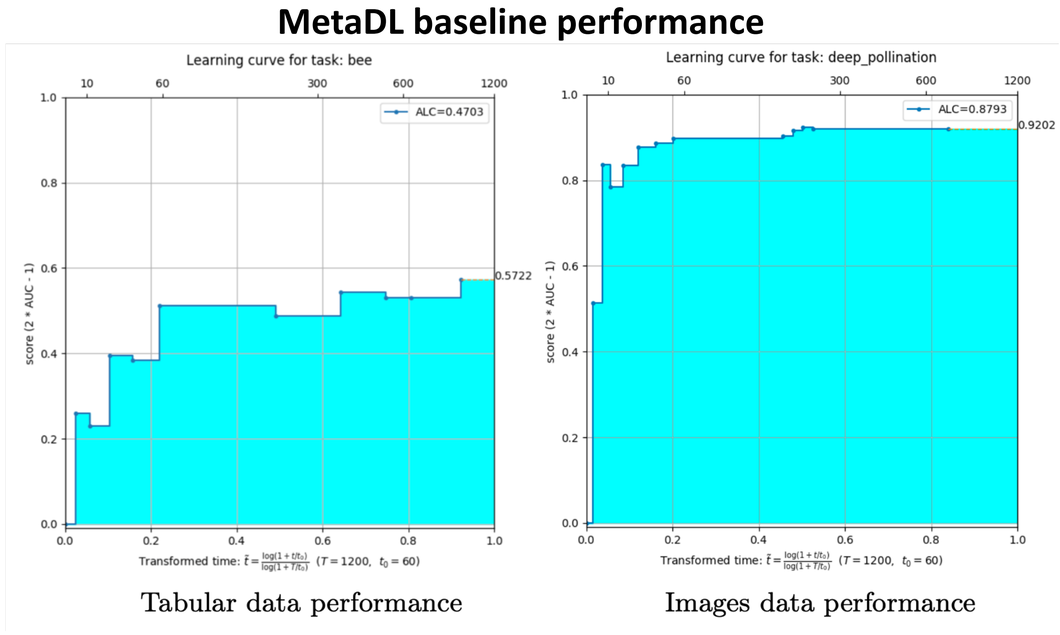
The dataset is donated by ***National Museum of Natural History Paris***. The data preprocessing includes: data cleaning, cropping and resizing of images into 128x128. The images are divided into five classes:

- Bee
- Wasp
- Butterfly
- Other insect
- Other non-insect

CodaLab Challenges

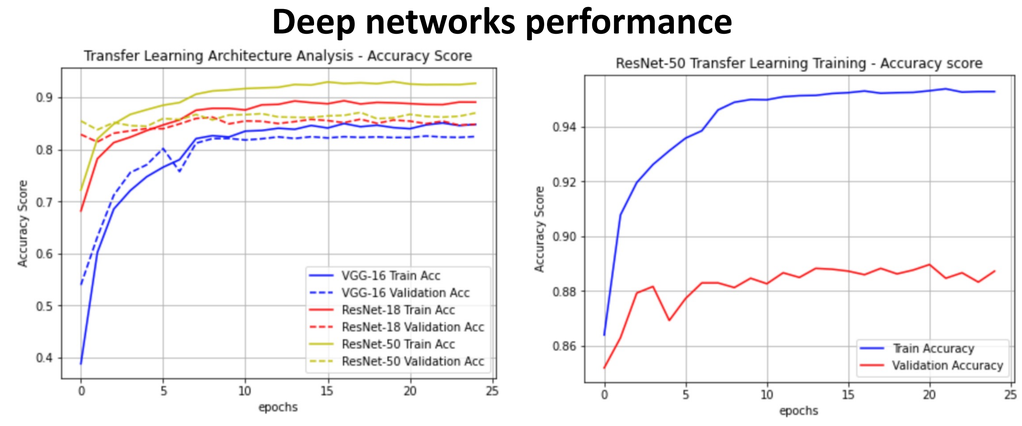
Results

MetaDL baseline performance



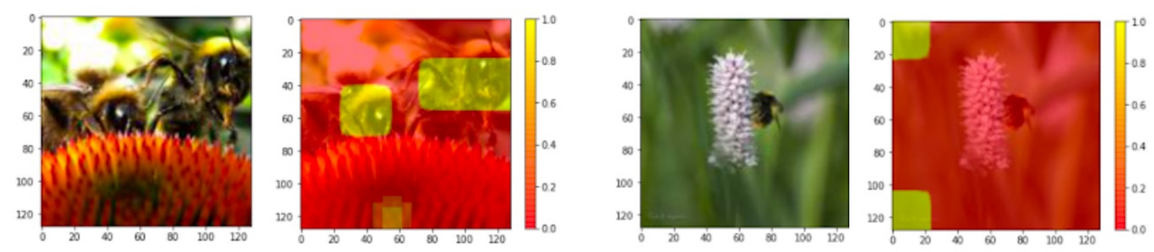
Tabular data performance | Images data performance

Deep networks performance



Explainability

GradCAM visualization



Bounding box and object center matching

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