

Classifying pest images utilizing deep learning models with an impressive accuracy rate of 98% utilizing a **limited image dataset**.



Insect Pest Classification and Detection using Deep Learning techniques

INTRO

The Forestry and Agricultural Biotechnology Institute (FABI) needs assistance in classifying pests starting with the Sirex and Gonipetrus pests using a limited dataset. We utilize transfer learning techniques and publicly available pests datasets to train the models.

METHODS

1. Data Preparation and Processing
2. Data Augmentation techniques
3. Image Classification via Transfer learning \ Fine tuning of models
4. Pest classification and Prediction using Resnet models

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RESULTS

Table 1 indicates the accuracy modelling results of the various Resnet models utilized.

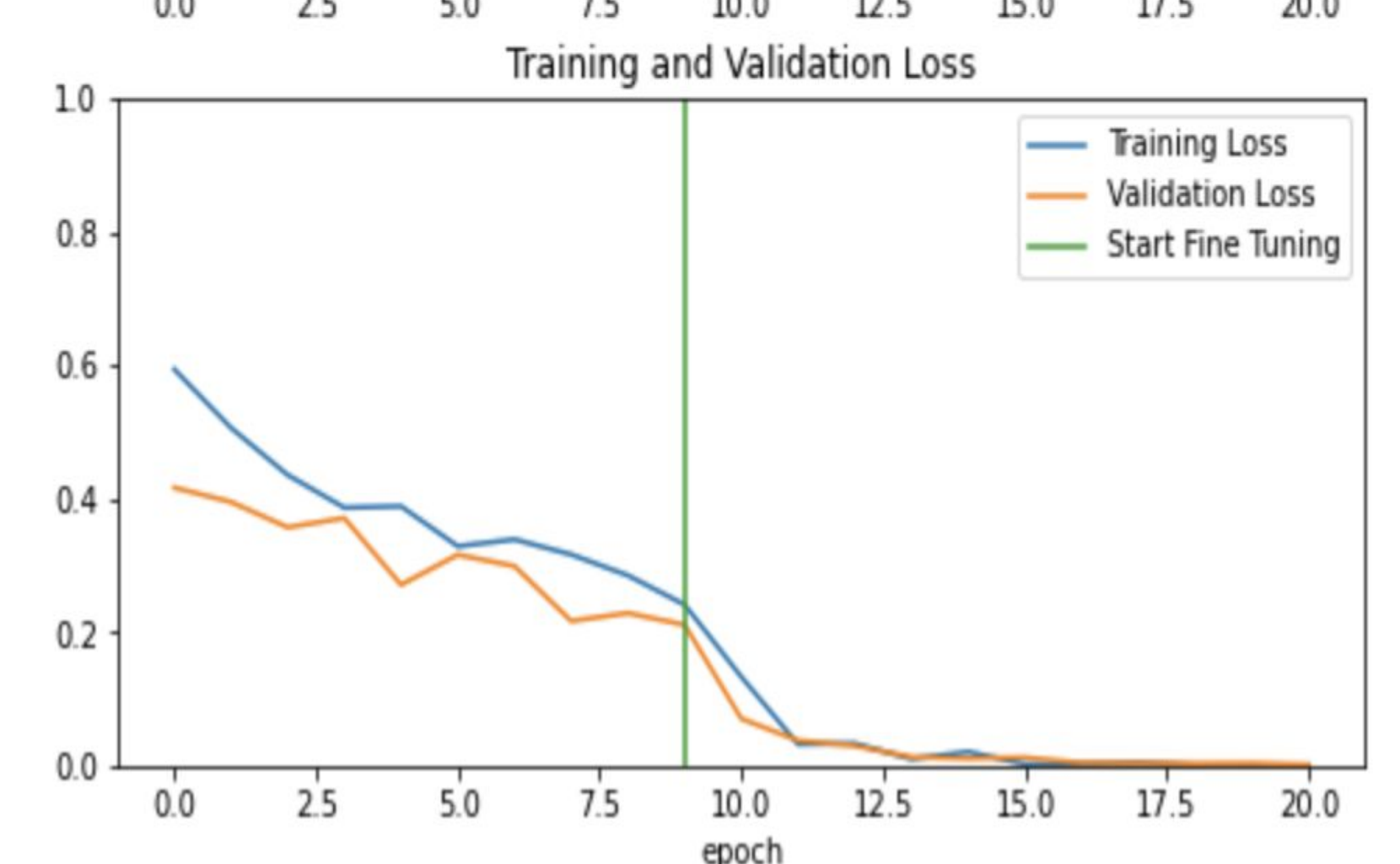
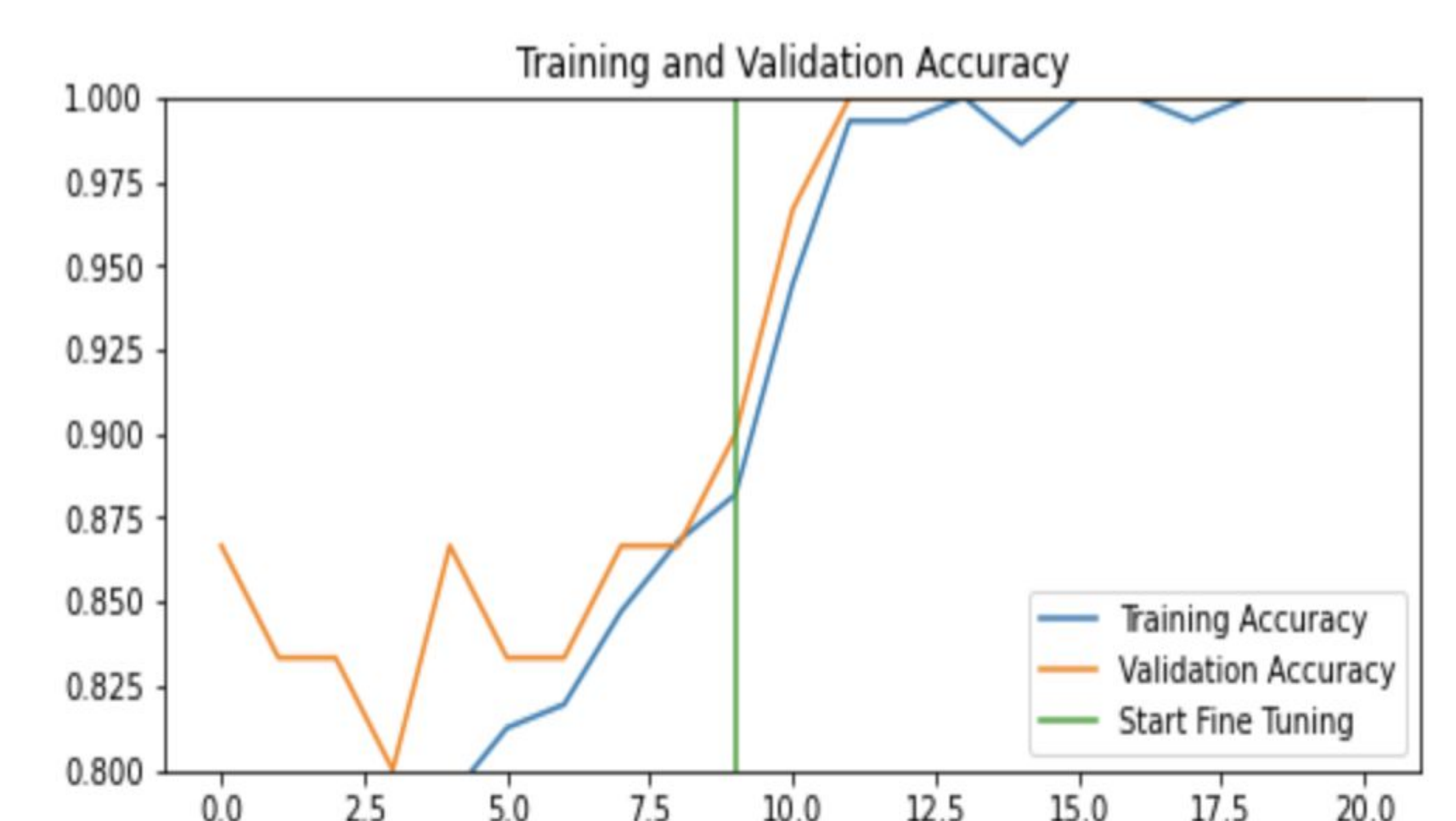
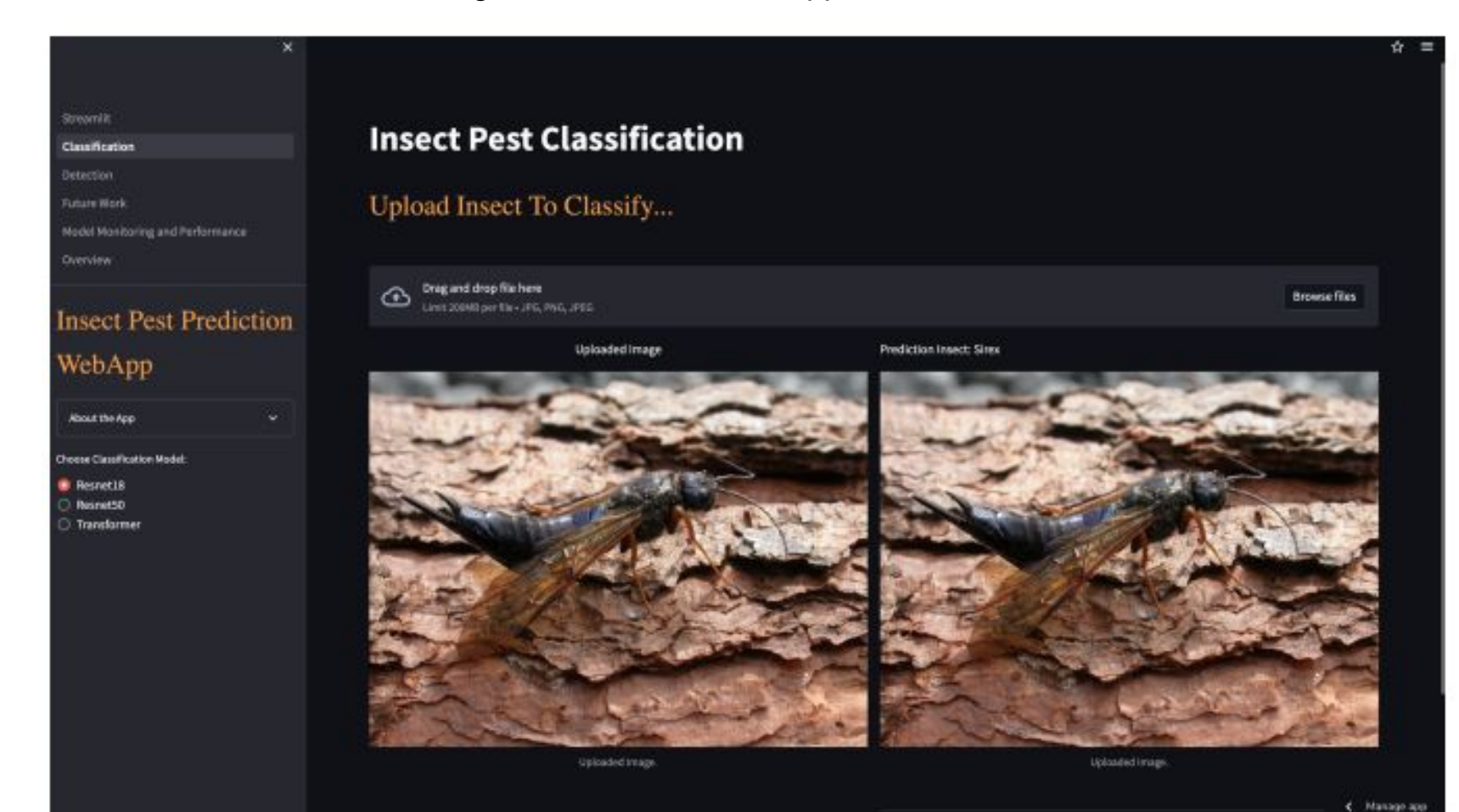
Model	Training Accuracy	Val Accuracy
Resnet18_imagenet1	95%	100%
Resnet18_imagenet2	95%	97%
Resnet50_imagenet1	94%	100%
Resnet50_imagenet2	95%	100%
Resnet50_IP102_1	98%	97%
Resnet_IP102_2	89%	97%

Table 1: FABI Dataset

DISCUSSION

The Resnet models performed well with an average val accuracy of approximately 98%. Training was done using various models and pretrained weights. However, the models were mainly evaluated on the limited FABI provided dataset. In terms of future work, we plan on using IP102 data annotations and labeled data from FABI.

Figure 1: Streamlit Web Application



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