1. Task introduction
2. CNN introduction
3. Dataset introduction (size, distribution)
4. Data preprocessing (classification by file name, check if two mix images are mislabeled as banana)
5. Model construction
6. CNN classification of original data set
7. Mix fruits with white background
8. CNN classification of data set after mixing
9. Mix fruits with white background + data enhancement
10. CNN classification of data set after mixing + enhancement
11. Original data + data enhancement
12. CNN classification of origin data + enhancement
13. Algorithm improvement
    1. Pre-trained model：ResNet50
    2. CNN + ResNet50
14. Ablation Experiment

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| --- | --- | --- | --- |
| Methods | Precision | Recall | F1 |
| CNN & Original Data | 0.90 | 0.90 | 0.89 |
| CNN & Original data + Manual Mixing | 0.94 | 0.93 | 0.93 |
| CNN & Original data + Manual Mixing + Augmentation | 0.92 | 0.92 | 0.91 |
| CNN & Original data + Augmentation | 0.95 | 0.95 | 0.95 |
| ResNet50 & Original data + Augmentation | 0.97 | 0.97 | 0.96 |
| CNN + ResNet50 & Original data + Augmentation |  |  |  |

1. 其他。。。

1. data processing：manually check the labeled data, two "mixed" images were wrongly labeled as "banana"

2. build CNN model trained by original data

3. Filter the fruit images with white background and mix them into mixed images to balance out the number of samples，and