DRONES FOR HUMANITY

Team Members' Positions

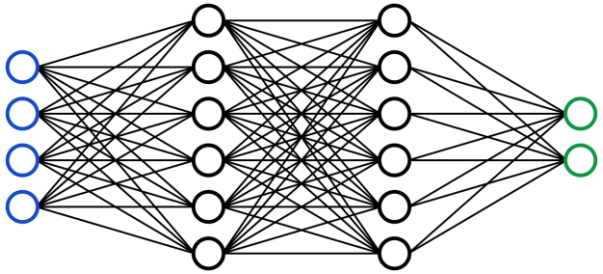
Name	Email	Position
Michael Mascari	mmascari2017@my.fit.edu	Programmer (Computer Vision/AI)
Ballard Barker	bbarker2017@my.fit.edu	Project Manager/ Structures
Matthew Backert	mbackert2017@my.fit.edu	Systems Engineer
Nicholas Davis	davisn2017@my.fit.edu	Avionics/ Propulsion/ Aerodynamics
Brendan Sanders	bsanders2017@my.fit.edu	Production/ Structures
CJ Gagni	cgagni2019@my.fit.edu	Avionics
Justin Williams	justin2017@my.fit.edu	Propulsion
Hamdan Alblooshi	halblooshi2016@my.fit.edu	Propulsion

Faculty Advisor and Client

- The CS faculty advisor for this project is Dr. Debasis Mitra
- The client for this project is the project team
- Client meetings on Thursdays at 4PM

Milestone 4

New comparison dataset



Ensemble methods

Progress Summary

Task	Completion %	To do
1. Ensemble Methods	100%	none
2. Better comparison dataset	100%	none

Task 1 – Ensemble Methods

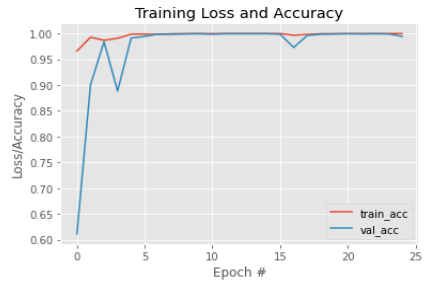
- Three types of Neural Networks, MiniVGGY, MiniGoogLeNetY, and LeNetY, were combined to make an ensemble of neural networks.
- Take the average prediction of all three and use that as the prediction for the image.

```
MiniVGGY = np.copy(predictedY)
```

	precision	recall	f1-score	support
0.0	1.00	1.00	1.00	1370
1.0	1.00	1.00	1.00	1354
accuracy			1.00	2724
macro avg	1.00	1.00	1.00	2724
weighted avg	1.00	1.00	1.00	2724

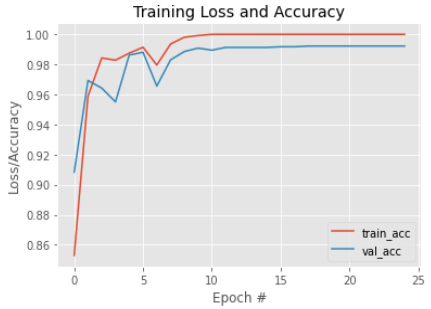

```
MiniGoogLeNetY = np.copy(predictedY)
```

	precision	recall	f1-score	support
0.0	1.00	0.98	0.99	1370
1.0	0.98	1.00	0.99	1354
accuracy			0.99	2724
macro avg	0.99	0.99	0.99	2724
weighted avg	0.99	0.99	0.99	2724



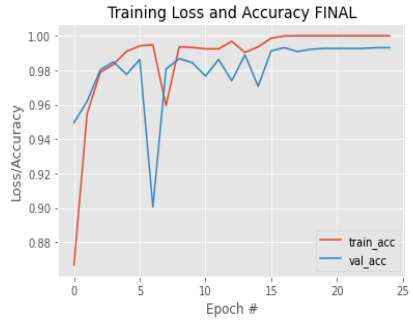

```
LeNetY = np.copy(predictedY)
```

	precision	recall	f1-score	support
0.0	0.99	0.99	0.99	1370
1.0	0.99	0.99	0.99	1354
accuracy			0.99	2724
macro avg	0.99	0.99	0.99	2724
weighted avg	0.99	0.99	0.99	2724



	precision	recall	f1-score	support
0.0	1.00	1.00	1.00	1370
1.0	1.00	1.00	1.00	1354
accuracy			1.00	2724
macro avg	1.00	1.00	1.00	2724
weighted avg	1.00	1.00	1.00	2724

```
<matplotlib.legend.Legend at 0x1c185fcdc40>
```



Task 2 – New comparison dataset

- Took a dataset of ~300 forest images from Kaggle
- Got about 96-97% accuracy with a much smaller dataset
- Gets tripped up by orange images
- Data augmentation and adding in extra orange images may increase accuracy

	precision	recall	f1-score	support
0	0.94	0.93	0.94	73
1	0.98	0.98	0.98	227
accuracy			0.97	300
macro avg	0.96	0.96	0.96	300
weighted avg	0.97	0.97	0.97	300

Milestone 5

- Task 1: Connect all physical components (Camera and Raspberry Pi)
- Task 2: Set up data stream from camera to neural network
- Task 3: Evaluation results
- Task 4: Set up GPS Chip signaling
- Task 5: Create poster for senior design