Network-1

Accuracy Table		
	Network-1	**Network-2**
Plane	64.3%	78.6%
Car	63.9%	86.7%
Bird	41.1%	54.2%
Cat	22.0%	44.8%
Deer	68.0%	54.7%
Dog	54.1%	64.4%
Frog	57.8%	73.4%
Horse	58.6%	85.0%
Ship	64.3%	63.2%
Truck	64.5%	67.5%
Average	**55.9%**	**67.3%**
Running Time	**2:38**	**2:38**

Confusion Matrix Network-1										
	Plane	**Car**	**Bird**	**Cat**	**Deer**	**Dog**	**Frog**	**Horse**	**Ship**	**Truck**
Plane		2.0%	6.8%	2.6%	3.2%	1.1%	0.9%	1.5%	12.7%	4.9%
Car	6.7%		0.9%	0.9%	2.5%	0.6%	2.3%	20%	4.5%	15.7%
Bird	6.8%	0.7%		4.5%	24.6%	10.1%	5.2%	3.1%	2.5%	1.4%

	Plane	Car	Bird	Cat	Deer	Dog	Frog	Horse	Ship	Truck
Cat	3.1%	0.7%	7.4%		21.6%	28.4%	8.2%	4.0%	2.6%	2.0%
Deer	4.2%	0.4%	7.7%	3.1%		5.2%	3.2%	6.1%	1.5%	0.6%
Dog	1.5%	0.2%	8.9%	9.7%	13.6%		3.1%	6.8%	1.0%	1.1%
Frog	1.3%	0.5%	4.0%	3.9%	24.5%	4.6%		1.6%	1.0%	0.8%
Horse	3.5%	0.2%	4.8%	4.1%	14.7%	9.2%	1.4%		1.1%	2.4%
Ship	15.5%	5.7%	1.6%	1.4%	2.4%	2.2%	1.1%	0.6%		5.2%
Truck	5.4%	12.0%	1.4%	2.7%	2.9%	0.9%	2.4%	3.5%	4.3%	

Confusion Matrix Network-2

	Plane	Car	Bird	Cat	Deer	Dog	Frog	Horse	Ship	Truck
Plane		3.4%	4.4%	1.3%	1.7%	1.5%	1.0%	2.9%	3.4%	1.8%
Car	1.9%		0.5%	0.8%	0.3%	1.1%	0.9%	1.6%	1.5%	4.7%
Bird	9.0%	0.8%		6.22%	6.8%	9.9%	4.6%	7.5%	0.1%	0.9%
Cat	2.1%	1.0%	5.9%		5.7%	24.4%	4.8%	9.6%	0.5%	1.2%
Deer	1.8%	0.7%	6.4%	7.4%		5.9%	4.8%	17.2%	0.8%	0.3%
Dog	0.9%	0.6%	4.6%	13.1%	2.7%		2.1%	11.3%	0.2%	0.1%
Frog	0.7%	0.2%	5.9%	7.4%	4.8%	3.8%		3.3%	0.1%	0.4%
Horse	0.8%	0.5%	2.3%	2.7%	2.9%	5.5%	0.0%		0.0%	0.3%
Ship	19.2%	6.0%	1.9%	2.0%	0.9%	2.1%	0.3%	1.4%		3.0%
Truck	5.8%	14.7%	1.2%	2.4%	0.7%	1.1%	1.4%	4.2%	1.0%	

Accuracy Table

	Network-3 (Network-2 Converted for 4 Classes)
Car	79.0%
Truck	77.1%

Ship	78.9%
Other	97.9%
Average	**83.2%**
Running Time	**2:53**

Confusion Matrix Network-3				
	Car	**Truck**	**Ship**	**Other**
Car		7.2%	3.8%	10.0%
Truck	6.2%		2.3%	14.4%
Ship	1.3%	2.8%		17.0%
Other	0.2%	0.6%	1.3%	

- **Q&A**: Network 2 had the worst accuracy in classifying Cat images, correctly identifying only 44.8% of those in the test set. They were most often misclassified as belonging to the Dog class.

- **Visualization**:
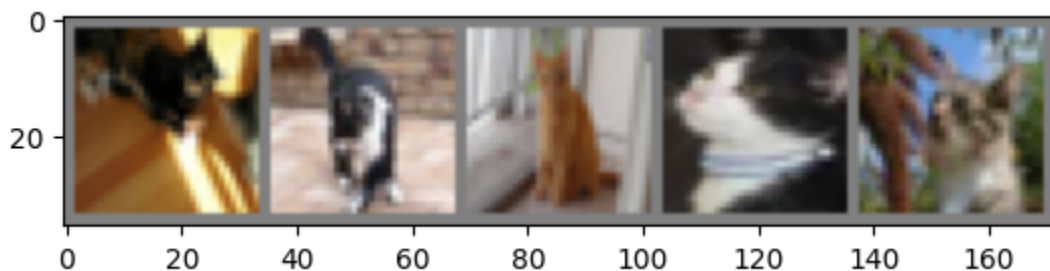
- All five of these images were misclassified as belonging to the Dog class by Network-2. This is most likely due to the similarities between each class' features. Cats and Dogs have similar body shapes, as well as many overlapping poses. There are many poses unique to cats (such as arching their backs or the colloquially known "loaf"), but the cats in these images as a dog could be. The areas surrounding the cats' most distinctive features are visually complex in these images.
- For example, pointed ears differentiate cats from dogs, but they are hard to discern in all images above except the third. In the first, the intense shadows make it hard to distinguish the boundaries of the cats' body. In the second, the cat's head is turned, disguising its ears among the rest of its body. In the fourth, the background is black and

hides the cat's black fur. In the fifth, the cat is a tabby in front of greenery, meaning both it and the background have inconsistent coloration that make it difficult to determine a clear boundary.