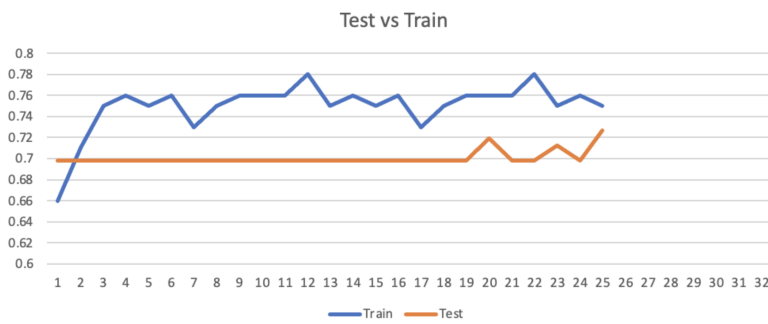
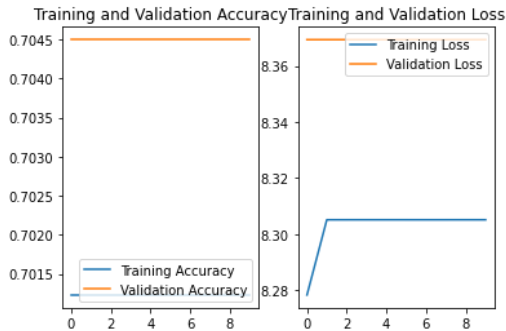




Results when using 2 camera types:



Results when using 3 camera types:



From the results we can see that the data is quickly finding a max accuracy and staying in that spot. This is most likely due to the fact that the dataset contains multiple pictures of the same scene just under different lighting conditions, this makes it so the network is not easily able to distinguish each one apart.

## Discussion

Cameras used are,

- **Samsung Galaxy Note 20 Ultra**

The Samsung Galaxy Note 20 Ultra features a triple camera setup on the back consisting of a main camera, a telephoto camera, and an ultra-wide camera.

The main camera has a resolution of 108 megapixels and uses a 1/1.33-inch sensor. This large sensor size allows for more light to be captured, resulting in better low-light performance and improved detail in photos. The main camera also has optical image stabilization (OIS) to help reduce blur caused by camera shake.

The telephoto camera has a resolution of 12 megapixels and uses a 3x optical zoom lens, allowing you to take close-up photos from a distance without losing quality. It also has OIS to help reduce blur in photos taken at longer focal lengths.

The ultra-wide camera has a resolution of 12 megapixels and a 120-degree field of view, allowing you to capture wide-angle shots that fit more of the scene into the frame.

In addition to the rear camera setup, the Galaxy Note 20 Ultra also has a front-facing camera with a resolution of 10 megapixels for taking selfies and video calls.

- **Nikon D810**

The Nikon D810 is a professional DSLR camera that was released in 2014. It features a 36.3 megapixel full-frame CMOS sensor, which is a type of image sensor that captures light and converts it into digital information. The sensor in the D810 is larger than the sensors found in most consumer-level cameras, which allows it to capture more detail and perform better in low light conditions.

The D810's sensor has a native ISO range of 64-12,800, which can be expanded to ISO 32-51,200. This means that the camera is able to capture a wide range of light levels, from bright daylight to dimly lit environments. The sensor also has a dynamic range of up to 14 stops, which allows the camera to capture a wide range of tones from the darkest shadows to the brightest highlights in a scene.

In addition to its high resolution and wide dynamic range, the D810's sensor also has a low level of noise, which means that images taken with the camera will be clean and detailed even at higher ISO values. This makes the D810 an ideal camera for a wide range of photography applications, including portrait, landscape, and low light photography.

- **Sony α9**

The Sony α9 (also known as the Sony Alpha 9 or Sony A9) is a professional-grade mirrorless camera that was released in 2017. It features a full-frame stacked CMOS image sensor with a resolution of 24.2 megapixels. The sensor is designed to be extremely fast and responsive, with a maximum continuous shooting speed of up to 20 frames per second with no viewfinder blackout.

One of the standout features of the α9's sensor is its ability to read out data from the entire sensor at high speed, allowing for fast continuous shooting and fast autofocus. The sensor also has a wide dynamic range and low noise levels, which helps to produce high-quality images with rich detail and low noise.

In addition to its still photography capabilities, the α9's sensor is also well-suited for video recording. It can capture 4K video at up to 60 frames per second, and has a wide color gamut and high color depth to ensure that videos have accurate and vibrant colors.

Overall, the Sony α9's sensor is a high-performance device that is well-suited for a wide range of photography and videography applications.

The difference between the three camera sensors that could've possibly affected the images are,

1. Resolution: The Samsung Galaxy Note 20 Ultra has a main camera with a resolution of 108 megapixels, the Nikon D810 has a 36.3 megapixel sensor, and the Sony α9 has a 24.2 megapixel sensor. This means that the images captured by the Galaxy Note 20 Ultra and D810 will likely be higher resolution than those captured by the α9.
2. Dynamic range: The Nikon D810 has a dynamic range of up to 14 stops, while the Sony α9 has a dynamic range of up to 15 stops. This means that the D810 and α9 may be better able to capture a wide range of tones in a single image, from the darkest shadows to the brightest highlights.

3. Low light performance: The Samsung Galaxy Note 20 Ultra has a large 1/1.33-inch sensor, which allows it to capture more light and perform better in low light conditions compared to the smaller sensors in the D810 and α9.
4. Autofocus: The Sony α9 has a fast, responsive autofocus system that is designed to track moving subjects and capture fast-moving action. It may be able to capture sharper images of moving subjects compared to the D810 and Galaxy Note 20 Ultra.
5. Color accuracy: All three cameras have high-quality sensors and should be able to produce images with accurate colors. However, the Sony α9 has a wide color gamut and high color depth, which may result in more vibrant and lifelike colors compared to the other two cameras.

## Future Work

- Hyperparameter tuning as detailed previously.
- We believe using a bigger dataset could provide even better results when trying to predict the type of camera used to take a picture.
- If we could capture our own dataset it would be interesting to see how the network performs when changing the type of lens used to capture the picture, and even swapping lenses between cameras to see what effect that would have on the prediction to better understand if the predictions coming from the network are more closely tied to the lens being used or the type of camera.

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