

## Transfer Learning

### Premise

Using Keras applications, I selected the ResNet50 algorithm. I choose the 'imagenet' model as the training model for this project. I used ten personal pictures to run with this project. (Unfortunately, for privacy reasons, I am not going to post those pictures.) My goal was to use actual personal photos that I thought could trick the algorithm. Let's see if I succeeded with tricking the model.

### Analysis of the Results

Based on the results, here are my thoughts:

Picture	Description	Results	Analysis of Results
BrewerBratRacer	A picture of me with one of the Brewer's racing sausages.	1. Cowboy hat 2. Sombrero 3. Cowboy boot	The racing sausage is where a sombrero/hat, and based on the outfit, I can see where the algorithm could guess about the cowboy boots.
WynnFlowers	These are a bunch of flower-like metal/tin statues in the Wynn hotel (made out of the same material as the Popeye image I mention later.	1. Goblet 2. Confectionary 3. Carousel	Based on the colors and shapes of these flowers, all three of these guesses make sense
PuppyPicture	Me holding a Yorkie puppy.	1. Pomeranian 2. Guinea Pig 3. Pekinese	These three guesses all make sense. A Yorkie is a small dog, similar in size to both Pomeranian and Pekinese dogs. The Guinea pig is smaller and furry.
Sphinx	A picture of me standing in front of the Sphinx, which is in front of the Luxor in Las Vegas.	1. Stupa 2. Sandbar 3. Obelisk	All three of these guesses make sense. The Luxor hotel in the back is a pyramid-shaped building. The Sphinx replica is made out of a material that looks like sand.
AdamMeCentaur	A picture with my younger brother and myself sitting in front of a Centaur statue in Caesars Palace.	1. Triceratops 2. Cliff dwelling 3. Megalith	The triceratops guess is understandable as it is a larger animal and it is from a tough angle. The cliff dwelling might be a bit of an exaggeration, but if this is for a larger class of cliff dwellings, I could see it. Also, the roman theme could generate that idea. Finally, megalith is justified because of the stone material used on surrounding buildings is

MarioAndLuigi	This is a picture of me with people who dressed up as the characters Mario and Luigi.	<ol style="list-style-type: none"> <li>1. Pop bottle</li> <li>2. Gas pump</li> <li>3. Totem pole</li> </ol>	I think that the algorithm missed the park completely on this picture.
MinionAndMe	A picture of me and someone dressed as a Minion from the Despicable Me movies. There is a water fountain behind me.	<ol style="list-style-type: none"> <li>1. Acoustic Guitar</li> <li>2. Banjo</li> <li>3. Cowboy Hat</li> </ol>	The first two guesses make no sense for this picture. The cowboy hat makes sense if you consider the top of the water fountain as seen as a very large hat instead of part of a fountain.
Popeye	This picture is of a Popeye statue in Wynn hotel in Las Vegas. It is like a balloon where the material used in metal/tin.	<ol style="list-style-type: none"> <li>1. Throne</li> <li>2. Altar</li> <li>3. Confectionary</li> </ol>	The guess of throne is baffling. While Popeye is situated on a raised platform, it is rather small in comparison to an altar. I can see why the algorithm say confectionary, even though it is not one. The colors used for the statue are very reminiscent of what you would expect in a confectionary.
Hotairballoon	A hot air balloon replica made primarily out of flowers. The basket has holiday gifts in it.	<ol style="list-style-type: none"> <li>1. Fountain</li> <li>2. Carousel</li> <li>3. Jigsaw Puzzle</li> </ol>	The colors and patterns make it easy to see how the algorithm guessed carousel. The jigsaw puzzle guess makes sense. This would be a great picture for a jigsaw puzzle. The foundation guess is interesting/puzzling.
WynnWaterfall	A picture from the inside on the main level to the waterfall outside, which can be accessed downstairs	<ol style="list-style-type: none"> <li>1. Throne</li> <li>2. Sliding Door</li> <li>3. Window Shade</li> </ol>	The throne guess is puzzling, but I can understand the other two guesses sound plausible. There are plenty of chairs, but not really thrones. The Windows are large (multiple stories high), so I can understand that guess. There are windows shade to the side of the windows.

### **Conclusions**

While there were some guesses (and one picture altogether) that missed the mark, the algorithm made some very intriguing and thought-provoking guesses for such a tough set of pictures. I was impressed!