

Image classification Neural Network

In Advertisements

By: Mamdouh AlSabhan

1. The Tools:

- FastAI modified to work on GPU by changing Pytorch-GPU.
- Pre-trained models Resnet34 and Resnet50
- Beautiful soup to scrape the internet.

2. Data gathering:

Scraped google for 5 classes of images using beautiful soup.

Watches	Sunglasses	Hats	Coffee	Cake
1,301 images.	1,129 images.	804 images.	1,443 images.	802 images.

Then renamed all the photos and numbered them (i.e., *hats0001.jpg*, *hats0002.jpg*, etc.)
Used the image name as the classes for our model

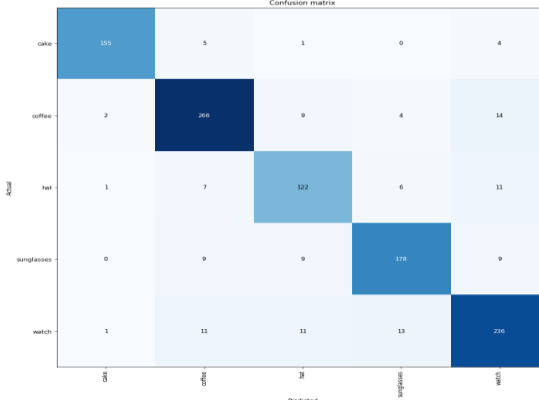
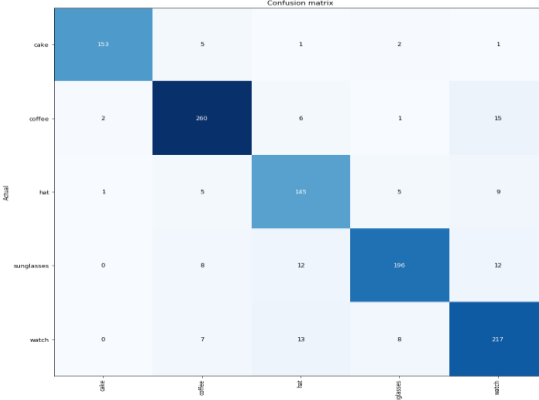
3. Data preparation:

Regular expression (*regex*) was used to extract the name of each image removing the numbering and the extension (*hats0001.jpg* becomes *hats*).

Then loading and resizing the images using FastAI's: *ImageDataBunch*.

4. The model:

Used FastAI's pre-trained models (Resnet34 and Resnet50), then tuned the image classification to classify my classes.

Resnet34	Resnet50																																																																								
<p>Confusion matrix</p>  <p>Actual</p> <table><tr><th></th><th>cake</th><th>coffee</th><th>hat</th><th>sunglasses</th><th>watch</th></tr><tr><th>cake</th><td>155</td><td>5</td><td>1</td><td>0</td><td>4</td></tr><tr><th>coffee</th><td>2</td><td>204</td><td>9</td><td>4</td><td>14</td></tr><tr><th>hat</th><td>1</td><td>7</td><td>122</td><td>6</td><td>11</td></tr><tr><th>sunglasses</th><td>0</td><td>9</td><td>9</td><td>179</td><td>9</td></tr><tr><th>watch</th><td>1</td><td>11</td><td>11</td><td>13</td><td>226</td></tr></table> <p>Predicted</p>		cake	coffee	hat	sunglasses	watch	cake	155	5	1	0	4	coffee	2	204	9	4	14	hat	1	7	122	6	11	sunglasses	0	9	9	179	9	watch	1	11	11	13	226	<p>Confusion matrix</p>  <p>Actual</p> <table><tr><th></th><th>cake</th><th>coffee</th><th>hat</th><th>sunglasses</th><th>watch</th></tr><tr><th>cake</th><td>153</td><td>5</td><td>1</td><td>2</td><td>1</td></tr><tr><th>coffee</th><td>2</td><td>201</td><td>6</td><td>1</td><td>15</td></tr><tr><th>hat</th><td>1</td><td>5</td><td>121</td><td>5</td><td>9</td></tr><tr><th>sunglasses</th><td>0</td><td>8</td><td>12</td><td>165</td><td>12</td></tr><tr><th>watch</th><td>0</td><td>7</td><td>13</td><td>8</td><td>217</td></tr></table> <p>Predicted</p>		cake	coffee	hat	sunglasses	watch	cake	153	5	1	2	1	coffee	2	201	6	1	15	hat	1	5	121	5	9	sunglasses	0	8	12	165	12	watch	0	7	13	8	217
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