READ ONLY FILE:

(ii) Can you extract anything else from these images with or without using deep learning algorithms? 4 points Your Word document will have the comparison table and your comments on it. Do not write more than 2-3 sentences. Also, describe (ii) in the Word document with similar sentence limitations regarding what you did and the outcomes.

After doing some research, a way to extract more information from images is that you can use a scene classification coding method that can be used to classify an entire image based on its overall environment and content (this done by using CNN).

This is the comparison table for the two deep learning methods that I used:

|  |  |  |
| --- | --- | --- |
|  | YOLO | Faster R-CNN |
| Speed | Very fast (said to be real-time detection) | Slower than YOLO |
| Accuracy | Lower Accuracy than Faster R-CNN | Higher accuracy |
| Implementation Complexity | Simpler to train and few components | More complex due to the two stage architecture |
| Architecture | Single CNN | Two stage: First generator RPN and the classifieds and refines |

Here is a table that compares the images and the models used:

|  |  |  |  |
| --- | --- | --- | --- |
| Image | YOLO Detection Time (s) | Objects Detected | Confidence Interval |
| photo1.jpg | 4.825 | 17 | (0.41, 0.59) |
| photo2.jpg | 0.236 | 10 | (0.41, 0.69) |
| photo3.jpg | 0.241 | 4 | (0.3, 0.84) |
| photo4.jpg | 0.274 | 5 | (0.4, 0.78) |
| photo5.jpg | 0.171 | 13 | (0.48, 0.75) |
| photo6.jpg | 0.195 | 4 | (0.35, 0.94) |
| photo7.jpg | 0.175 | 9 | (0.45, 0.78) |

|  |  |  |  |
| --- | --- | --- | --- |
| Image | Faster R-CNN Detection Time | Total Objects | Confidence Interval |
| photo1.jpg | 9.44 | 42 | 0.53 - 1.00 |
| photo2.jpg | 8.87 | 10 | 0.72 - 0.99 |
| photo3.jpg | 7.16 | 7 | 0.54 - 0.94 |
| photo4.jpg | 8.37 | 11 | 0.53 - 0.95 |
| photo5.jpg | 11.26 | 27 | 0.55 - 1.00 |
| photo6.jpg | 8.18 | 7 | 0.92 - 1.00 |
| photo7.jpg | 8.83 | 10 | 0.51 - 1.00 |

Looking at the results from the two method I used we can see that Faster R-CNN outperformed YOLO in every section other than the detection time. YOLO was created so it is able to just look at the image once and detect what is in the image, so since it has a shorter detection time the Faster R-CNN makes sense because it was designed to be fast. In all aspects I would use Faster R-CNN since the results are better than YOLO, as I am willing to wait for better results than others.