**MSBA 503 Take-Home Assignment**

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Method 1: YOLOv8 Nano

Method 2: Faster R-CNN

**Comparison of Results**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Image Name** | **Method** | **Objects Detected** | **Average Probability** | **Processing Time (s)** |
| image1.jpg | YOLOv8 Nano | 1 | 69.55% | 0.3508 |
| image1.jpg | Faster R-CNN | 11 | 63.46% | 6.7489 |
| image2.jpeg | YOLOv8 Nano | 2 | 57.34% | 0.2450 |
| image2.jpeg | Faster R-CNN | 6 | 80.36% | 6.9107 |
| image3.webp | YOLOv8 Nano | 9 | 58.28% | 0.2044 |
| image3.webp | Faster R-CNN | 26 | 81.98% | 7.7348 |
| image4.jpg | YOLOv8 Nano | 4 | 86.89% | 0.1691 |
| image4.jpg | Faster R-CNN | 7 | 92.07% | 9.4020 |
| image5.jpg | YOLOv8 Nano | 9 | 70.24% | 0.2034 |
| image5.jpg | Faster R-CNN | 16 | 95.22% | 9.7847 |

**Comments:**

From the results we can state these two methods have pros and cons when comparing to each other. Method using YOLv8 is extremely faster per image (under a second) but suffers in low accurate probability with minimal objects detected. Method using R-CNN experienced the opposite (high processing times but accurate probability of multiple objects).

**Comments Part ii:**

To further understand the images viewed I added to show more features based on color or texture per object. Added Color analysis, texture features, and intensity statistics per object to help enhance object understanding. This can be used for many scenarios for real-world applications to help with forensic and security applications.