CIS 680: Project 3

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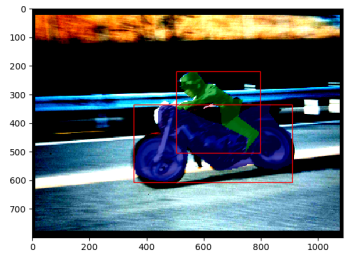
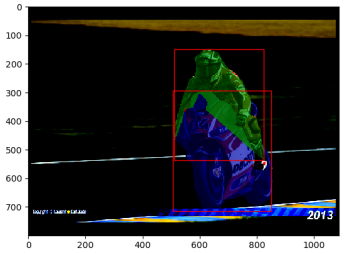
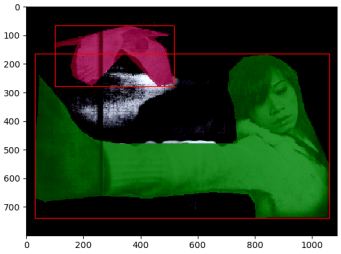
1 Dataset Plots



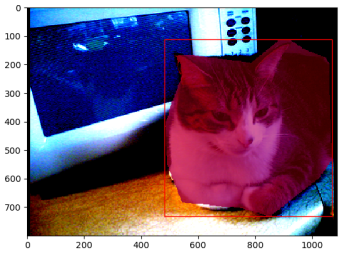
(a) Dataset Visual 1



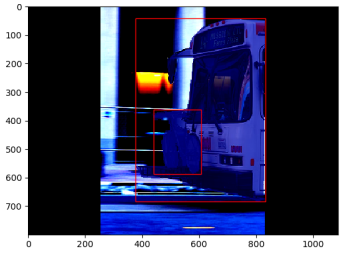
(b) Dataset Visual 2



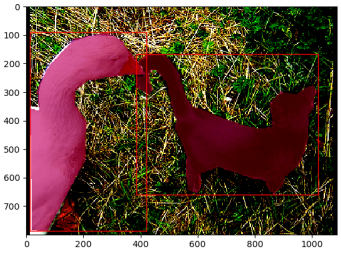
(c) Dataset Visual 3



(d) Dataset Visual 4



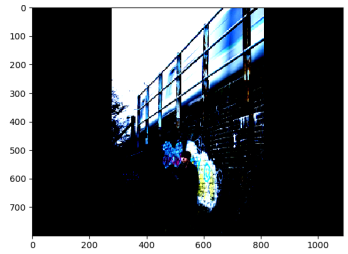
(e) Dataset Visual 5



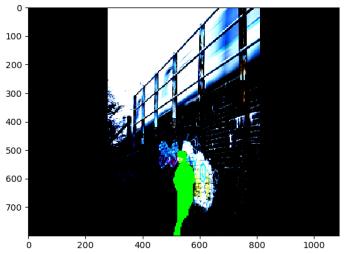
(f) Dataset Visual 6

2 FPN Plots

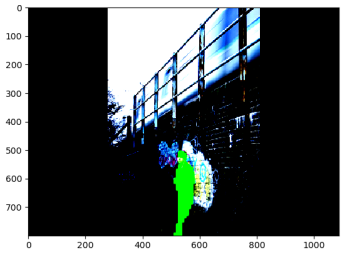
1.1 Example 1



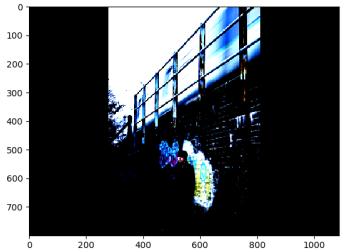
(a) FPN recovery from level 1



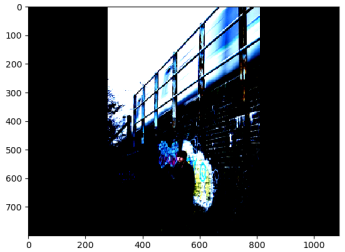
(b) FPN recovery from level 2



(c) FPN recovery from level 3

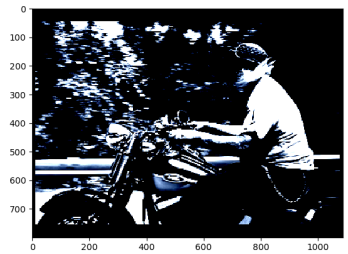


(d) FPN recovery from level 4

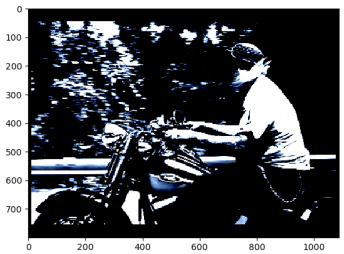


(e) FPN recovery from level 5

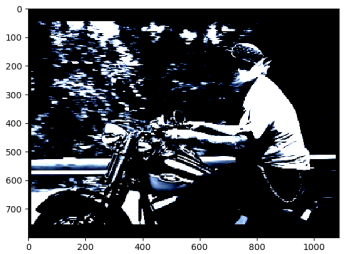
1.2 Example 2



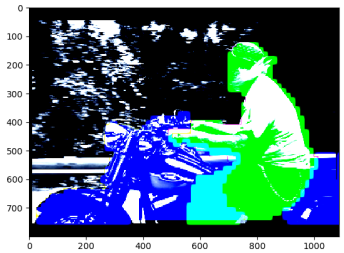
(a) FPN recovery from level 1



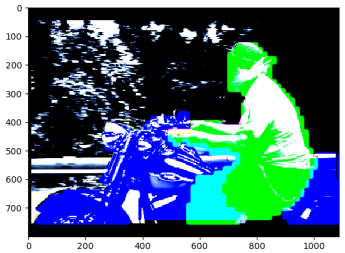
(b) FPN recovery from level 2



(c) FPN recovery from level 3

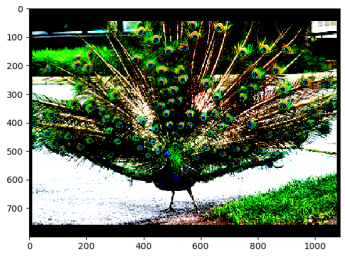


(d) FPN recovery from level 4

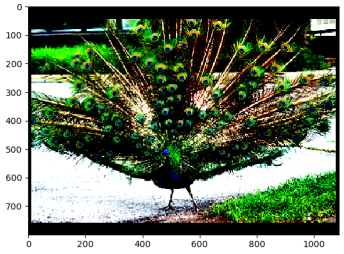


(e) FPN recovery from level 5

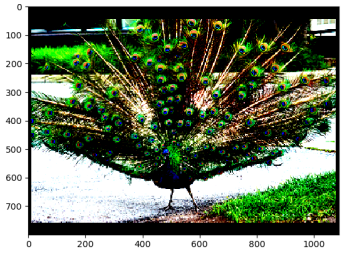
1.3 Example 3



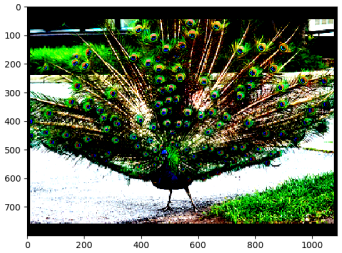
(a) FPN recovery from level 1



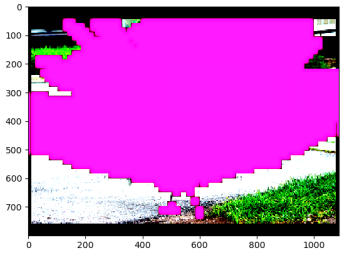
(b) FPN recovery from level 2



(c) FPN recovery from level 3

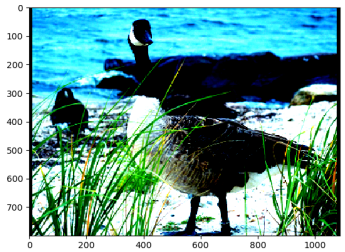


(d) FPN recovery from level 4

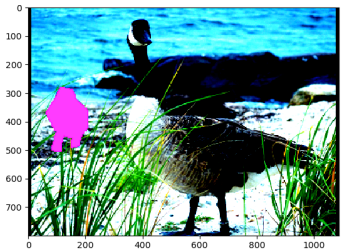


(e) FPN recovery from level 5

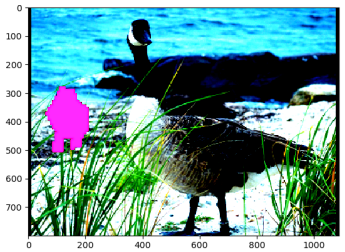
1.4 Example 4



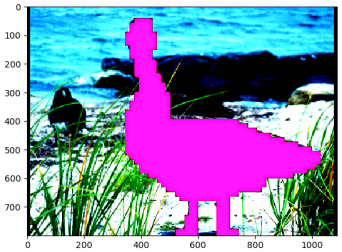
(a) FPN recovery from level 1



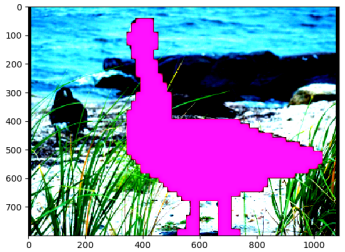
(b) FPN recovery from level 2



(c) FPN recovery from level 3

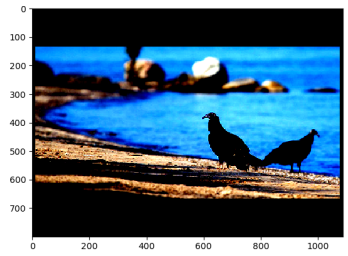


(d) FPN recovery from level 4

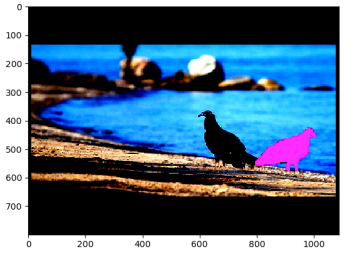


(e) FPN recovery from level 5

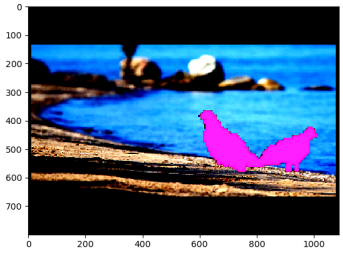
1.5 Example 5



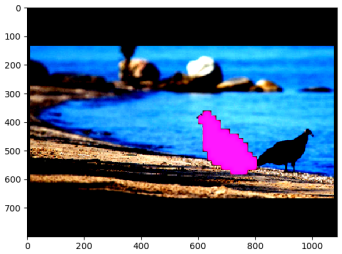
(a) FPN recovery from level 1



(b) FPN recovery from level 2



(c) FPN recovery from level 3



(d) FPN recovery from level 4

(e) FPN recovery from level 5

From the above examples of images generated from different levels of feature pyramid, we can observe that objects with different instance scales are activated in different levels of feature pyramid.

For an object instance, the lower level of feature pyramid focus on more detailed and fine-grind features, while the higher level focus on more coarse features, with more contextual information. This is because feature pyramid preserve more spatial information with higher resolutions on lower levels and more semantic information on higher levels. This enables extracting semantic information while avoid ignoring small objects during instance extraction.