```python
In [6]: import cv2
```

```python
In [3]: from pywt import dwt2, idwt2
        img = cv2.imread(r'C:\Users\hp\Downloads/tree.jpg')
        cA, (cH, cV, cD) = dwt2(img, 'haar')
```

```python
In [7]: import numpy as np
        import pywt
        import numpy
        import PIL
        from PIL import Image.convert("L")
        imgarr = numpy.array(img)
        coeffs = pywt.dwt2(imgarr, 'haar')
        pywt.idwt2(coeffs, 'haar')
```

```
Out[7]: array([[111., 112., 115., ..., 107., 104., 103.],
               [114., 115., 118., ..., 109., 106., 105.],
               [117., 118., 121., ..., 112., 108., 107.],
               ...,
               [ 84.,  91.,  97., ...,  13.,  14.,  14.],
               [ 81.,  89.,  95., ...,  15.,  15.,  15.],
               [ 77.,  87.,  94., ...,  14.,  14.,  14.]])
```

```python
In [8]: import pywt
        cA, cD = pywt.dwt([1, 2, 3, 4], 'db1')
```

```
In [23]: import numpy as np
         import matplotlib.pyplot as plt

         import pywt
         import pywt.data


         # Load image
         img = PIL.Image.open(r'C:\Users\hp\Downloads/lena.bmp')

         # Wavelet transform of image, and plot approximation and details
         titles = ['Approximation', ' Horizontal detail',
                   'Vertical detail', 'Diagonal detail']
         coeffs2 = pywt.dwt2(img, 'bior1.3')
         LL, (LH, HL, HH) = coeffs2
         fig = plt.figure(figsize=(12, 3))
         for i, a in enumerate([LL, LH, HL, HH]):
             ax = fig.add_subplot(1, 4, i + 1)
             ax.imshow(a, interpolation="nearest", cmap=plt.cm.gray)
             ax.set_title(titles[i], fontsize=10)
             ax.set_xticks([])
             ax.set_yticks([])

         fig.tight_layout()
         plt.show()
```
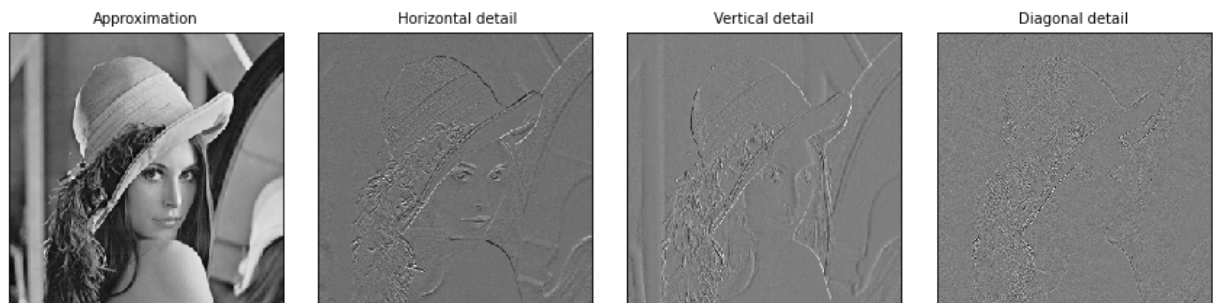

Approximation   Horizontal detail   Vertical detail   Diagonal detail

```
In [26]:  import numpy as np
          import matplotlib.pyplot as plt

          import pywt
          import pywt.data


          # Load image
          img = PIL.Image.open(r'C:\Users\hp\Downloads/peppers.bmp')

          # Wavelet transform of image, and plot approximation and details
          titles = ['Approximation', ' Horizontal detail',
                    'Vertical detail', 'Diagonal detail']
          coeffs2 = pywt.dwt2(img, 'bior1.3')
          LL, (LH, HL, HH) = coeffs2
          fig = plt.figure(figsize=(12, 3))
          for i, a in enumerate([LL, LH, HL, HH]):
              ax = fig.add_subplot(1, 4, i + 1)
              ax.imshow(a, interpolation="nearest", cmap=plt.cm.gray)
              ax.set_title(titles[i], fontsize=10)
              ax.set_xticks([])
              ax.set_yticks([])

          fig.tight_layout()
          plt.show()
```
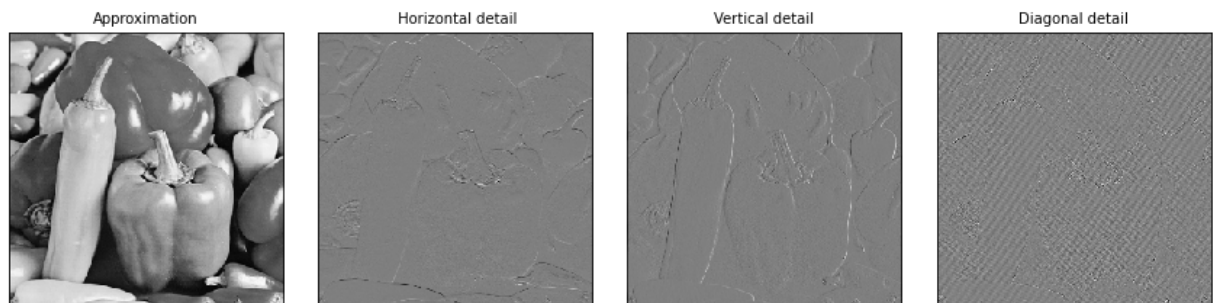
```
In [30]: import numpy as np
         import matplotlib.pyplot as plt

         import pywt
         import pywt.data


         # Load image
         img = PIL.Image.open(r'C:\Users\hp\Downloads/w256a.bmp')

         # Wavelet transform of image, and plot approximation and details
         titles = ['Approximation', ' Horizontal detail',
                   'Vertical detail', 'Diagonal detail']
         coeffs2 = pywt.dwt2(img, 'bior1.3')
         LL, (LH, HL, HH) = coeffs2
         fig = plt.figure(figsize=(12, 3))
         for i, a in enumerate([LL, LH, HL, HH]):
             ax = fig.add_subplot(1, 4, i + 1)
             ax.imshow(a, interpolation="nearest", cmap=plt.cm.gray)
             ax.set_title(titles[i], fontsize=10)
             ax.set_xticks([])
             ax.set_yticks([])

         fig.tight_layout()
         plt.show()
```
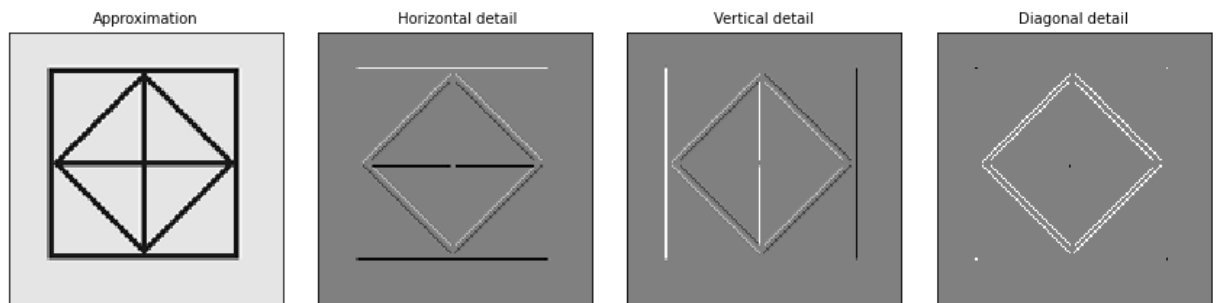

In [ ]:

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