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Homework 2

- Type of key points that you detected in the images

SIFT: https://docs.opencv.org/3.1.0/da/df5/tutorial_py_sift_intro.html
SURF
When I use the sift, I found the query_17 key points only have 11 by SIFT. Therefore, I SURF when I cannot find key points=30

- Hyper-parameters of the CNN architecture for computing feature descriptors

```
def __init__(self):
    super(DesNet, self).__init__()
    self.features = nn.Sequential(
        nn.Conv2d(1, 32, kernel_size=3, padding=1, bias = False),
        nn.BatchNorm2d(32, affine=False),
        nn.ReLU(),

        nn.Conv2d(32, 32, kernel_size=3, padding=1, bias = False),
        nn.BatchNorm2d(32, affine=False),
        nn.ReLU(),

        nn.Conv2d(32, 64, kernel_size=3, stride=2, padding=1, bias = False),
        nn.BatchNorm2d(64, affine=False),
        nn.ReLU(),

        nn.Conv2d(64, 64, kernel_size=3, padding=1, bias = False),
        nn.BatchNorm2d(64, affine=False),
        nn.ReLU(),

        nn.Conv2d(64, 128, kernel_size=3, stride=2,padding=1, bias = False),
        nn.BatchNorm2d(128, affine=False),
        nn.ReLU(),

        nn.Conv2d(128, 128, kernel_size=3, padding=1, bias = False),
        nn.BatchNorm2d(128, affine=False),
        nn.ReLU(),

        nn.Dropout(0.3),
        nn.Conv2d(128, 128, kernel_size=8, bias = False),
        nn.BatchNorm2d(128, affine=False),
    )
```

- Two recall-precision curves of image retrieval, where each curve uses the corresponding results

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