```
import torch
import torch.nn as nn
import torch.nn.functional as F
import torch.optim as optim
import torch.utils.data as data

import torchvision.transforms as transforms
import torchvision.datasets as datasets

import matplotlib.pyplot as plt
import numpy as np
from PIL import Image

image = Image.open("coolguitar Small.jpeg")
image = image.convert("L")
```

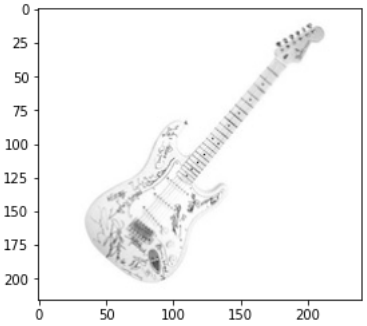
```
test_transforms = transforms.ToTensor()
img_tensor = test_transforms(image)
```

```
img_tensor.shape
```

```
     torch.Size([1, 216, 240])
```

```
plt.imshow(image, cmap = plt.cm.gray)
```

```
     <matplotlib.image.AxesImage at 0x7f9792e4abb0>
```



```
print(img_tensor)
```

```
     tensor([[[1., 1., 1.,  ..., 1., 1., 1.],
              [1., 1., 1.,  ..., 1., 1., 1.],
              [1., 1., 1.,  ..., 1., 1., 1.],
              ...,
              [1., 1., 1.,  ..., 1., 1., 1.],
              [1., 1., 1.,  ..., 1., 1., 1.],
              [1., 1., 1.,  ..., 1., 1., 1.]]])
```

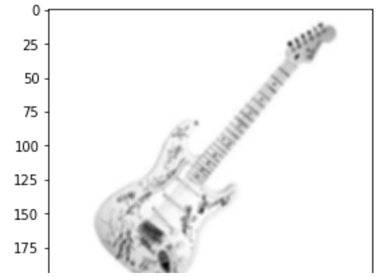
```
img_tensor.shape
```

```
     torch.Size([1, 216, 240])
```

The image is now blurrier after the blurring was applied to the image tensor.

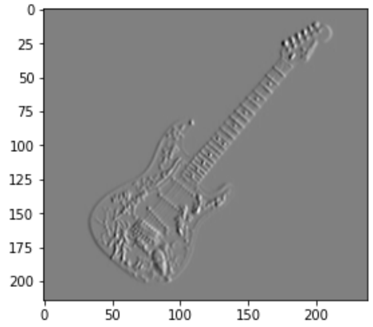
```
filter1 = [[1,1,1],
          [1,1,1],
          [1,1,1]]
filter1 = torch.FloatTensor(filter1).unsqueeze(0).unsqueeze(0)
filtered_image = F.conv2d(img_tensor, filter1).squeeze(0)
plt.imshow(filtered_image, cmap = plt.cm.gray)
```

```
<matplotlib.image.AxesImage at 0x7f9792b76460>
```



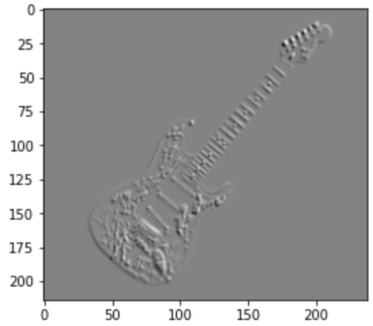
```
filter2 = [[-1,0,1],
          [-2,0,2],
          [-1,0,1]]
filter2 = torch.FloatTensor(filter2).unsqueeze(0).unsqueeze(0)
filtered_image = F.conv2d(img_tensor, filter2).squeeze(0)
plt.imshow(filtered_image, cmap = plt.cm.gray)
```

```
<matplotlib.image.AxesImage at 0x7f9792d475e0>
```



```
filter3 = [[0,1,2],
          [-1,0,1],
          [-2,-1,0]]
filter3 = torch.FloatTensor(filter3).unsqueeze(0).unsqueeze(0)
filtered_image = F.conv2d(img_tensor, filter3).squeeze(0)
plt.imshow(filtered_image, cmap = plt.cm.gray)
```

```
<matplotlib.image.AxesImage at 0x7f9792d15fa0>
```



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