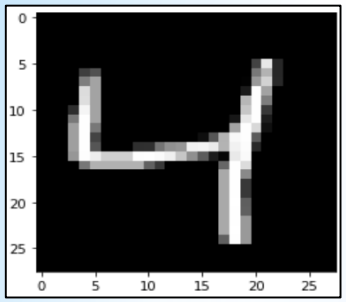
[예제 0] MNIST 3번째 데이터인 x_train[2] 데이터에 대해서, 다음과 같은 3 x 3 필터에 대해 컨벌루션 연산을 하는 conv2d_simple(input_image, filter, filter_size) 구현하고 컨벌루션 결과를 이미지로 출력하시오



x_train[2]

$$\text{horizontal filter} = \begin{pmatrix} 1.0 & 1.0 & 1.0 \\ 0.0 & 0.0 & 0.0 \\ -1.0 & -1.0 & -1.0 \end{pmatrix}$$

$$\text{vertical filter} = \begin{pmatrix} 1.0 & 0.0 & -1.0 \\ 1.0 & 0.0 & -1.0 \\ 1.0 & 0.0 & -1.0 \end{pmatrix}$$

$$\text{blur filter} = \begin{pmatrix} 0.11 & 0.11 & 0.11 \\ 0.11 & 0.11 & 0.11 \\ 0.11 & 0.11 & 0.11 \end{pmatrix}$$

$$\text{sharpen filter} = \begin{pmatrix} 0.0 & -1.0 & 0.0 \\ -1.0 & 5.0 & -1.0 \\ 0.0 & -1.0 & 0.0 \end{pmatrix}$$

```
vertical_filtered_image = conv2d_simple(x_train[2], vertical_filter, 3)

horizontal_filtered_image = conv2d_simple(x_train[2], horizontal_filter, 3)
```

```
plt.figure(figsize=(6,4))

plt.subplot(1, 2, 1)
plt.title('vertical')
plt.imshow(vertical_filtered_image, cmap='gray')

plt.subplot(1, 2, 2)
plt.title('horizontal')
plt.imshow(horizontal_filtered_image, cmap='gray')

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