

```

data = {{0, 1, 1, 0}, {0, 1, 2, 0}, {0, 0, 1, 0}, {3, 0, 0, 0}}; K = {{0, 1, 0}, {1, -4, 1}, {0, 1, 0}};

ListConvolve[K, data, 2, 0] // MatrixForm
{{1, -2, -1, 1}, {1, -1, -5, 2}, {3, 2, -2, 1}, {-12, 3, 1, 0}}

ListConvolve[{{1, 2, 3}, {4, 5, 6}, {7, 8, 9}}, {{k11, k12, k13}, {k21, k22, k23}, {k31, k32, k33}}, 2, 0] // MatrixForm
{{5 k11 + 4 k12 + 2 k21 + k22, 6 k11 + 5 k12 + 4 k13 + 3 k21 + 2 k22 + k23}, {8 k11 + 7 k12 + 5 k21 + 4 k22 + 2 k31 + k32, 9 k11 + 8 k12 + 7 k13 + 6 k21 + 5 k22 + 4 k23 + 3 k31 + 2 k32 + k33}, {8 k21 + 7 k22 + 5 k31 + 4 k32, 9 k21 + 8 k22 + 7 k23 + 6 k31 + 5 k32 + 4 k33}};

img = Import[FileNameJoin[{NotebookDirectory[], "Convolution_LaplaceOriginal.jpg"}]];
convolved = LaplacianFilter[img, 1] // ImageData // Abs // Image

```

