

? ImageConvolve

ImageConvolve[image, ker] gives the convolution of image with kernel ker. >

? BoxMatrix

BoxMatrix[r] gives a $(2r+1) \times (2r+1)$ matrix of 1s.
 BoxMatrix[r, w] gives a $(2r+1) \times (2r+1)$ block of 1s centered in a $w \times w$ matrix of 0s.
 BoxMatrix[{r₁, r₂, ...}, ...] gives a $(2r_1+1) \times (2r_2+1) \times \dots$ array of 1s. >

img // ImageDimensions

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ker[n_] := ReplacePart[$\frac{-\text{BoxMatrix}[n]}{(2n+1)^2 - 1}$, {n+1, n+1} → 1]

ker [5]

$$\left\{ \left\{ -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120} \right\}, \right.$$

$$\left\{ -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120} \right\},$$

$$\left\{ -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120} \right\},$$

$$\left\{ -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120} \right\},$$

$$\left\{ -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120} \right\},$$

$$\left\{ -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, 1, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120} \right\},$$

$$\left\{ -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120} \right\},$$

$$\left\{ -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120} \right\},$$

$$\left\{ -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120} \right\},$$

$$\left\{ -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120} \right\},$$

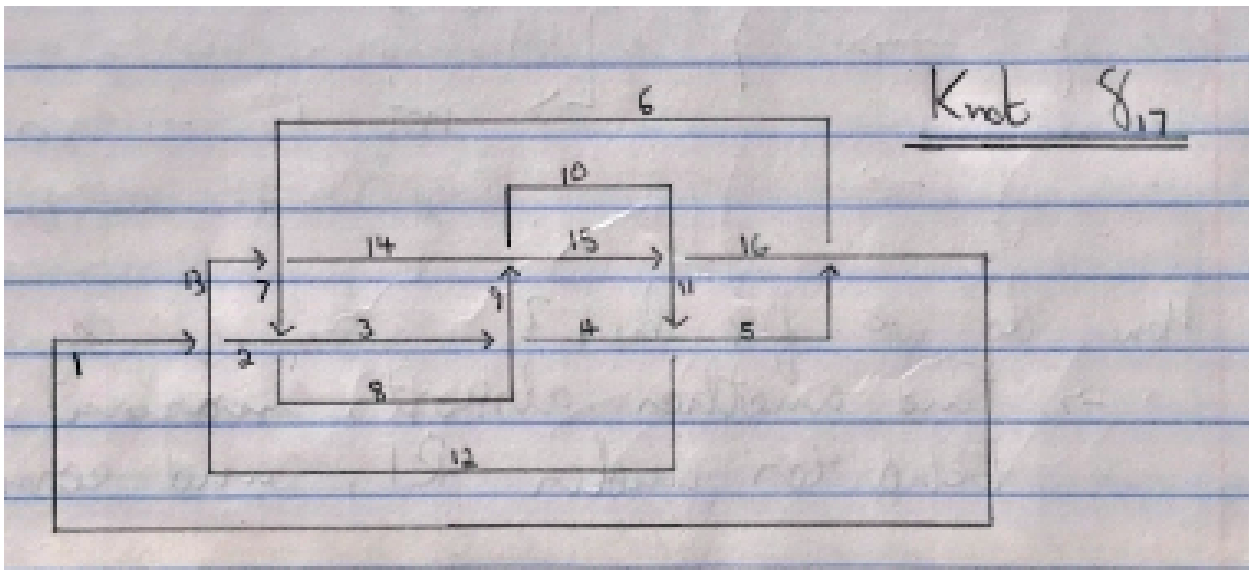
$$\left\{ -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120} \right\},$$

$$\left\{ -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120}, -\frac{1}{120} \right\}$$

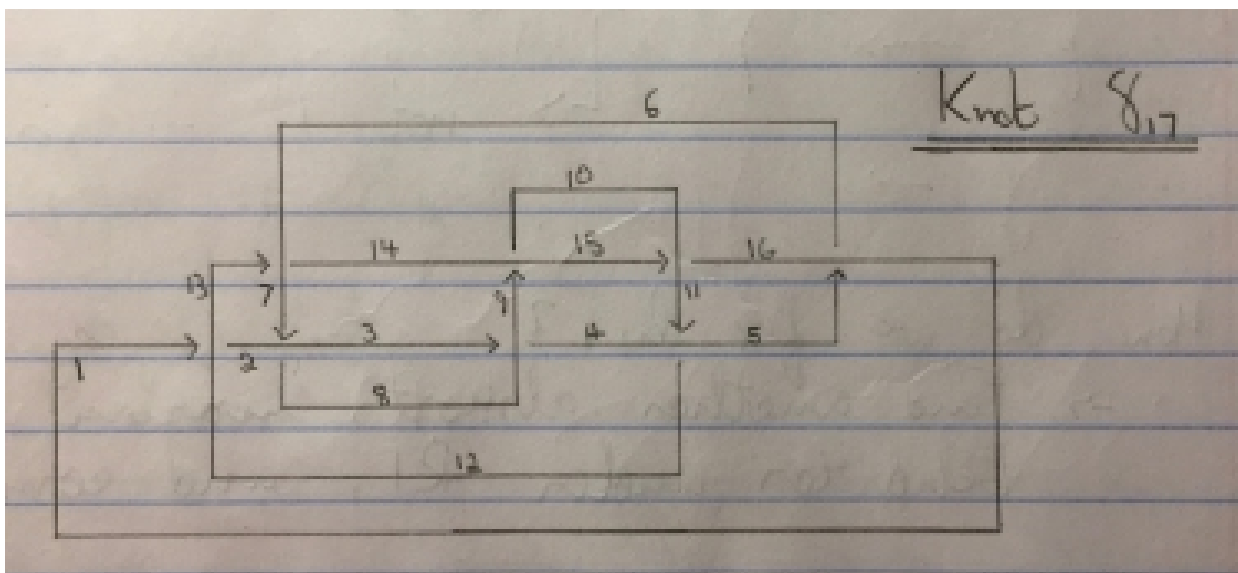
ImageConvolve [img, BoxMatrix [1] / 9] // ImageDimensions

{400, 172}

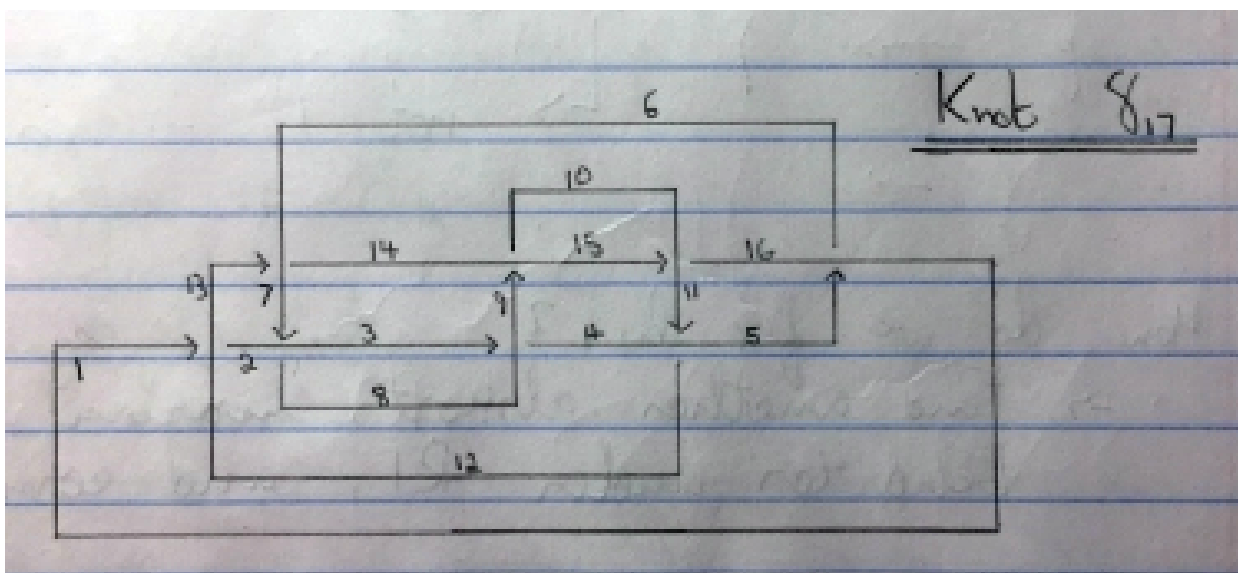
ImageConvolve [img // ColorNegate, ker [15]] // ImageAdjust // ColorNegate



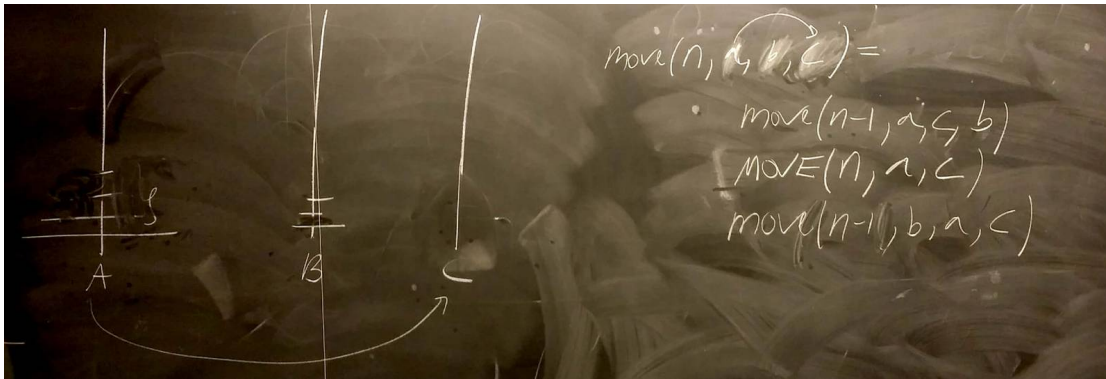
img



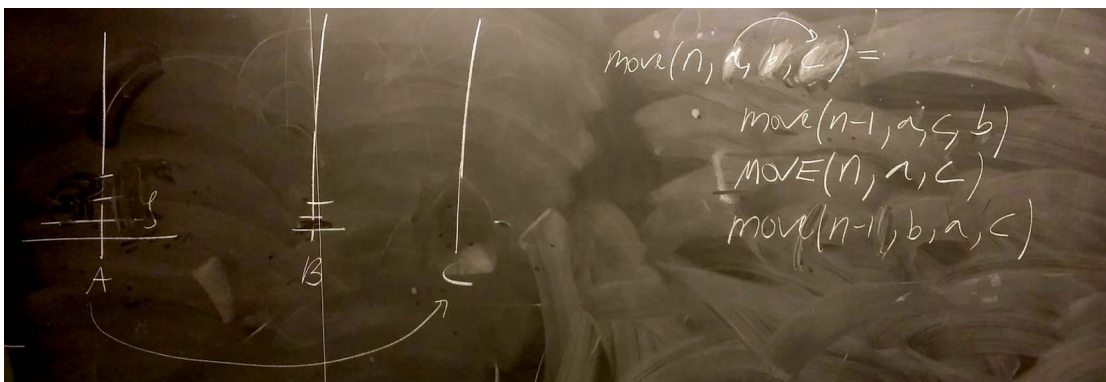
img // ImageAdjust



```
img2 = Import["http://drorbn.net/bbs/shots/17-1750-171013-121553.jpg"]
```



```
img2 // ImageAdjust
```



```
ImageConvolve[img2 // ColorNegate, ker[15]] // ImageAdjust
```

