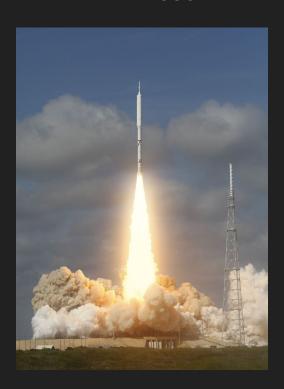
A05 Seam Carving

By Kaden Ramirez

Input Image

1177x1600



Energy Map

edges=getEdgeImage(img) kernel=np.ones(3,np.float64) for i in range(1,len(edges)):

minAbove=cv2.erode(edges[i-1],kernel).T[0] edges[i]+=minAbove



Finding and Highlighting Seams Code (Horizontal and Vertical)

Seam Highlighter

```
def drawSeam(img,seam,color=255):
  for x,y in seam:
   img[y,x]=color
```

Seam Finder

```
energyMap=getEnergyMap(img)
y=len(energyMap)-1
x=np.argmin(energyMap[y])
seam=[(x,y)]
while len(seam)<len(energyMap):
    x,y=seam[-1]
    newY=y-1
    newX=x+np.argmin(energyMap[newY,x-1:x+2])-1
    seam.append((newX,newY))</pre>
```

Highlighting Seams Images

Original



100 Horizontal and Vertical Highlights



Retarget Code

```
def reTarget(img,w=824,h=1120,tw=320,th=320):
    while h!=th or w!=tw:
        if h!=th:
            img.removeHorizontalSeam()
            img.show()
            h-=1
        elif w!=tw:
            img.removeVerticleSeam()
            img.show()
            w-=1
```

240x320



Retarget Images

Retargeted 320x320



Retargeted 640x640

