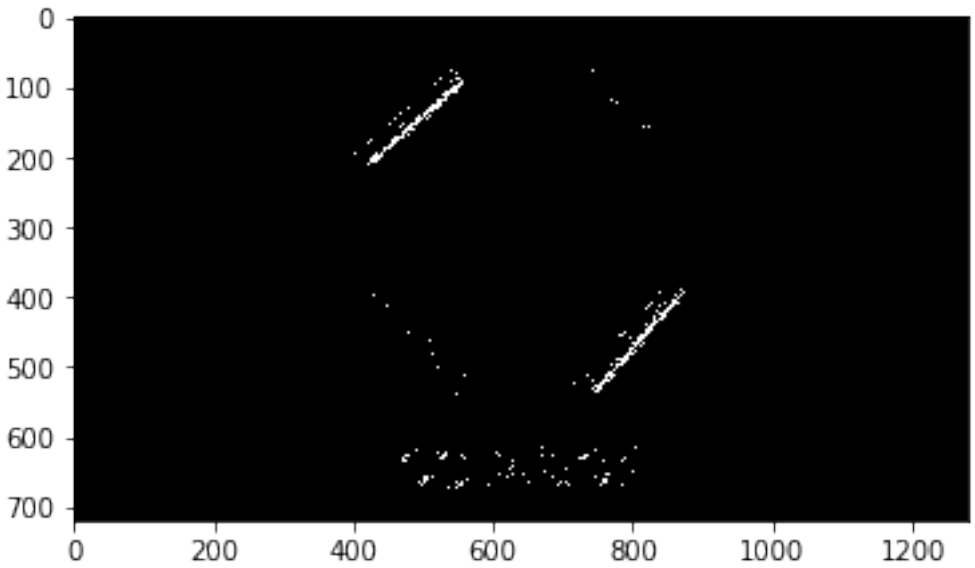
-48.03403964694501
-34.99202019855866
-47.48955292199916
-40.91438322002513
-57.10767025676035
-40.539151741483444
-45.0
-57.885169399703265
-38.736509385665464
-43.97696981133217
-41.18592516570965
-45.0
-49.899092453787766
-45.0
-45.0
-57.52880770915151
-45.0
-45.0
-39.472459848343824
-44.13194855025446
-45.0
-49.899092453787766
-47.48955292199916
-45.0
-58.10920819815429
-32.9052429229879
-45.0
-45.0
-45.0
-45.0
-50.19442890773481
-33.690067525979785
-45.0
-45.0
-45.0
-59.03624346792648
-45.0
-45.0
-53.13010235415598
-55.00797980144134
-47.12109639666146
-45.0
-30.96375653207352
-56.309932474020215
-45.0
-45.0
-56.309932474020215
-56.309932474020215

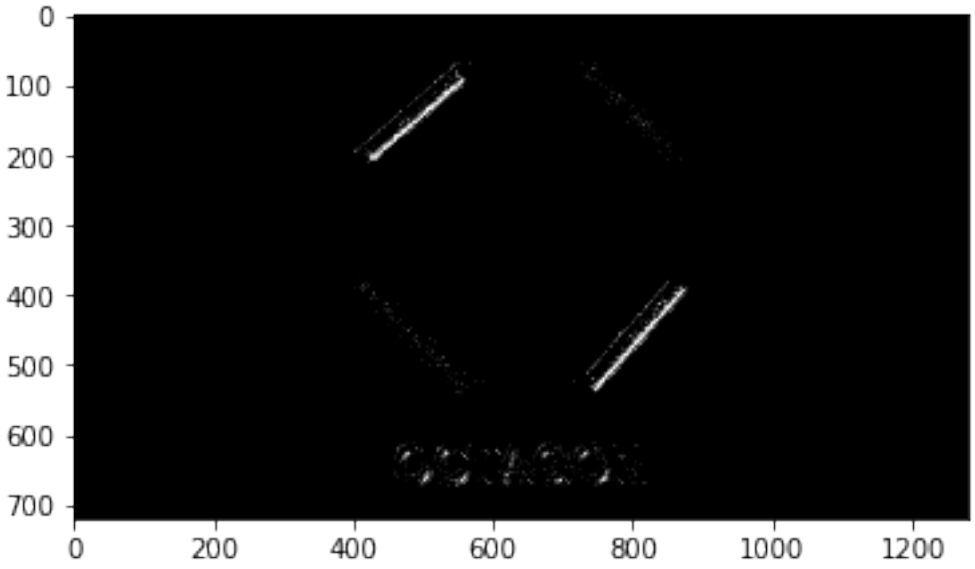
```
-33.690067525979785
-45.0
-36.86989764584402
-45.0
-45.0
-45.0
-45.0
-56.309932474020215
-45.0
-45.0
-45.0
-45.0
-59.03624346792648
-45.0
-45.0
-53.13010235415598
-45.0
```

In [25]:
```
plt.imshow(filtered2,cmap="gray")
cv2.imshow('image',filtered2)
cv2.waitKey()
cv2.destroyAllWindows()
```



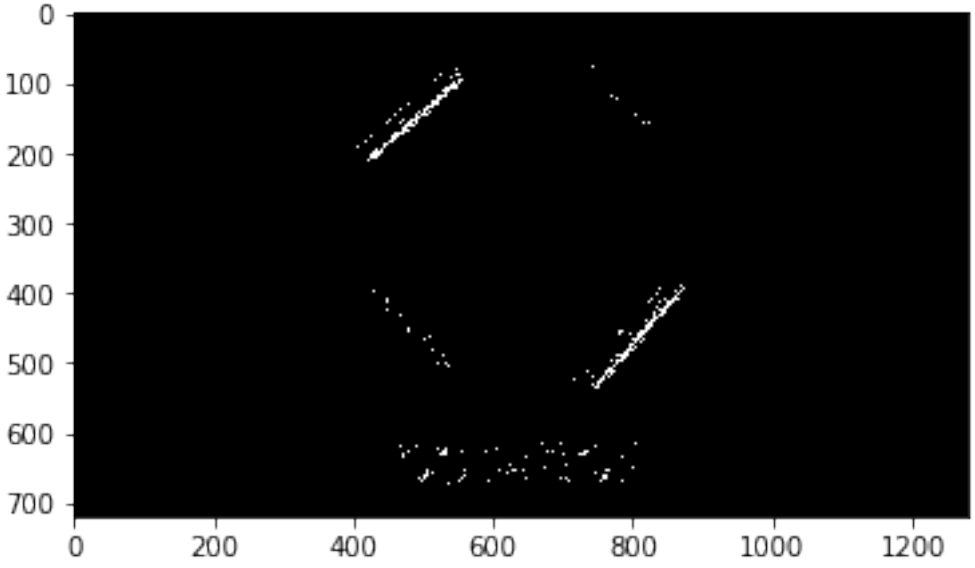
In [26]:
```
smo_fil = cv2.GaussianBlur(filtered2,(5,5),0)
```

In [27]:
```
plt.imshow(smo_fil,cmap='gray')
plt.imsave('output_edge.png',smo_fil,cmap='gray')
```



In [ ]:

In [28]:
```
plt.imshow(filtered,cmap="gray")
cv2.imshow('image',filtered)
cv2.waitKey()
cv2.destroyAllWindows()
```



```
In [29]: x = np.array([-1, +1, +1, -1])
         y = np.array([-1, -1, +1, +1])

         np.arctan2(y,x)*180/np.pi

Out[29]: array([-135.,  -45.,   45.,  135.])

In [ ]:

In [ ]:
```