In [10]:
```
import sys
```

In [11]:
```
import torch
import torch.nn.functional as F
from unet import UNet
```

In [12]:
```
device = torch.device('cuda' if torch.cuda.is_available() else 'cpu')
model = UNet(n_classes=2, padding=True, up_mode='upconv').to(device)
optim = torch.optim.Adam(model.parameters())
epochs = 10
```

In [ ]:
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```

In [ ]:
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```

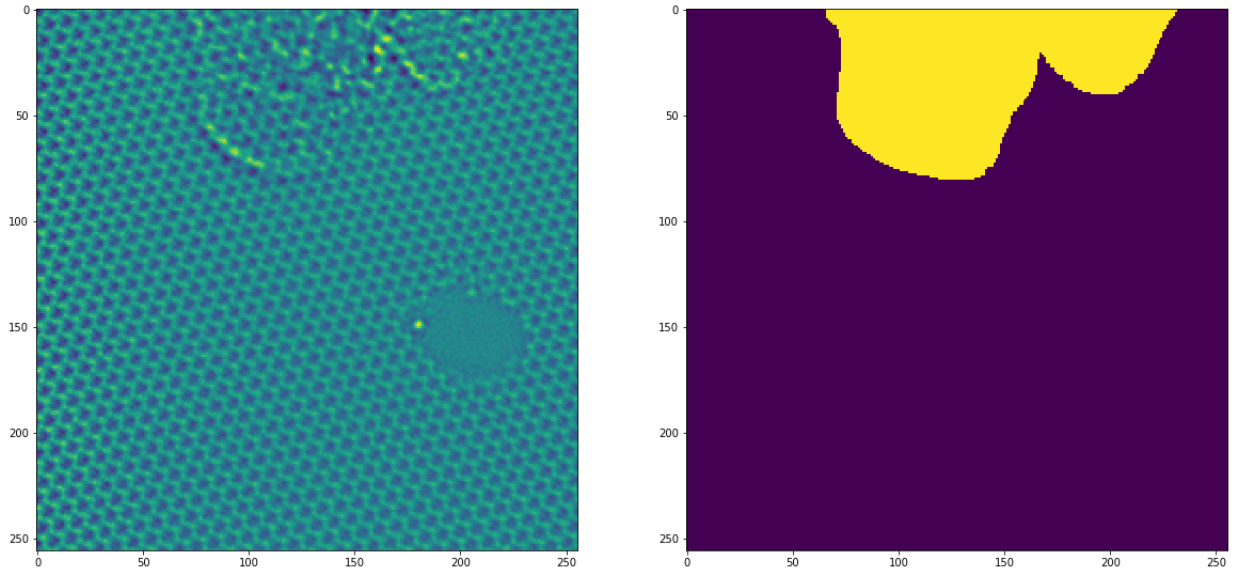
In [23]:
```
import matplotlib.pyplot as plt
import numpy as np
D = plt.imread("DATA.png")
L = plt.imread("LABEL.png")

print(D.shape)
L = L[:,:,0]

D = D/np.max(D)
L = (L/np.max(L)).astype(int)
```

```
(256, 256)
```

In [24]:
```
plt.figure(figsize = (20,20))
plt.subplot(1,2,1)
plt.imshow(D)
plt.subplot(1,2,2)
plt.imshow(L)
plt.show()
print('pass')
```



```
pass
```

In [ ]:
```
X_train = [D]
y_train = [L]
for _ in range(100):
    for X, y in zip(X_train,y_train):

        X_=np.copy(X)
        y_=np.copy(y)


        print(X.shape)
        print(y.shape)



        X = X.reshape([1,1,X.shape[0],X.shape[1]])
        y = y.reshape([1,y.shape[0],y.shape[1]])

        X = torch.tensor(X)
        y = torch.tensor(y)
        X = X.to(device)  # [N, 1, H, W]
        y = y.to(device)  # [N, H, W] with class indices (0, 1)
        prediction = model(X)  # [N, 2, H, W]
```

```
        loss = F.cross_entropy(prediction, y)


        optim.zero_grad()
        loss.backward()
        optim.step()


        out = prediction.detach().numpy()

        #out = out.reshape([out.shape[3],out.shape[2],out.shape[1]])
        out = out[0,0,:,:]

        print(out.shape)
        if _%2==0:

            print('input image, ground truth')
            plt.figure(figsize = (20,20))
            plt.subplot(1,2,1)
            plt.imshow(X_)
            plt.subplot(1,2,2)
            plt.imshow(y_)
            plt.show()

            print('Unet output, ground truth')
            plt.figure(figsize = (20,20))
            plt.subplot(1,2,1)
            plt.imshow(out)
            plt.subplot(1,2,2)
            plt.imshow(y_)
            plt.show()
        print('pass')
```

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input image, ground truth
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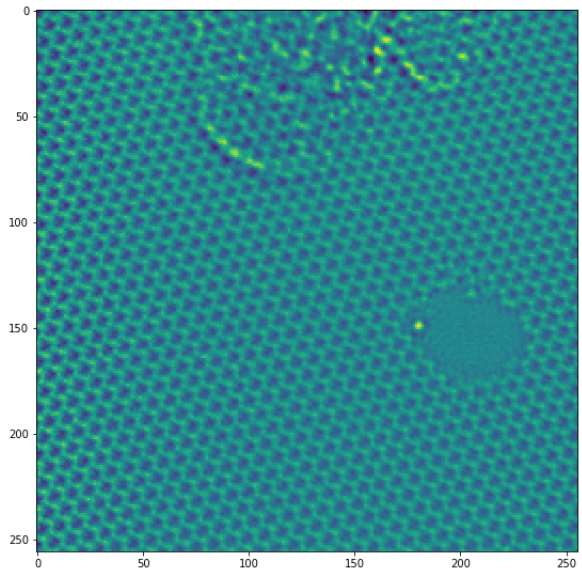
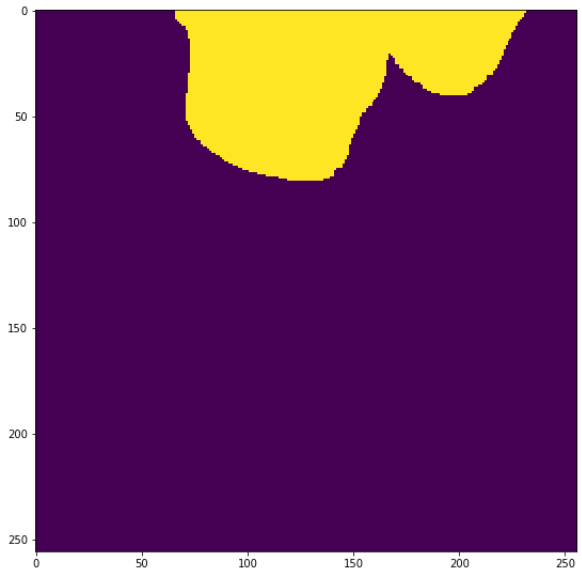
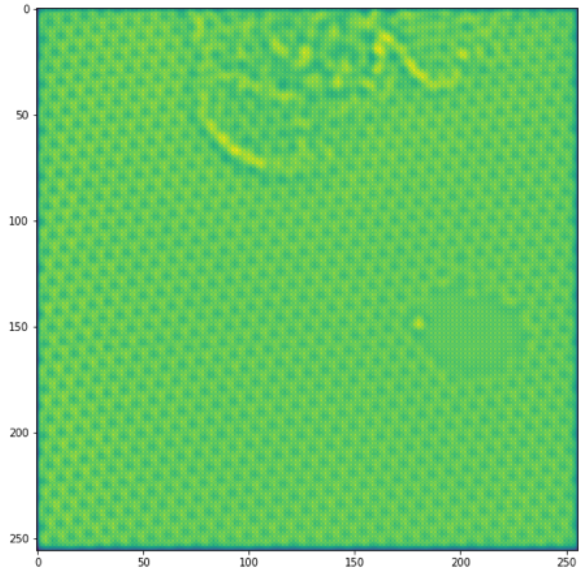
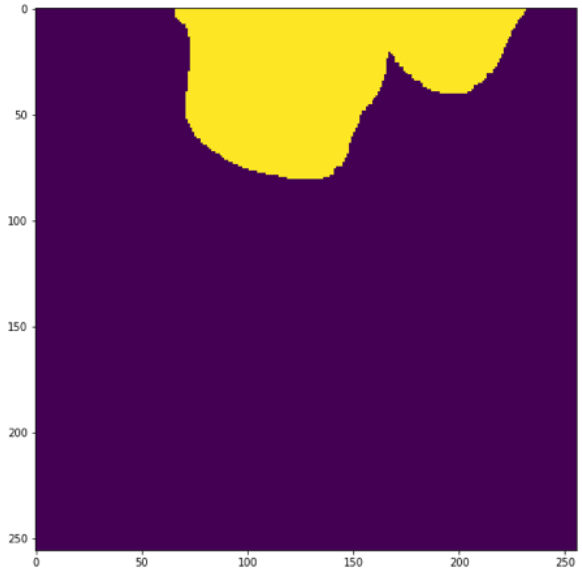



Unet output, ground truth

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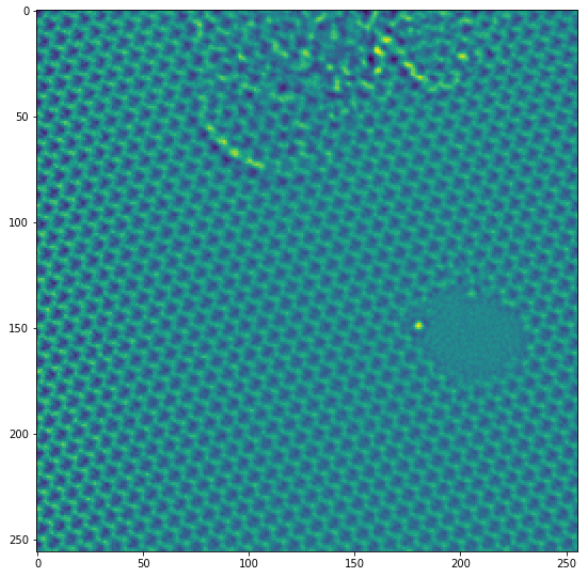
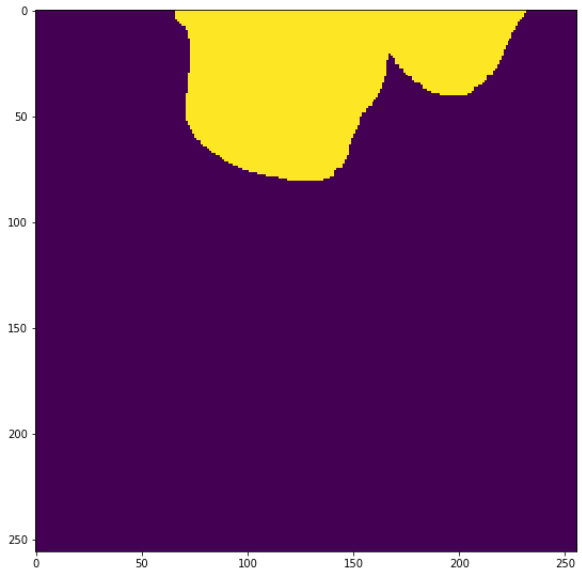
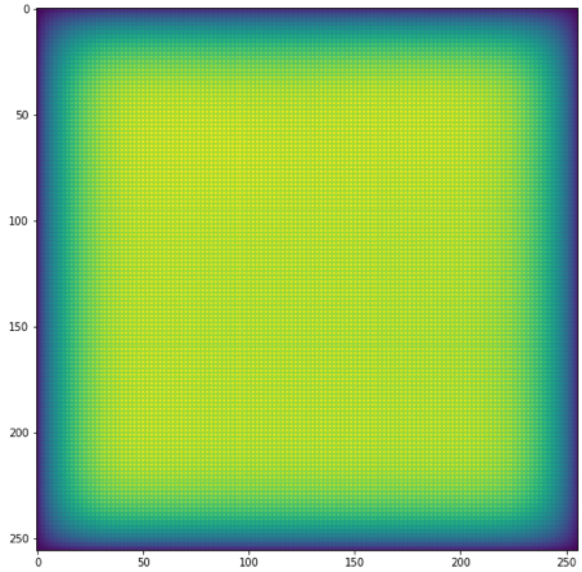
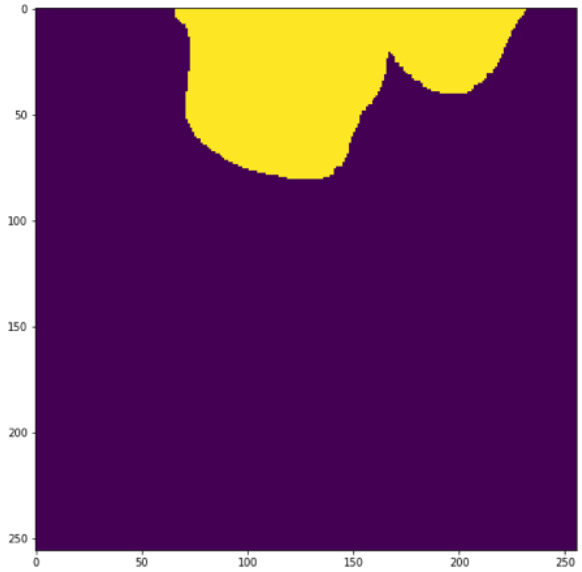
input image, ground truth





Unet output, ground truth





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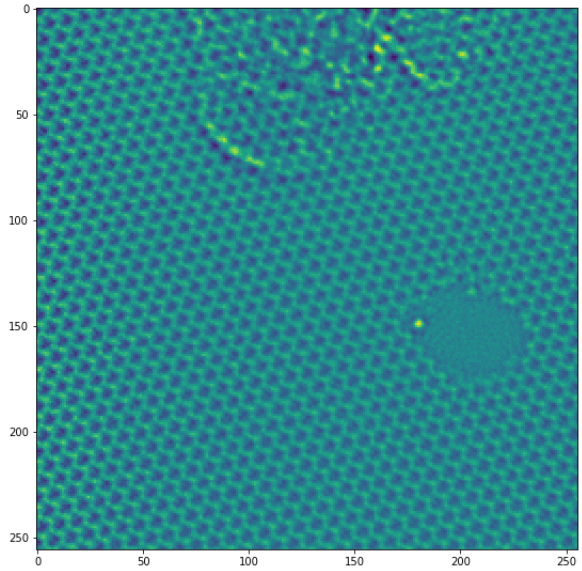

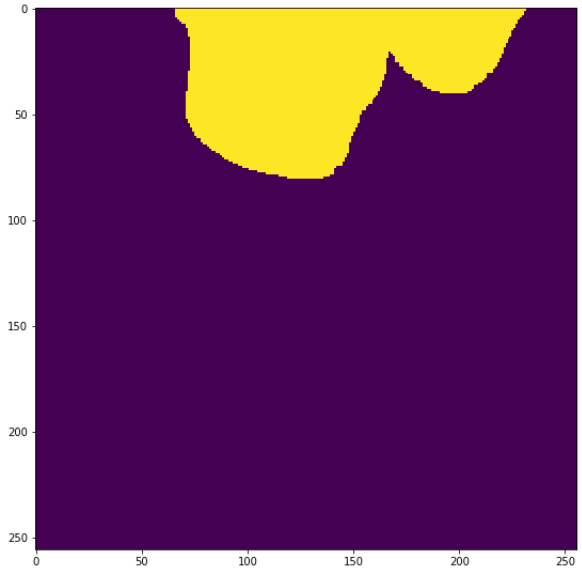

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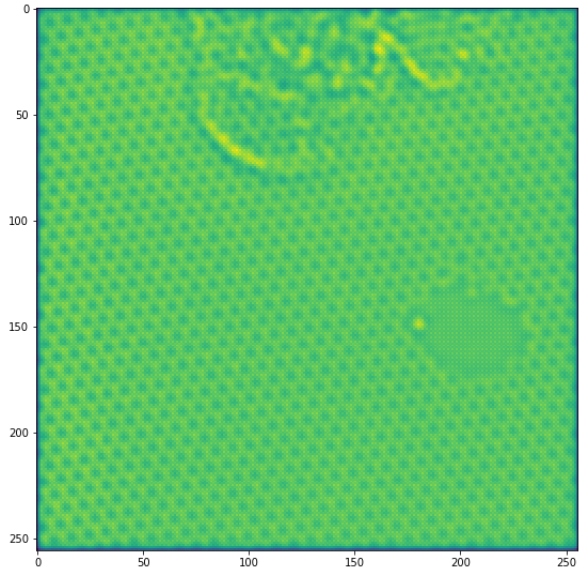

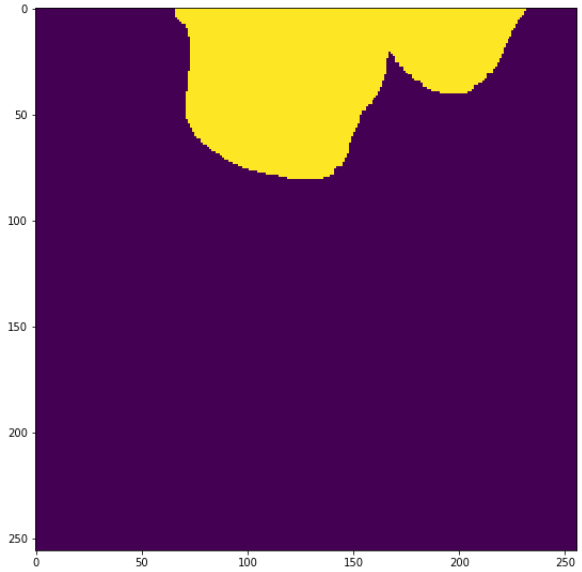

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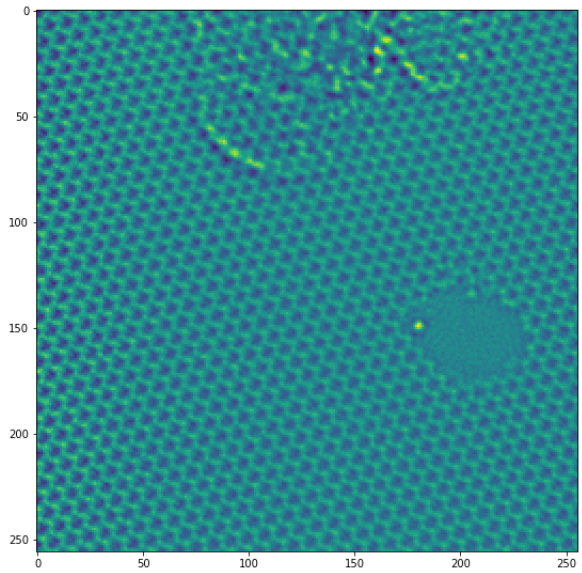
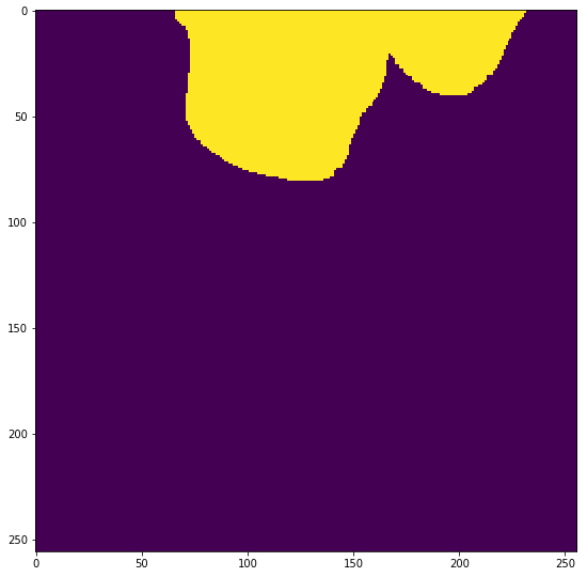

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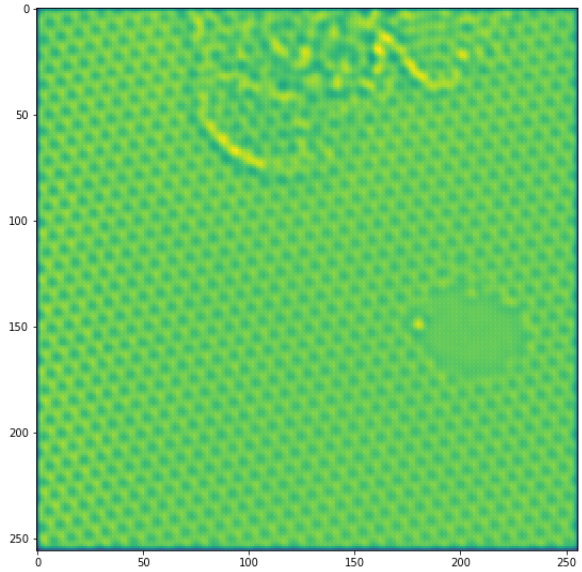
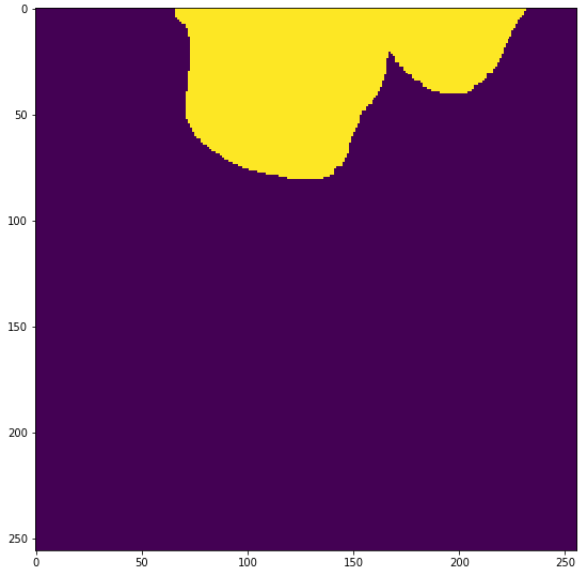

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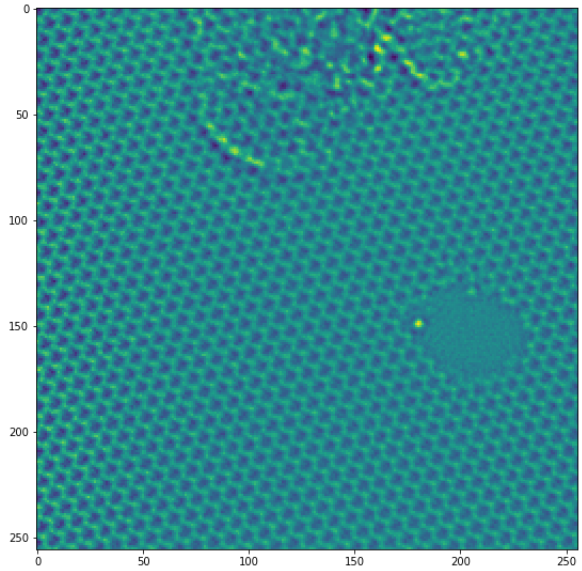
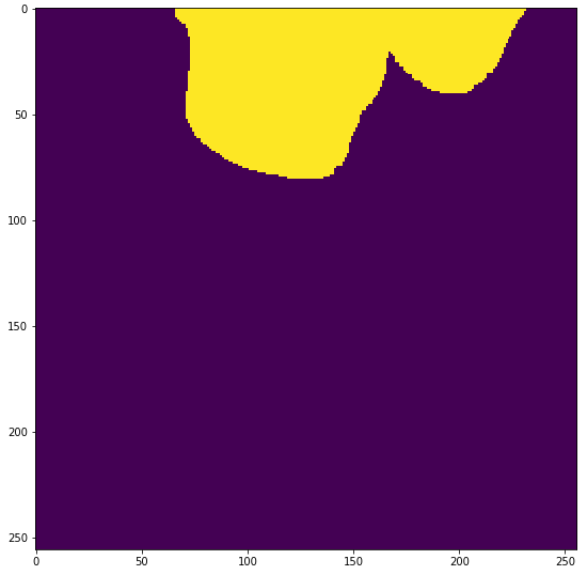

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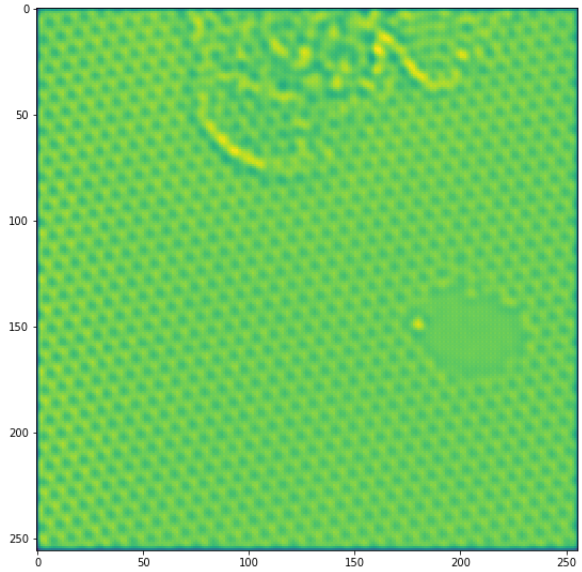
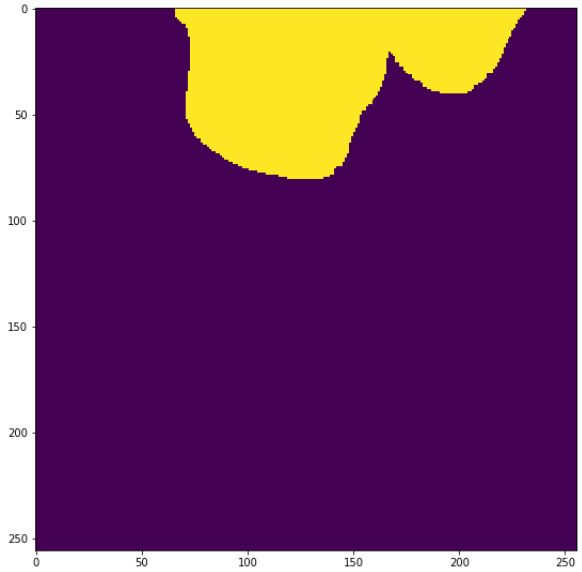

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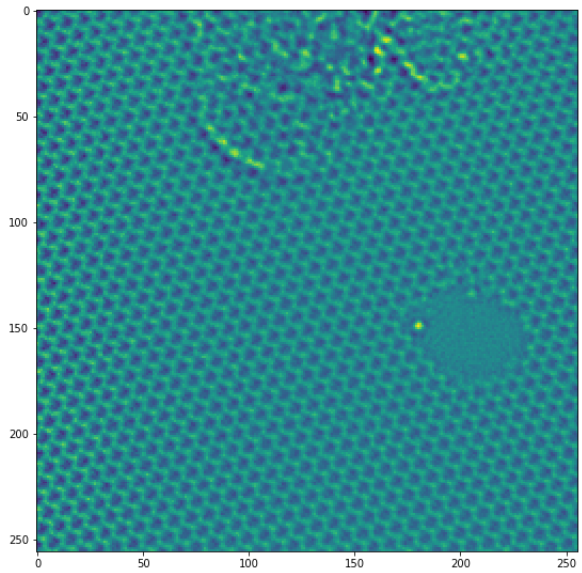

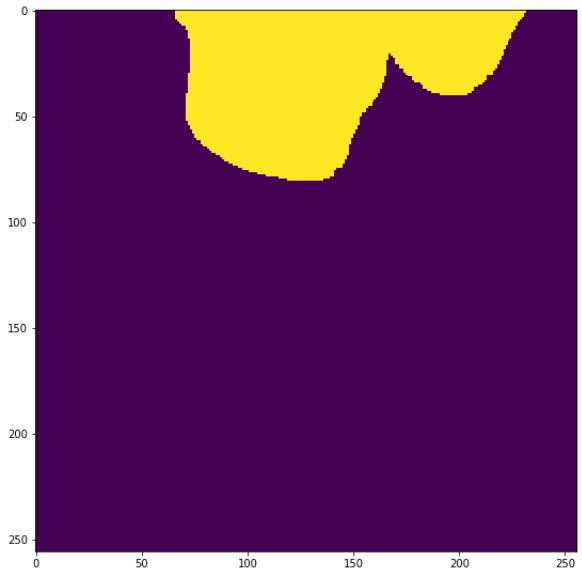

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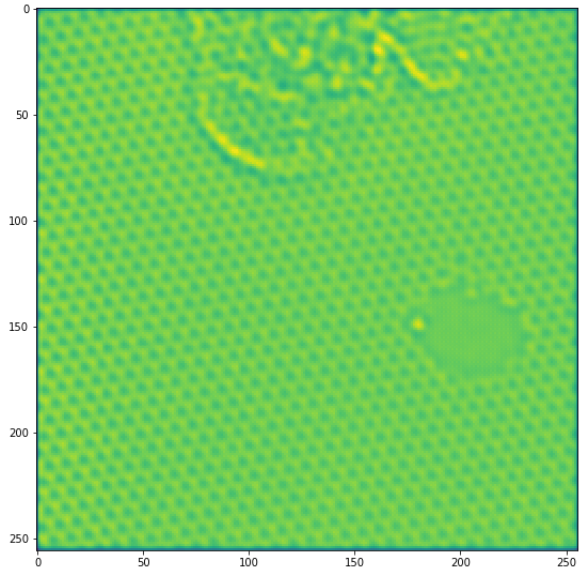

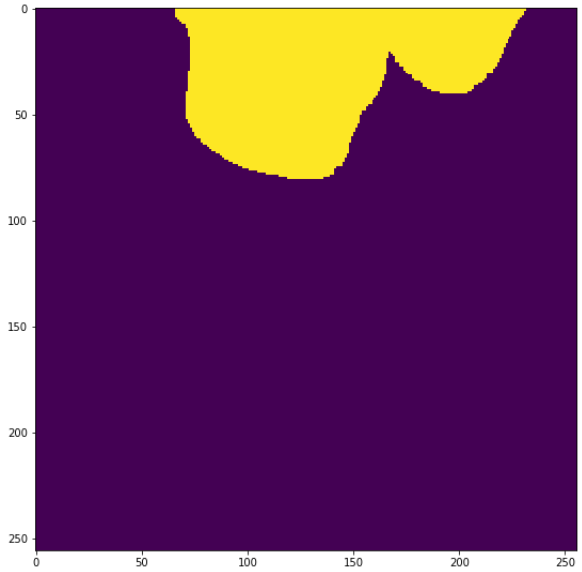

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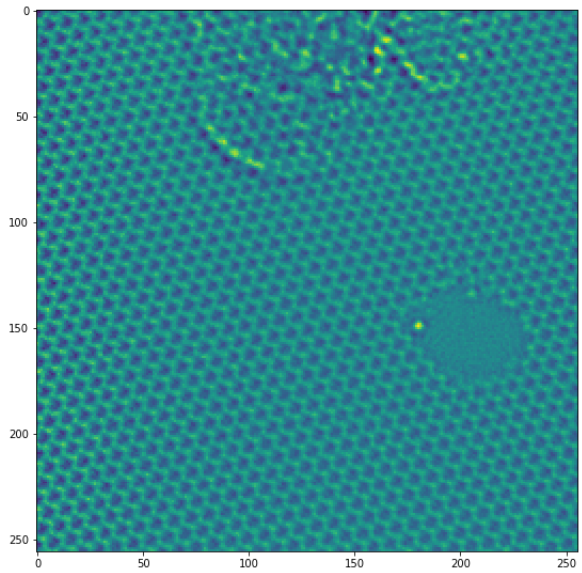
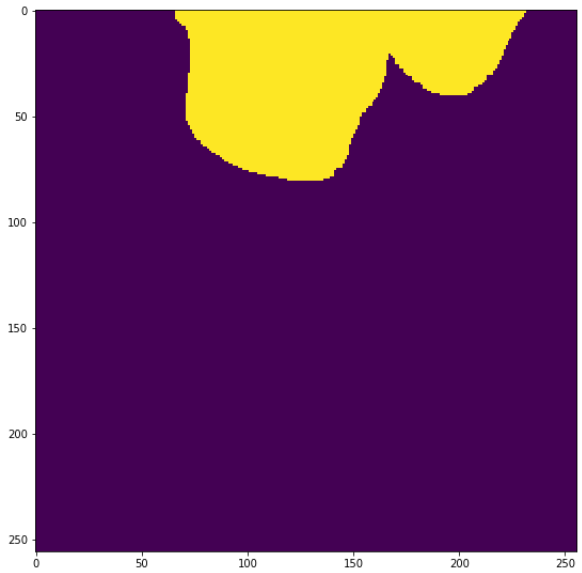

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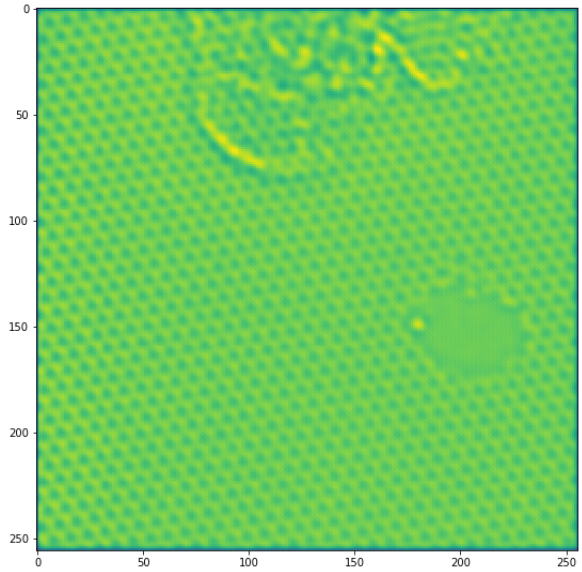
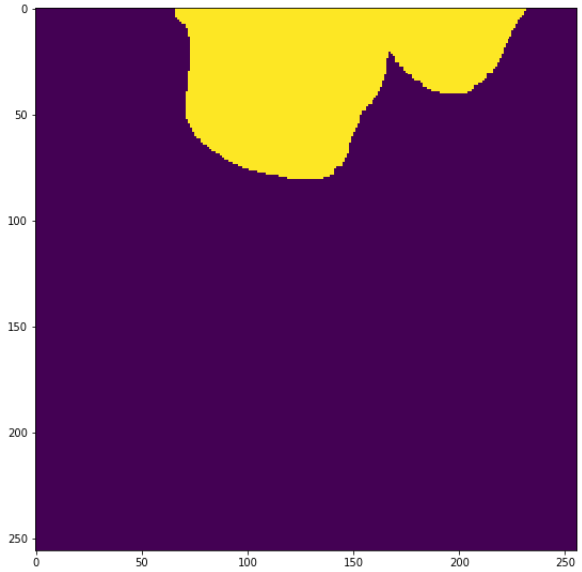

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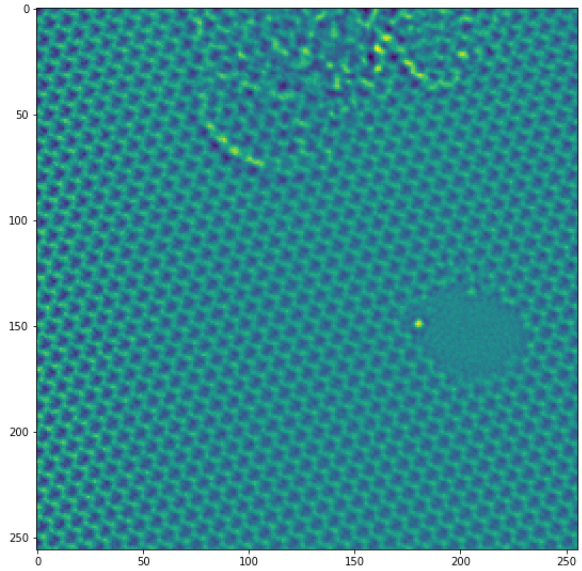

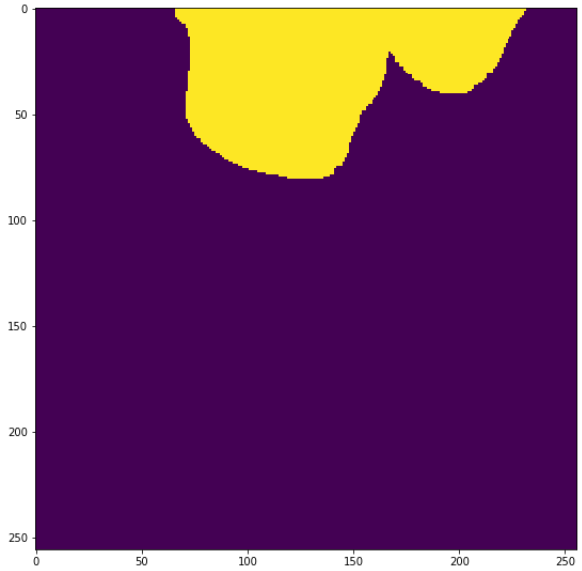

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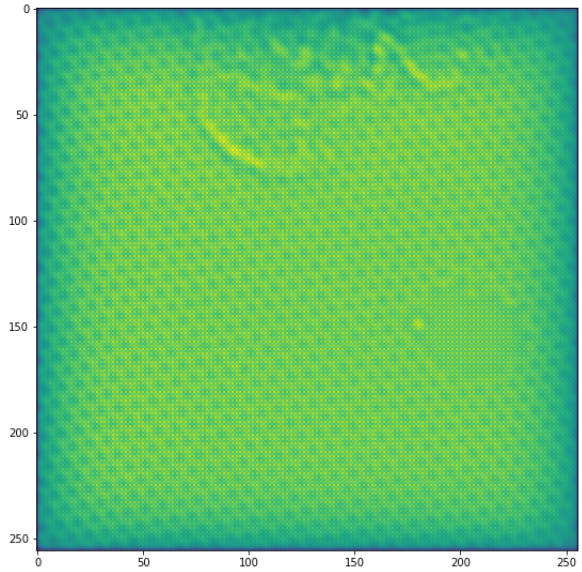

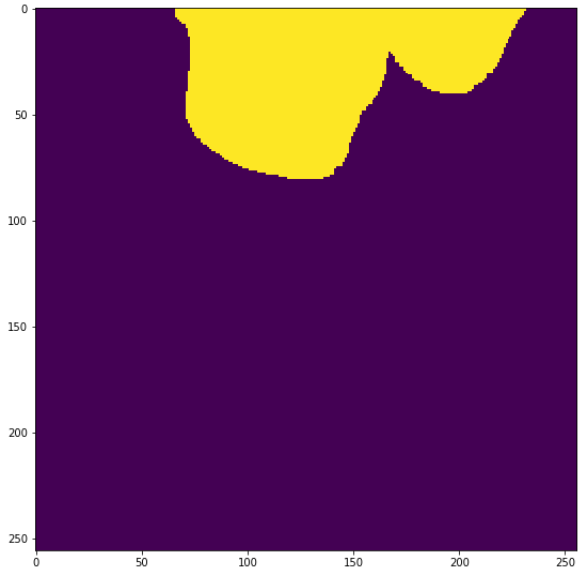

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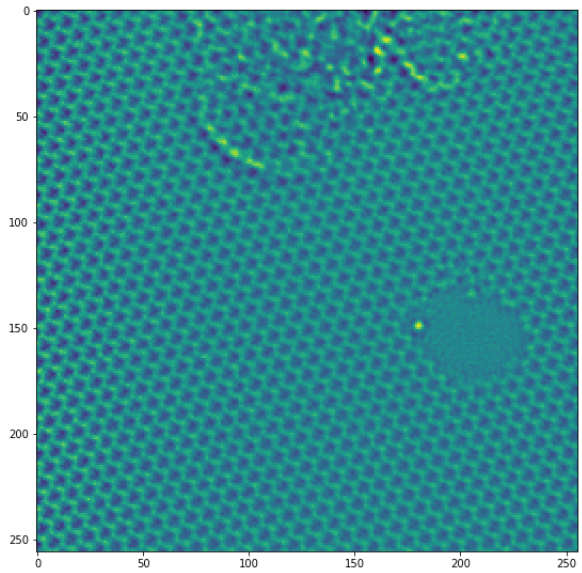
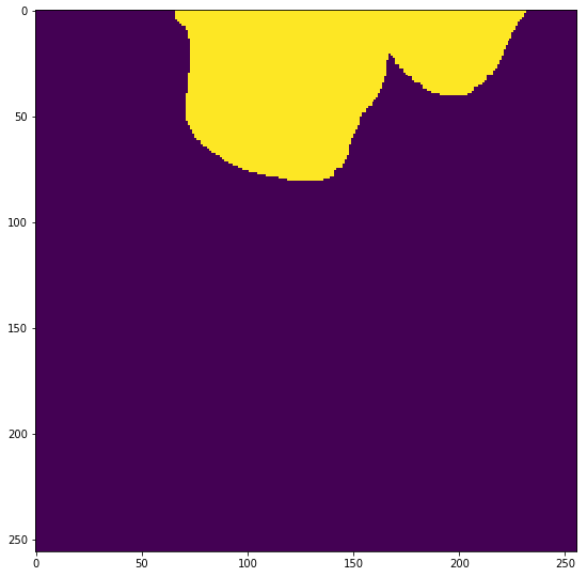
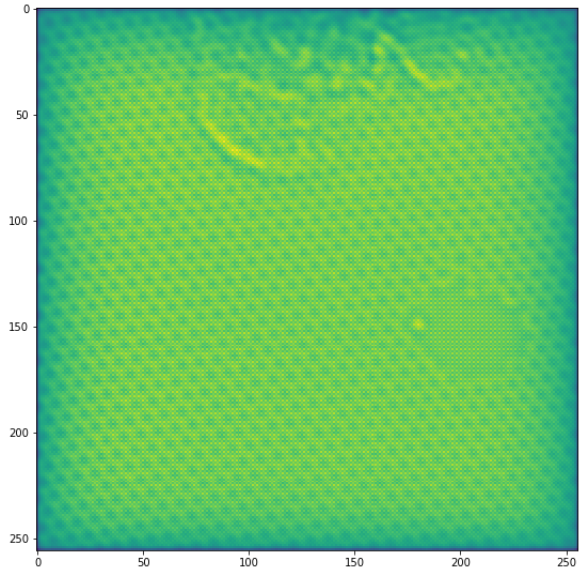
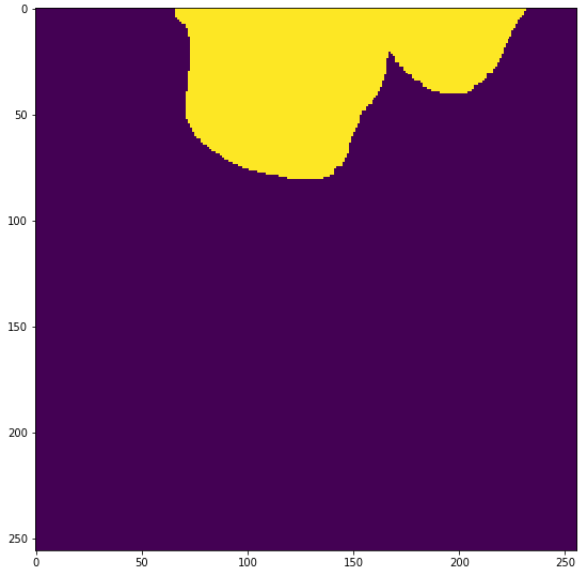




Unet output, ground truth





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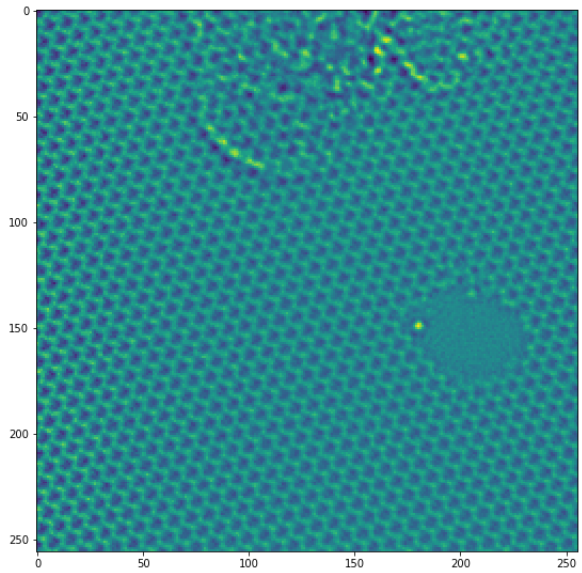

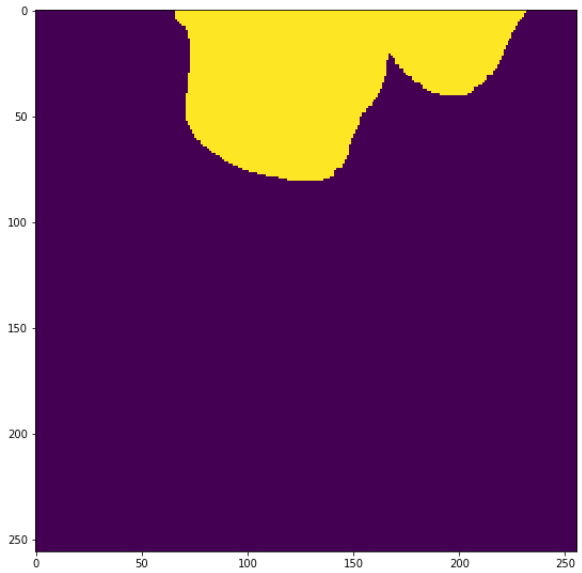

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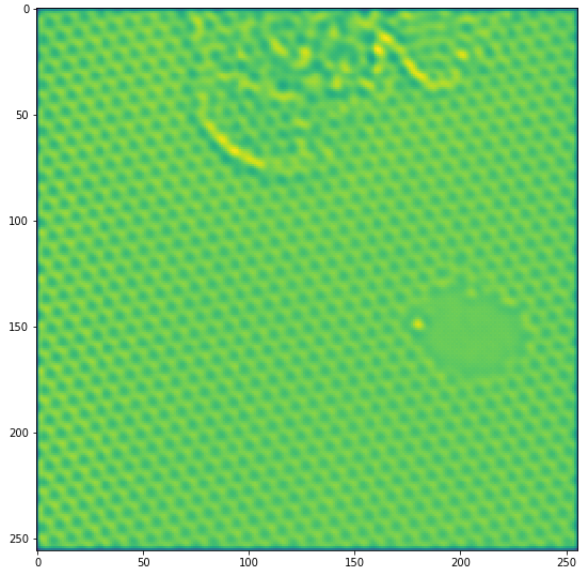

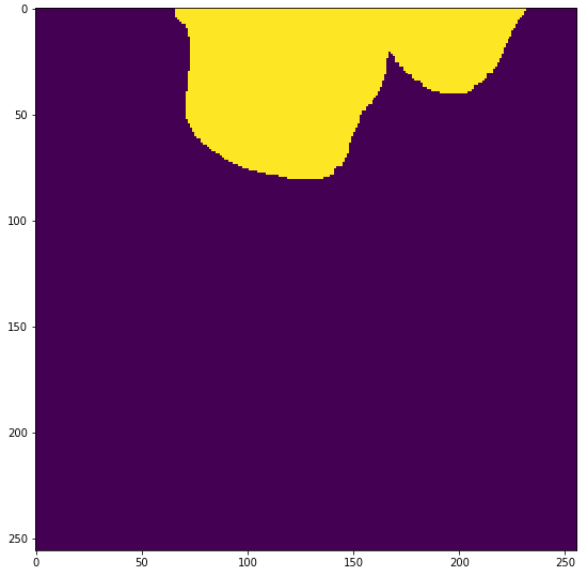

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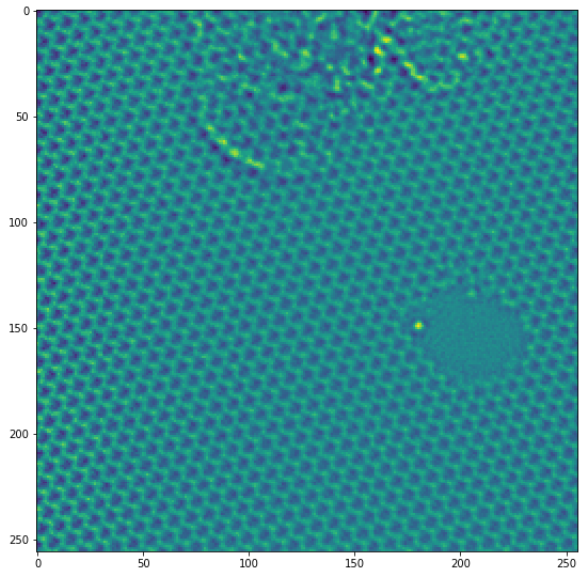
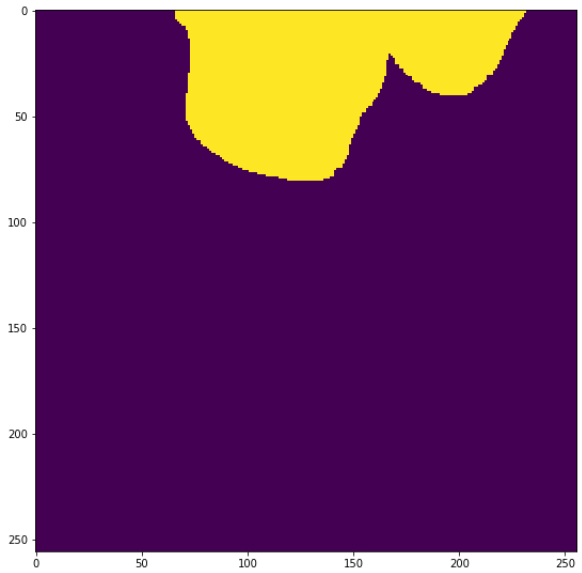

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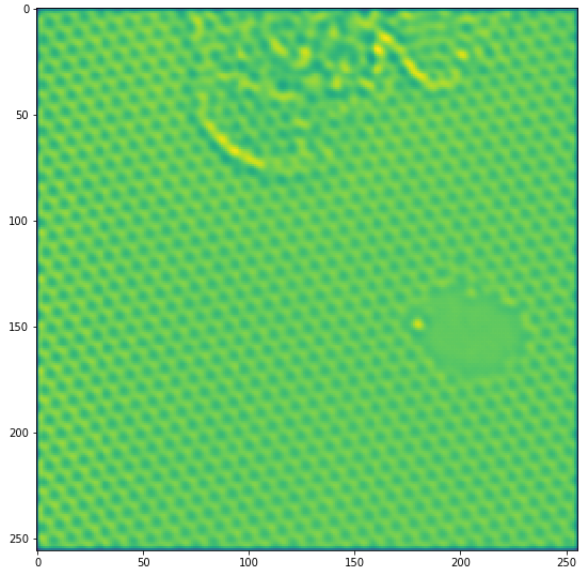
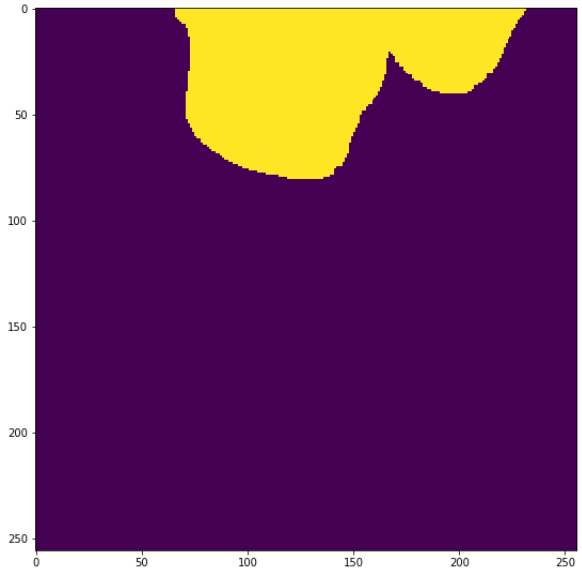

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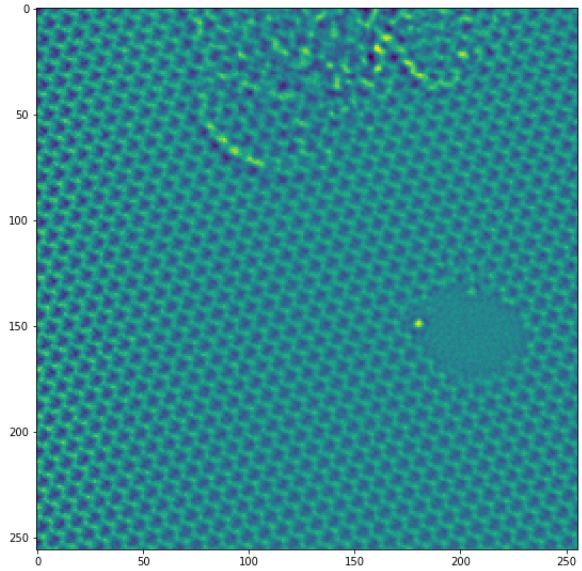

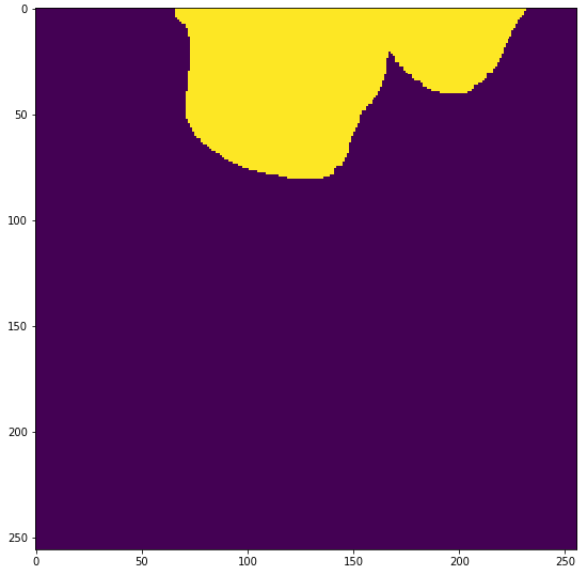

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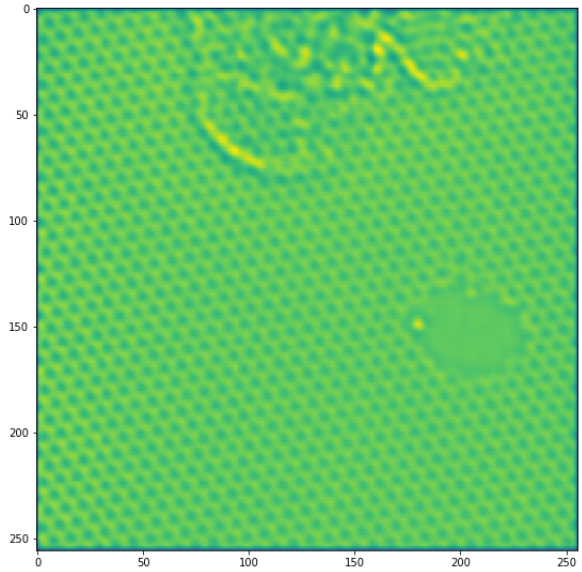

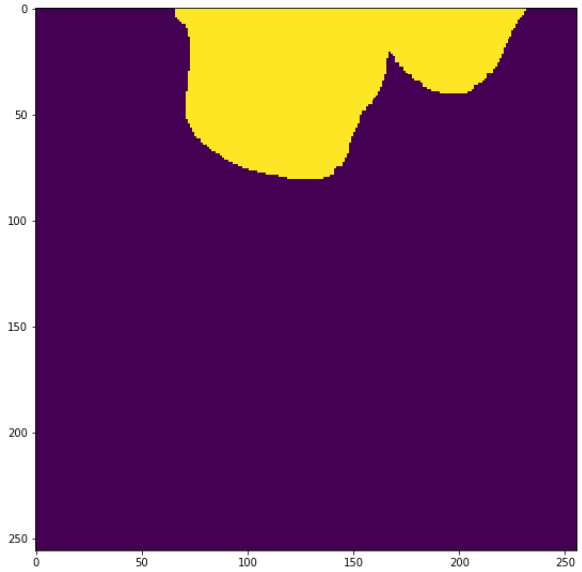

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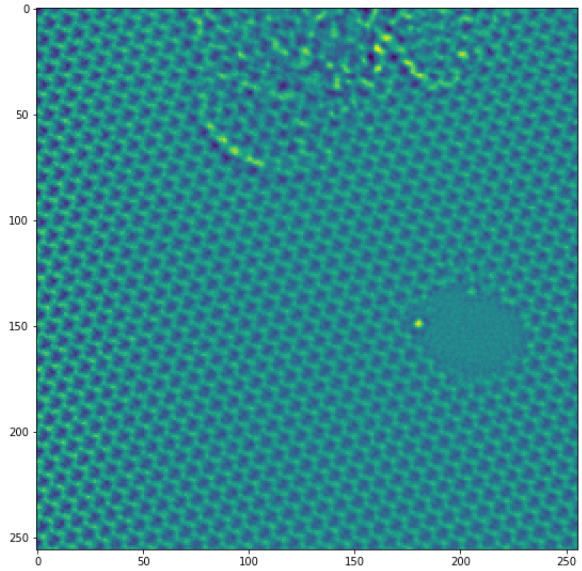
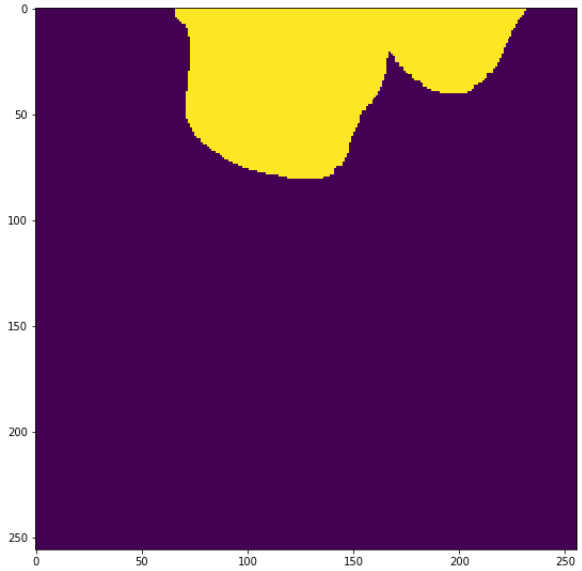

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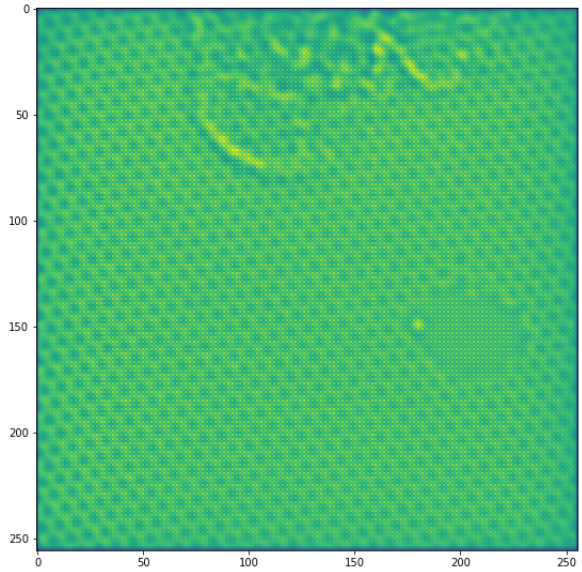
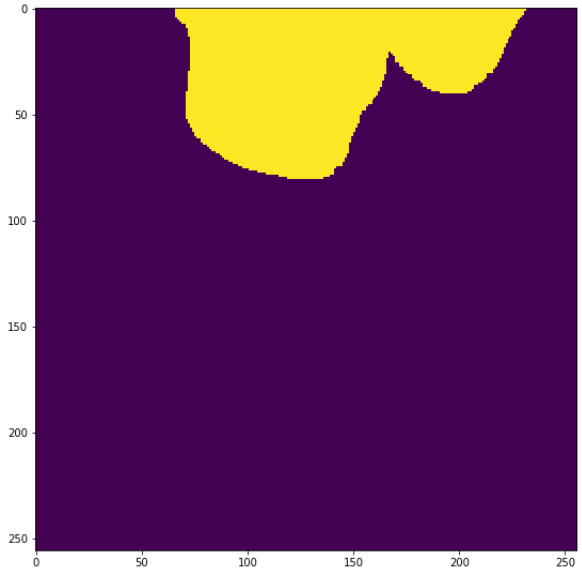

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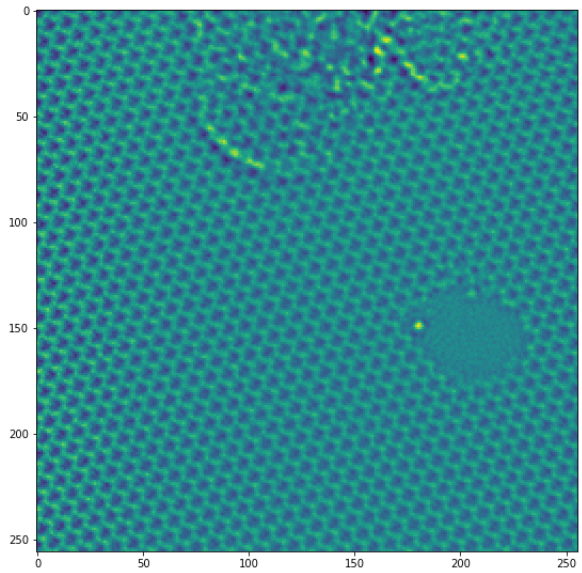

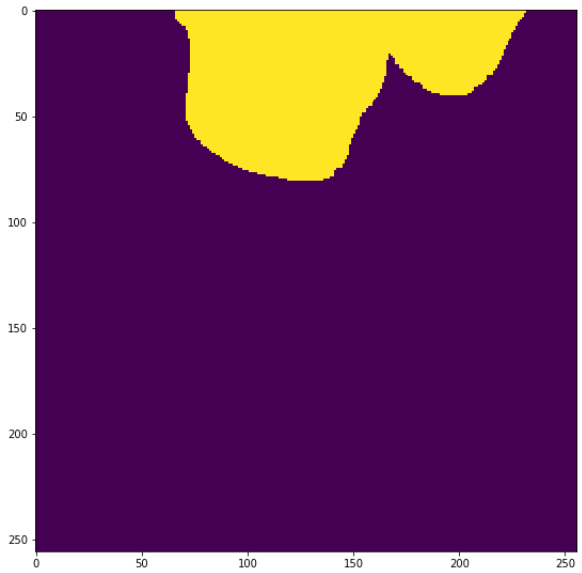

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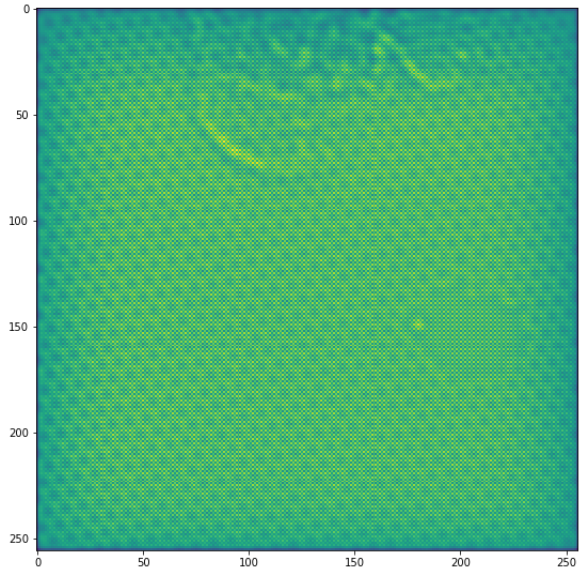

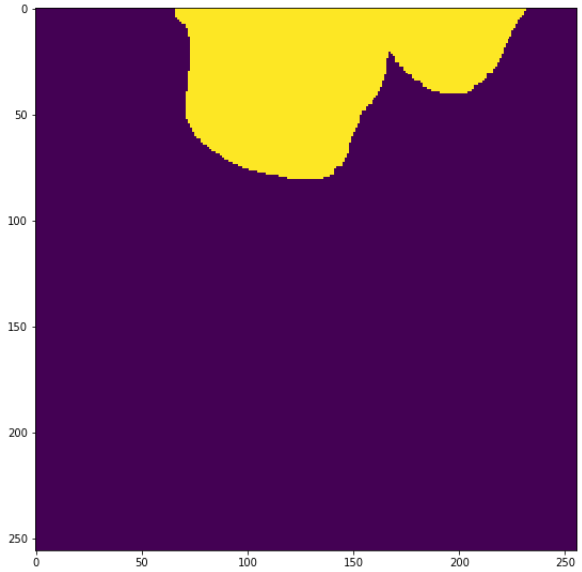

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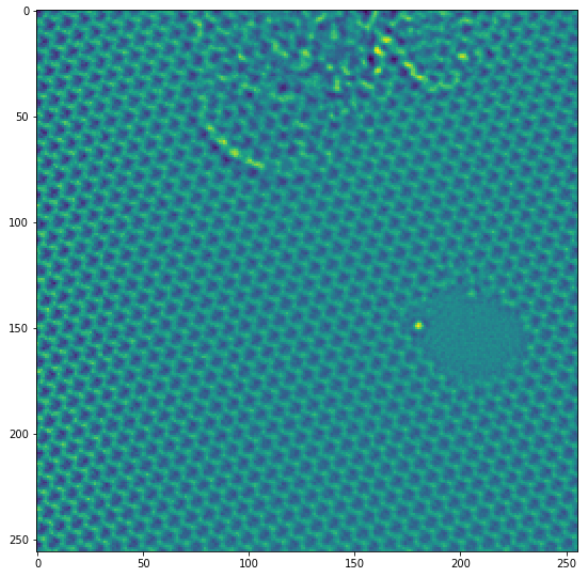

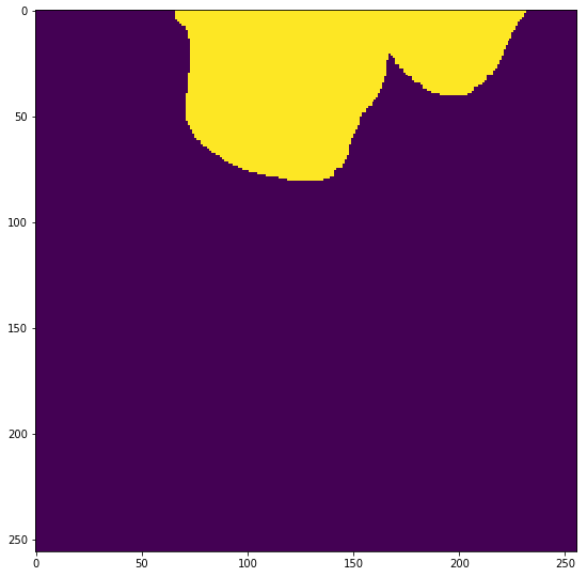

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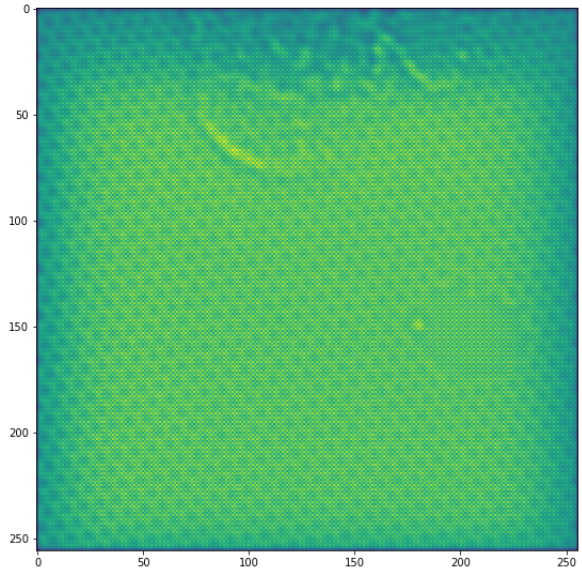

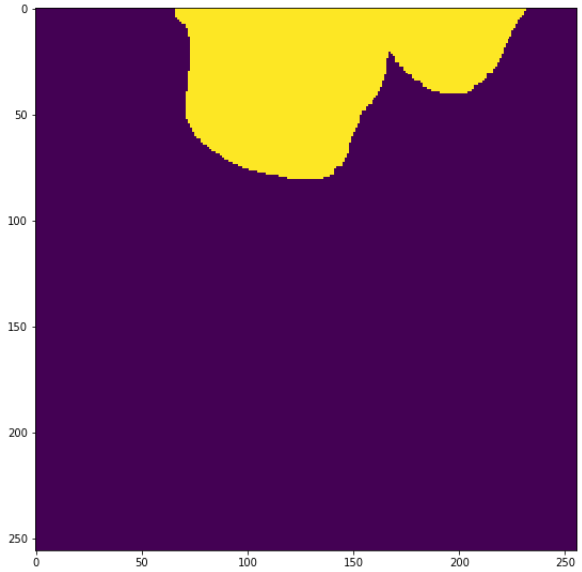

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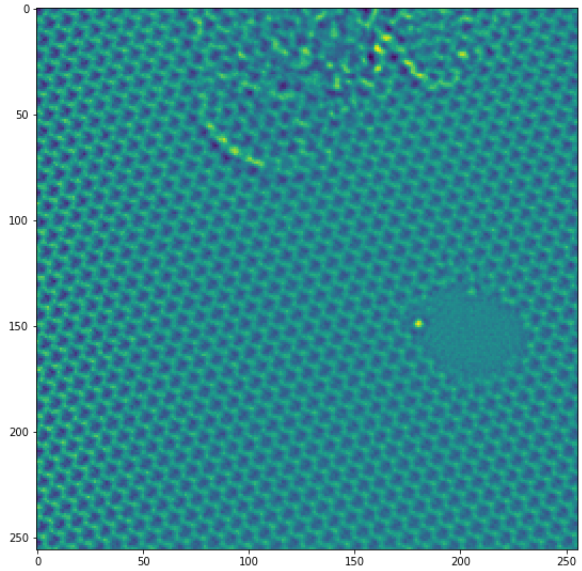

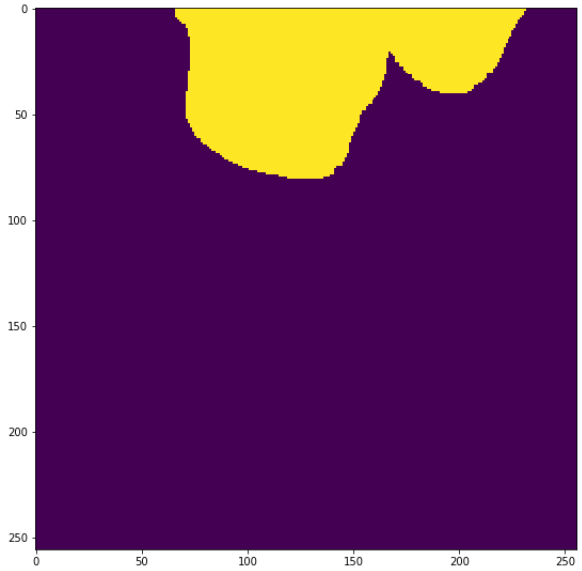

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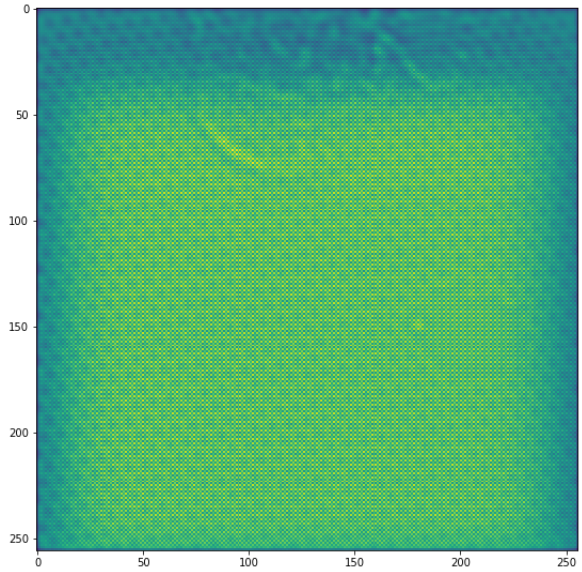

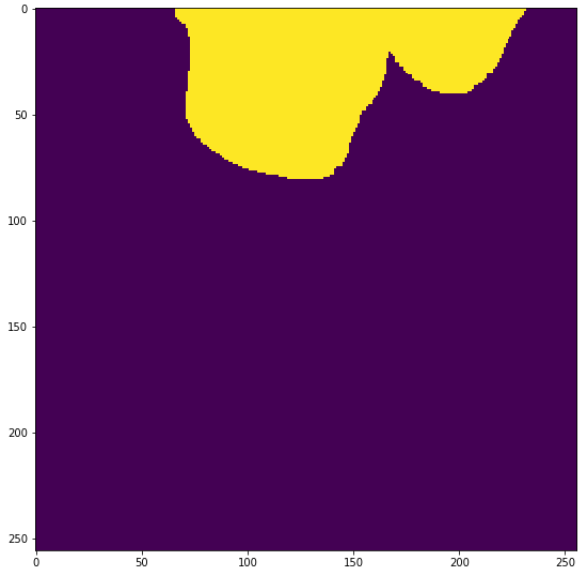

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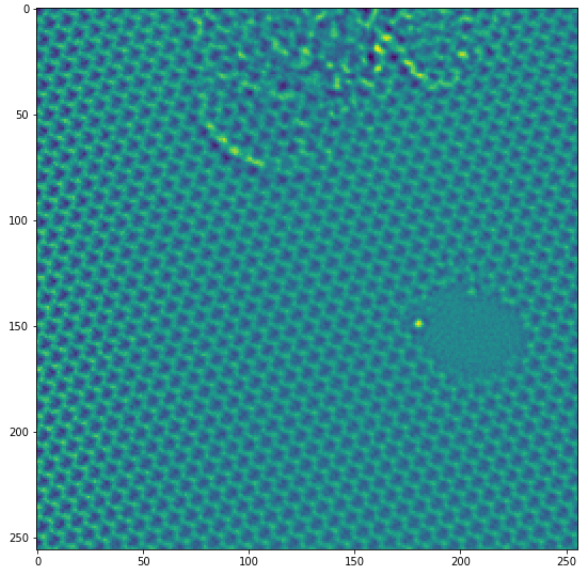

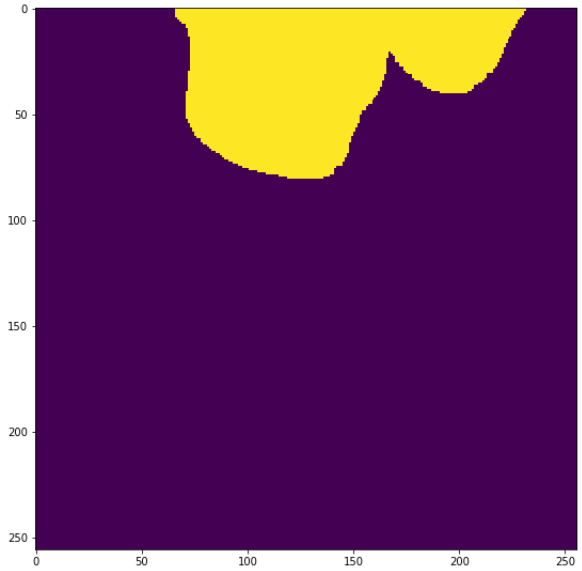

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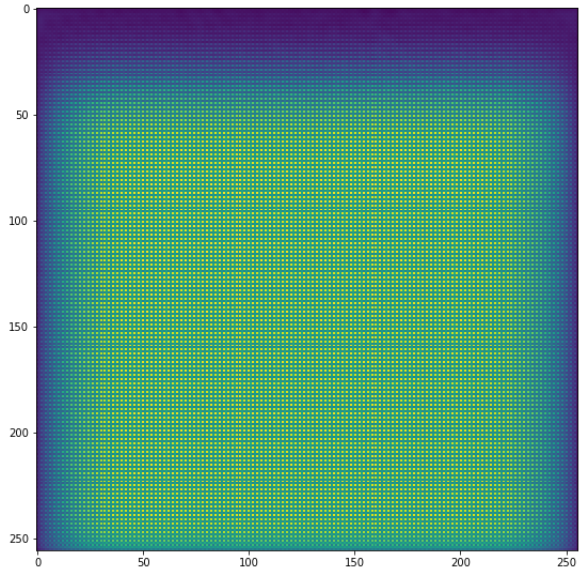

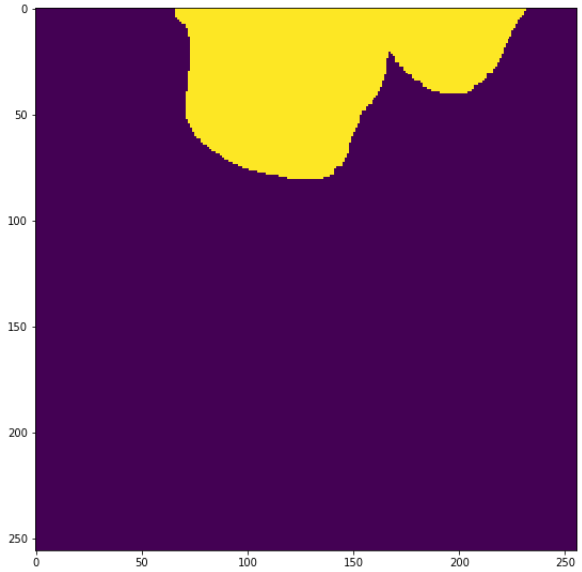

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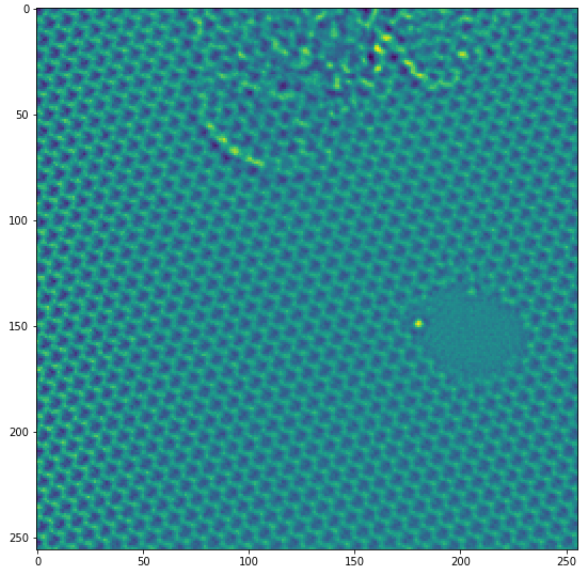
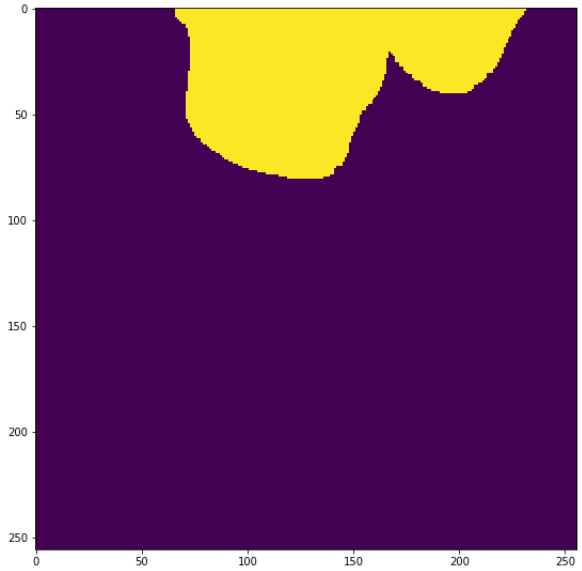

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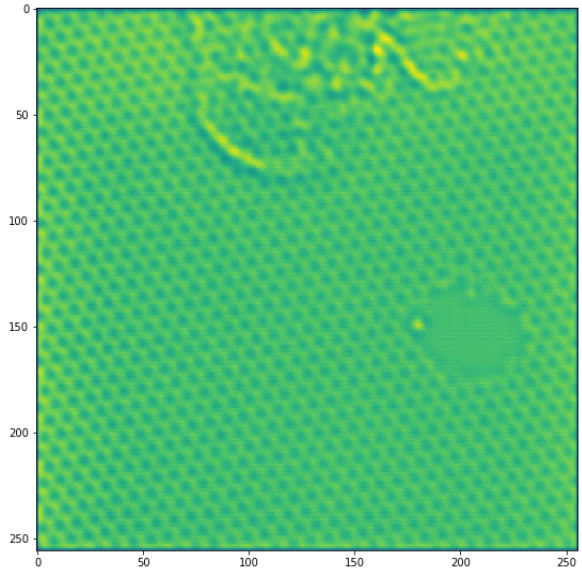
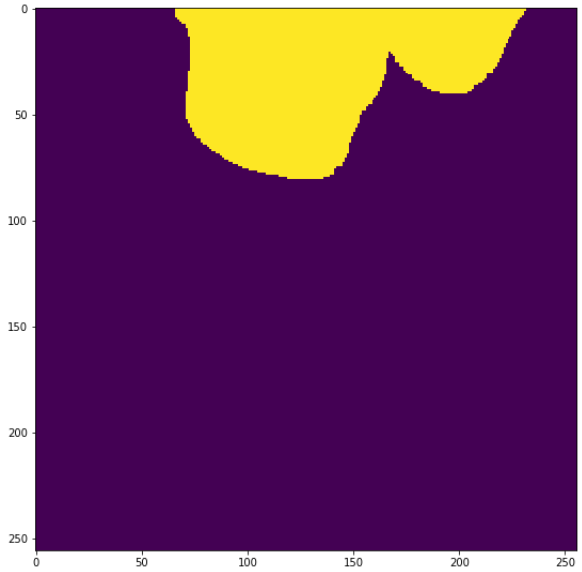

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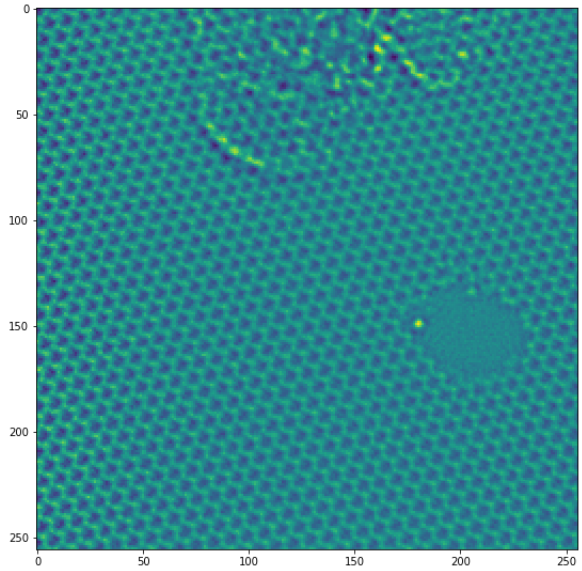
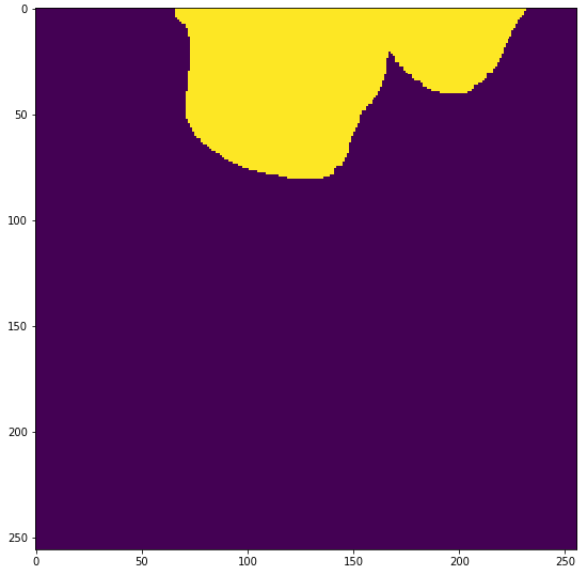

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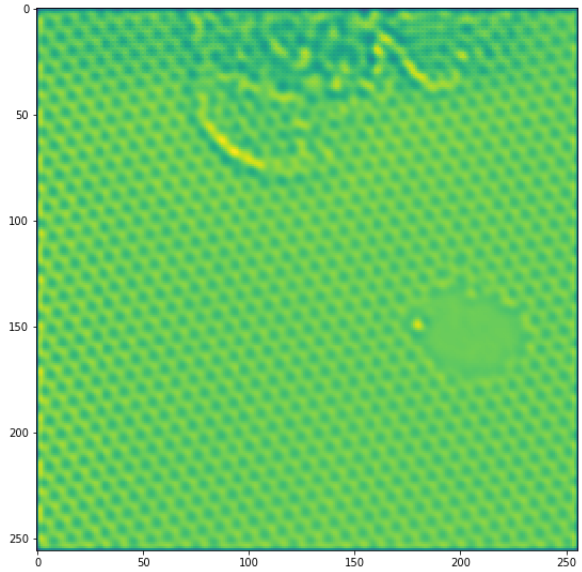
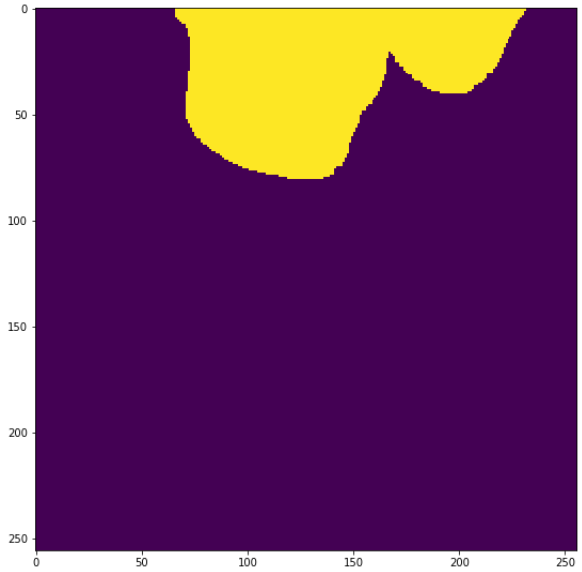

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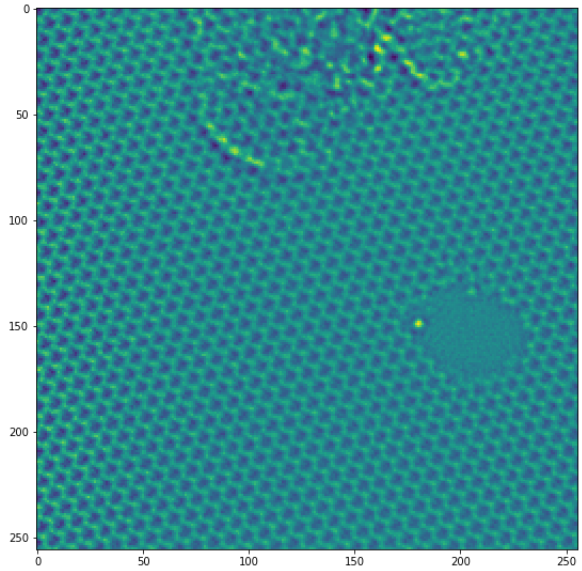
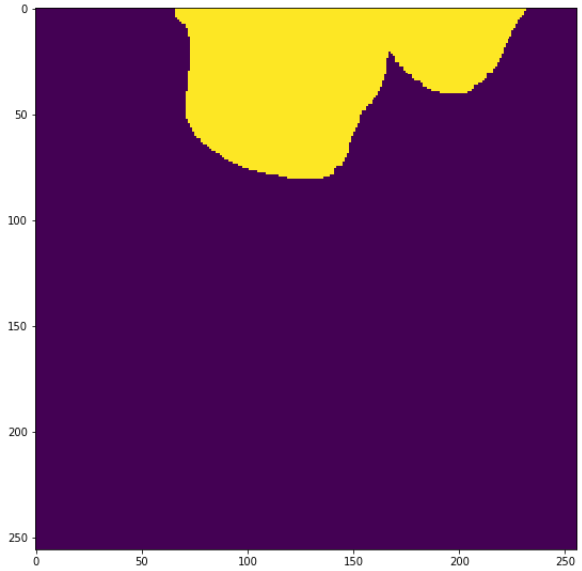

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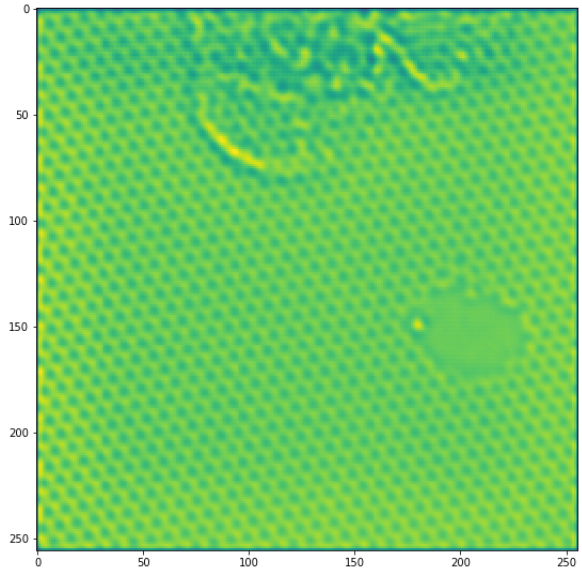
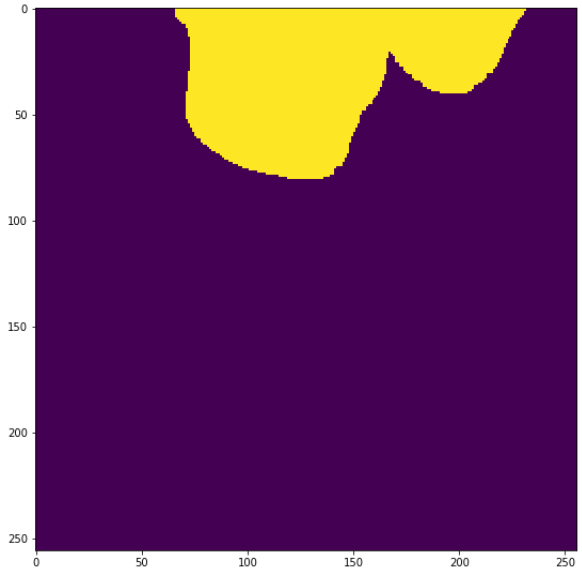

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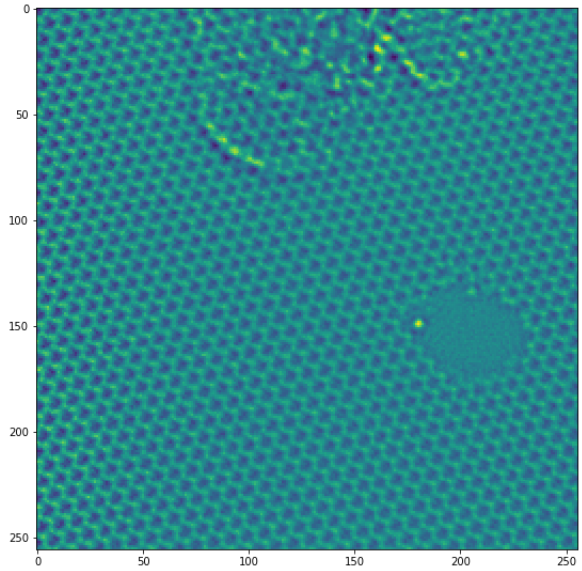

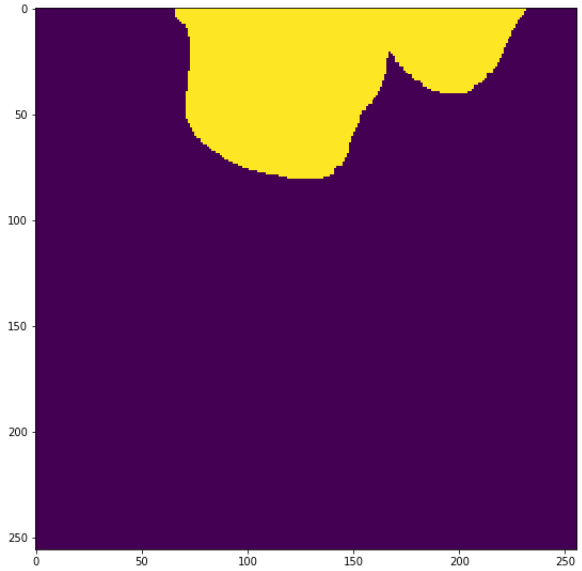

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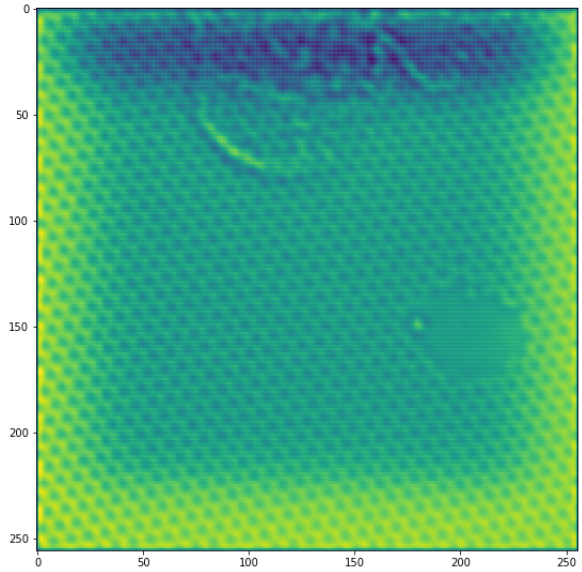

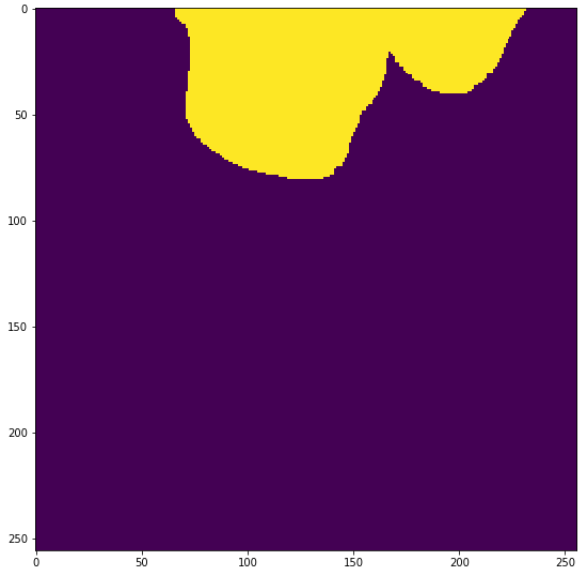

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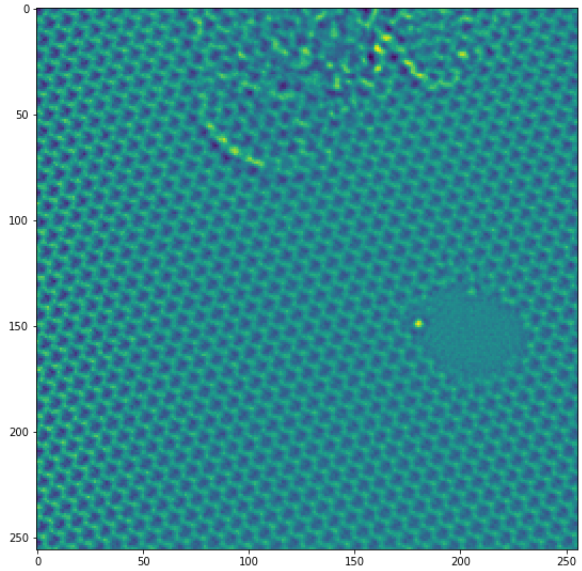
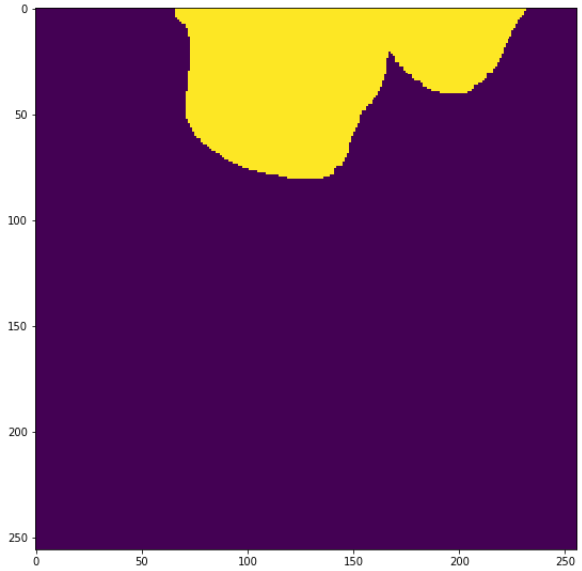

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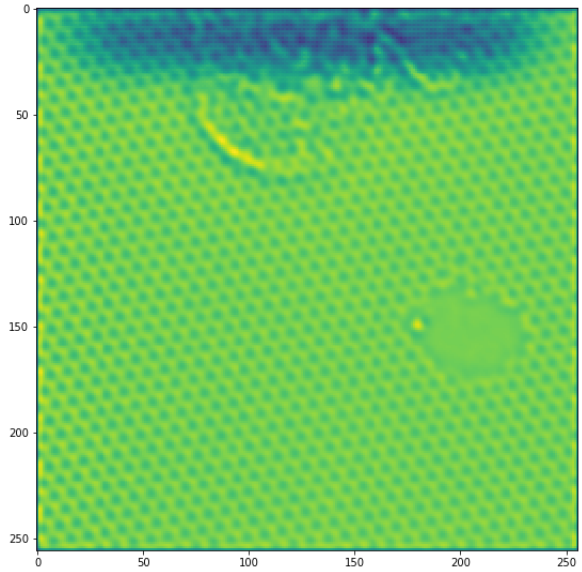
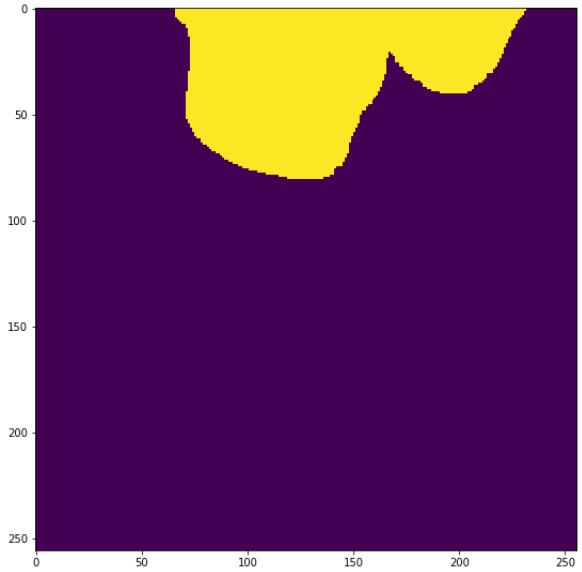

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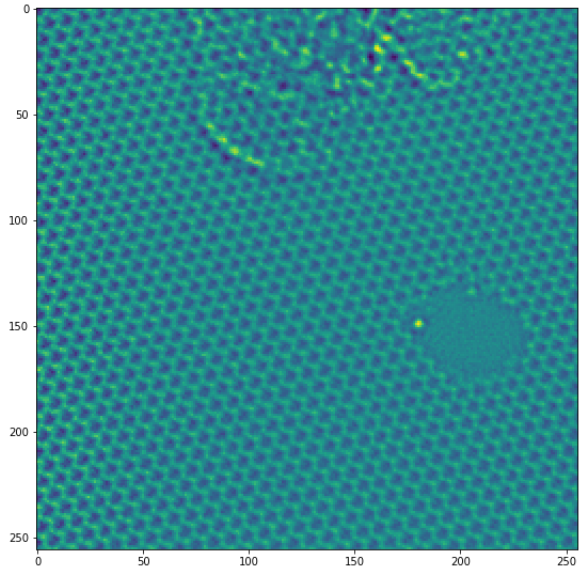

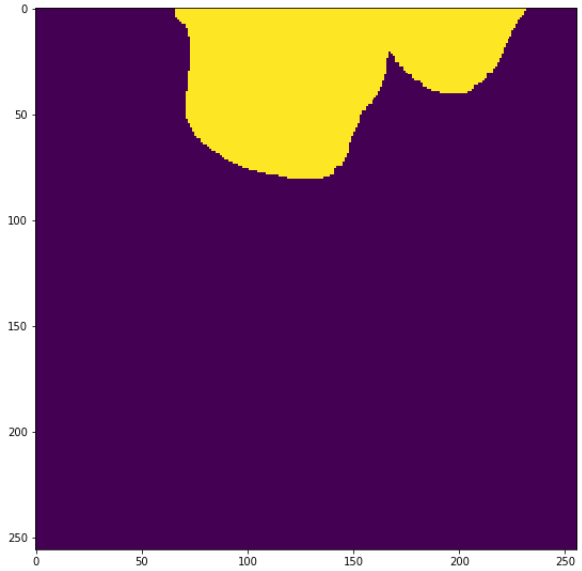

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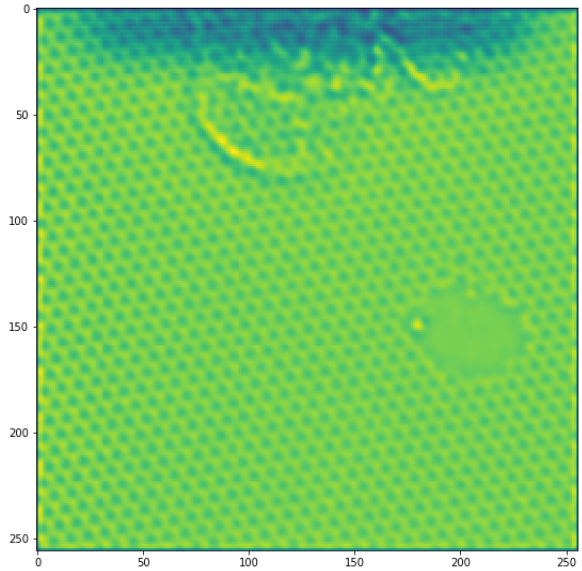

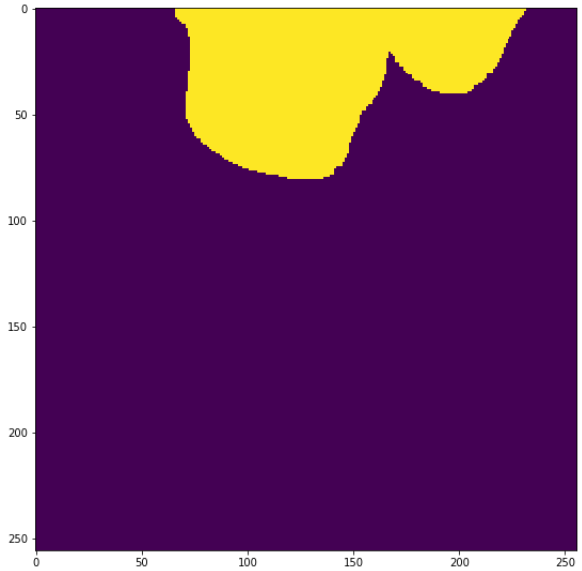

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