In [1]:
```
import pprint
import rasterio
from rasterio import features
import rasterio.warp
import matplotlib.pyplot as plt
import numpy as np
from scipy.ndimage import zoom
import os

import torch
import torch.nn as nn
import torch.nn.functional as F
import torch.optim as optim
import torchvision
from torchvision import datasets, transforms
from torch.utils.data import Dataset
from torch.optim.lr_scheduler import StepLR
```

In [2]:
```
# Base values
channel_descriptions = ['M11', 'I2', 'I1', 'NDVI_last', 'EVI2_last', 'total precipi

min_values = [np.float32(-100.0),
  np.float32(-100.0),
  np.float32(-100.0),
  np.float32(-9863.268),
  np.float32(-4422.217),
  np.float32(0.0),
  np.float32(0.0),
  np.float32(0.0),
  np.float32(0.0),
  np.float32(0.0),
  np.float32(0.0),
  np.float32(0.0),
  np.float32(0.0),
  np.float32(0.0),
  np.float32(-84.0),
  np.float32(-6.72),
  np.float32(1.0),
  np.float32(0.0),
  np.float32(0.0),
  np.float32(-89.999214),
  np.float32(-13.984883),
  np.float32(0.0),
  np.float32(0.0)]

max_values = [np.float32(15976.0),
  np.float32(15799.0),
  np.float32(15744.0),
  np.float32(9975.073),
  np.float32(9856.787),
  np.float32(122.0),
  np.float32(16.2),
  np.float32(360.0),
  np.float32(311.8),
  np.float32(325.4),
  np.float32(122.0),
  np.float32(0.01888),
  np.float32(63.85685),
  np.float32(359.42383),
  np.float32(4268.336),
  np.float32(8.28),
  np.float32(17.0),
  np.float32(204.1875),
  np.float32(14.295916),
  np.float32(89.98897),
  np.float32(39.505894),
  np.float32(0.0122514665),
  np.float32(2218.0)]
```

In [3]:
```
fire_folders = []
look_back = 5   # 5 days sequence
all_frames = []
data_limit, loop_counter, loop_start = 30, 0, 0
channel_descriptions = None
base_path = "./data"

target_shape_h, target_shape_w = 128, 128

print('Loading...')

for fire_folder in os.listdir(base_path):
    loop_counter += 1
    if loop_counter - loop_start > data_limit:
        break
    if loop_counter < loop_start:
        continue
    print('Progress: {0}/{1} ({2})'.format(loop_counter - loop_start, data_limit, l
    fire_folders.append(fire_folder)
    for image_name in os.listdir(base_path + f"/{fire_folder}"):
        file_path = base_path + f"/{fire_folder}/{image_name}"

        with rasterio.open(file_path, 'r') as geotiff:
            src = geotiff.read()
            channel_descriptions = geotiff.descriptions
            zoom_factor = (1, target_shape_h / src.shape[1], target_shape_w / src.s
            resized_src = zoom(src, zoom_factor, order=1)
            resized_src = np.nan_to_num(resized_src, copy=True)
            all_frames.append(resized_src)

print(f'Loading done! Count = {len(all_frames)} | Shape = {all_frames[0].shape}')

data_frames = np.stack(all_frames)
print(data_frames.shape)
```

```
Loading...
Progress: 1/30 (1)
Progress: 2/30 (2)
Progress: 3/30 (3)
Progress: 4/30 (4)
Progress: 5/30 (5)
Progress: 6/30 (6)
Progress: 7/30 (7)
Progress: 8/30 (8)
Progress: 9/30 (9)
Progress: 10/30 (10)
Progress: 11/30 (11)
Progress: 12/30 (12)
Progress: 13/30 (13)
Progress: 14/30 (14)
Progress: 15/30 (15)
Progress: 16/30 (16)
Progress: 17/30 (17)
Progress: 18/30 (18)
Progress: 19/30 (19)
Progress: 20/30 (20)
Progress: 21/30 (21)
Progress: 22/30 (22)
Progress: 23/30 (23)
Progress: 24/30 (24)
Progress: 25/30 (25)
Progress: 26/30 (26)
Progress: 27/30 (27)
Progress: 28/30 (28)
Progress: 29/30 (29)
Progress: 30/30 (30)
Loading done! Count = 726 | Shape = (23, 128, 128)
(726, 23, 128, 128)
```

In [4]:
```
np.min(data_frames), np.max(data_frames)
```

Out[4]:
```
(np.float32(-9018.023), np.float32(15955.0))
```

In [5]:
```
from sklearn.preprocessing import MinMaxScaler, minmax_scale

#data_frames = (data_frames - min_bound) / (max_bound - min_bound)

for c in range(23):
    data_frames[:, c, :, :] = (data_frames[:, c, :, :] - min_values[c]) / (max_valu
```

In [6]:
```
np.min(data_frames), np.max(data_frames)
```

Out[6]:
```
(np.float32(0.0), np.float32(1.0))
```

In [7]:
```
X = []
Y = []

for t in range(0, data_frames.shape[0] - look_back):
    x_seq = data_frames[t:t+look_back]              # shape: (5, 23, H, W)
    y_mask = data_frames[t + look_back, 22]          # fire mask from channel 22
    X.append(x_seq)
    Y.append(y_mask)     # binarize

X = np.stack(X)  # shape: (273, 5, 23, 128, 128)
Y = np.expand_dims(np.stack(Y), axis=1)  # shape: (273, 1, 128, 128)

print(X.shape)
print(Y.shape)
```

```
(721, 5, 23, 128, 128)
(721, 1, 128, 128)
```

In [8]:
```
split_index = int(X.shape[0] * 0.8)

X_train = X[:split_index]
X_test = X[split_index:]

Y_train = Y[:split_index]
Y_test = Y[split_index:]

X_train.shape, Y_train.shape, X_test.shape, Y_test.shape
```

Out[8]:
```
((576, 5, 23, 128, 128),
 (576, 1, 128, 128),
 (145, 5, 23, 128, 128),
 (145, 1, 128, 128))
```

In [9]:
```
X_train = torch.tensor(X_train).float()
Y_train = torch.tensor(Y_train).float()

X_test = torch.tensor(X_test).float()
Y_test = torch.tensor(Y_test).float()

X_train.shape, Y_train.shape, X_test.shape, Y_test.shape
```

Out[9]:
```
(torch.Size([576, 5, 23, 128, 128]),
 torch.Size([576, 1, 128, 128]),
 torch.Size([145, 5, 23, 128, 128]),
 torch.Size([145, 1, 128, 128]))
```

In [10]:
```
class WildfireDataset(Dataset):
    def __init__(self, X, Y):
        self.X = X
        self.Y = Y

    def __len__(self):
        return len(self.X)

    def __getitem__(self, i):
        return self.X[i], self.Y[i]

train_dataset = WildfireDataset(X_train, Y_train)
test_dataset = WildfireDataset(X_test, Y_test)

len(train_dataset), len(test_dataset)
```

Out[10]:
```
(576, 145)
```

In [11]:
```
from torch.utils.data import DataLoader

batch_size = 8

train_loader = DataLoader(train_dataset, batch_size=batch_size, shuffle=True)
test_loader = DataLoader(test_dataset, batch_size=batch_size, shuffle=False)
```

In [12]:
```
if torch.cuda.is_available():
    device = torch.device("cuda")
elif torch.mps.is_available():
    device = torch.device("mps")
else:
    device = torch.device("cpu")

device
```

Out[12]:
```
device(type='cuda')
```

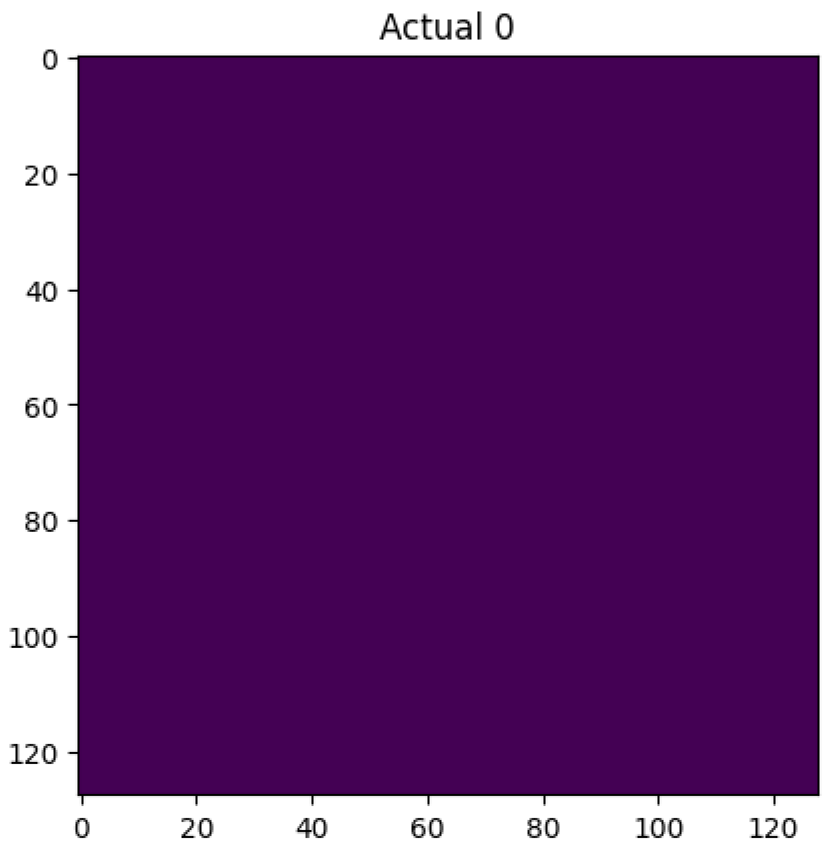
In [13]:
```
import convlstm

class Net(nn.Module):
    def __init__(self):
        super().__init__()
        orig_size = (330, 257)

        self.clstm = convlstm.ConvLSTM(
            input_size=(128, 128),
            input_dim=23,
            hidden_dim=[64],
            kernel_size=(3, 3),
            num_layers=1
        )
        # (8, 64, 128, 128)

        self.head = nn.Sequential(
            nn.Conv2d(64, 1, kernel_size=3, padding=1),
            nn.Sigmoid()
        )
        # (8, 1, 128, 128)

    def forward(self, x):
        batch_size = x.size(0)
        outputs, last_states = self.clstm(x)

        x = outputs[0][:, -1, :, :, :]
        x = self.head(x)
        return x

model = Net().to(device)

model.load_state_dict(torch.load('model-weights.pth'))
model.eval()
```

Out[13]:
```
Net(
  (clstm): ConvLSTM(
    (cell_list): ModuleList(
      (0): ConvLSTMCell(
        (conv): Conv2d(87, 256, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1))
      )
    )
  )
  (head): Sequential(
    (0): Conv2d(64, 1, kernel_size=(3, 3), stride=(1, 1), padding=(1, 1))
    (1): Sigmoid()
  )
)
```

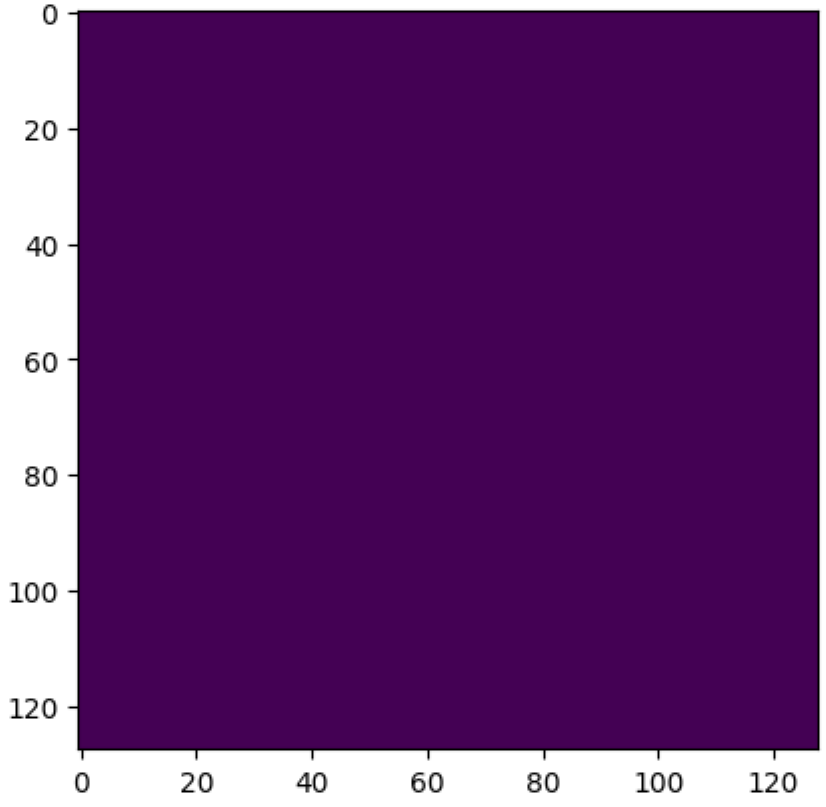
In [15]:
```python
tolerance = 0.01
accuracy = 0
precision = 0
accuracy_counter = 0
precision_counter = 0
show_figures = True

for batch_index, batch in enumerate(test_loader):
    x_batch, y_batch = batch[0].to(device), batch[1].to(device)
    y_pred = model(x_batch)

    y_batch_np = y_batch.cpu().detach().numpy()
    y_pred_np = y_pred.cpu().detach().numpy()

    for i in range(y_batch_np.shape[0]): # Each image in a batch = batch_size
        split_val = 0.15
        value_true = y_batch_np[i, 0]
        value_true = np.piecewise(value_true, [value_true < split_val, value_true >
        if show_figures:
            plt.figure()
            plt.title(f"Actual {precision_counter}")
            plt.imshow(value_true)

        split_val = 0.5
        value_pred = y_pred_np[i, 0]
        value_pred = np.piecewise(value_pred, [value_pred < split_val, value_pred >
        if show_figures:
            plt.figure()
            plt.title(f"Predicted {precision_counter}")
            plt.imshow(value_pred)

        correct = np.abs(value_pred - value_true) <= tolerance

        accuracy += correct.sum() / correct.size
        accuracy_counter += 1

        TP = np.logical_and(value_pred == 1, value_true == 1).sum()
        FP = np.logical_and(value_pred == 1, value_true == 0).sum()

        precision += TP / (TP + FP + 1e-7)  # Add small epsilon to avoid division b
        precision_counter += 1
```

```
avg_accuracy = accuracy / accuracy_counter
avg_precision = precision / precision_counter

print(f"Accuracy: {np.floor(avg_accuracy * 100):.0f}%; Precision: {avg_precision}")
```

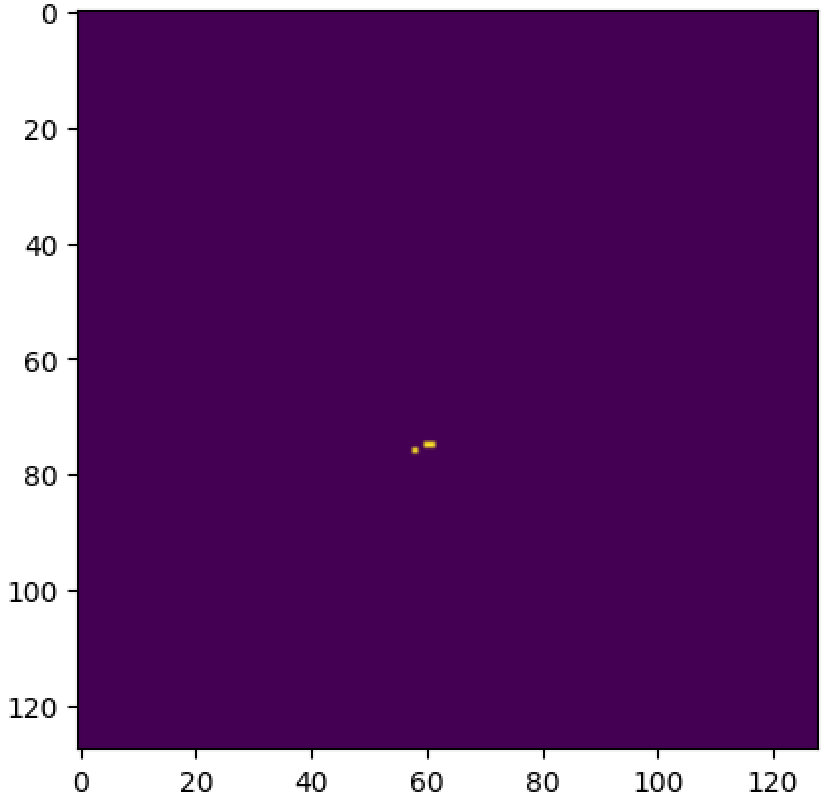
```
C:\Users\neelr\AppData\Local\Temp\ipykernel_7616\938270476.py:20: RuntimeWarning: Mo
re than 20 figures have been opened. Figures created through the pyplot interface (`
matplotlib.pyplot.figure`) are retained until explicitly closed and may consume too
much memory. (To control this warning, see the rcParam `figure.max_open_warning`). C
onsider using `matplotlib.pyplot.close()`.
  plt.figure()
Accuracy: 99%; Precision: 0.16340744335717702
```

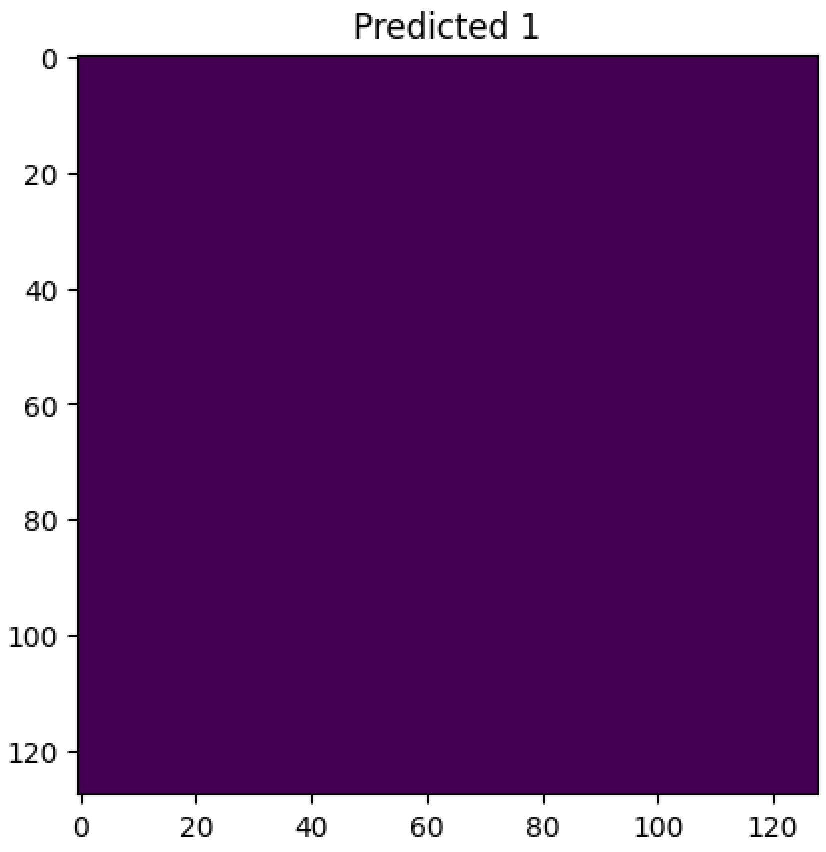


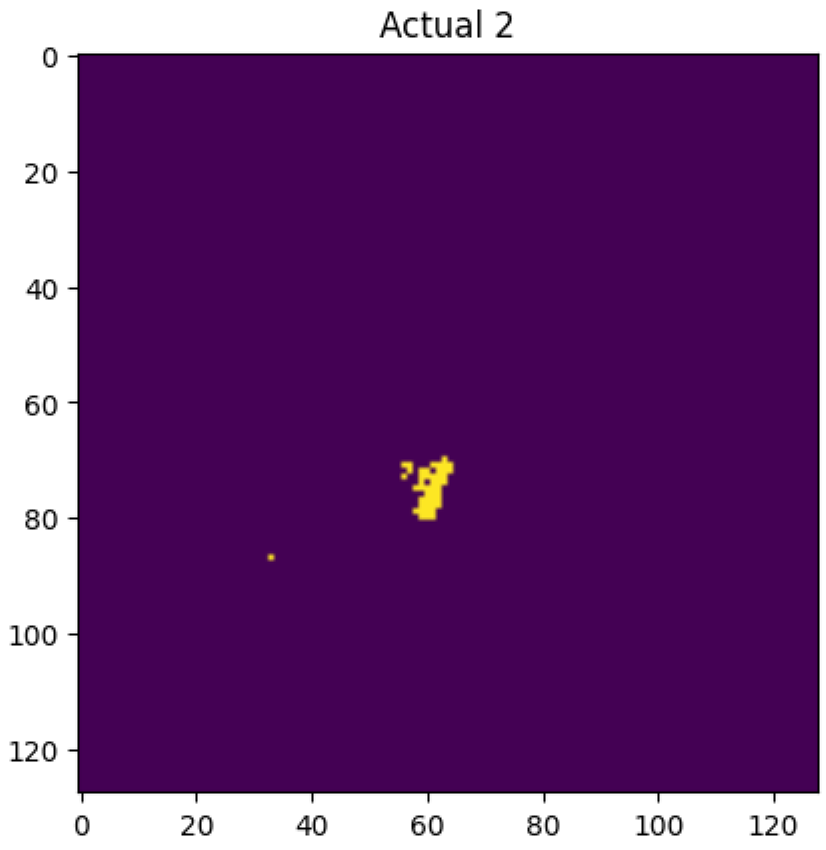
Predicted 0

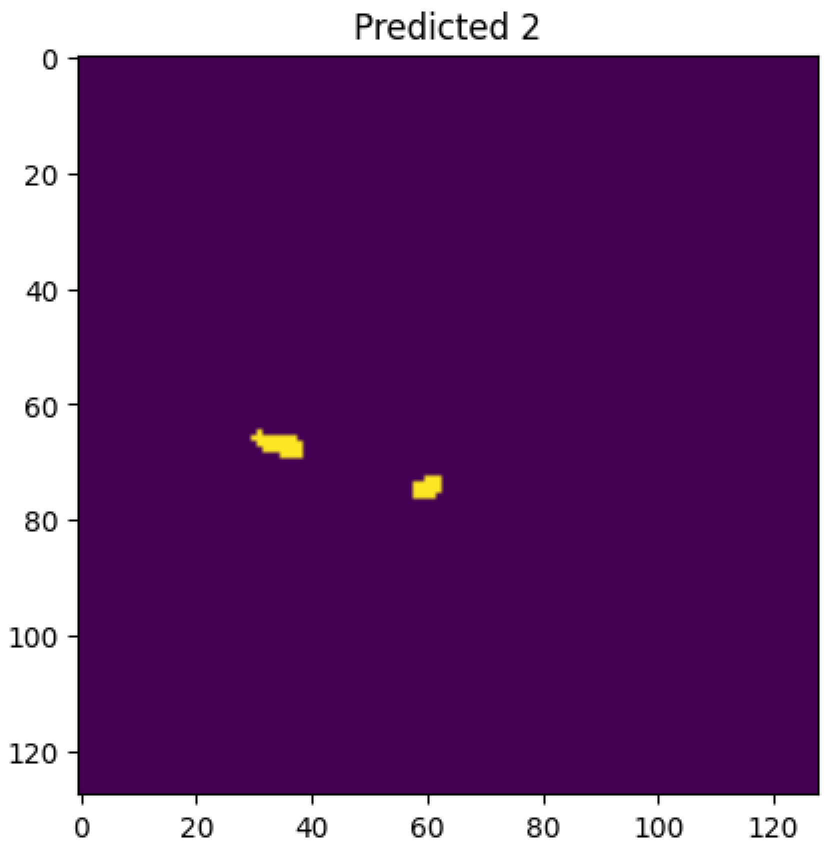


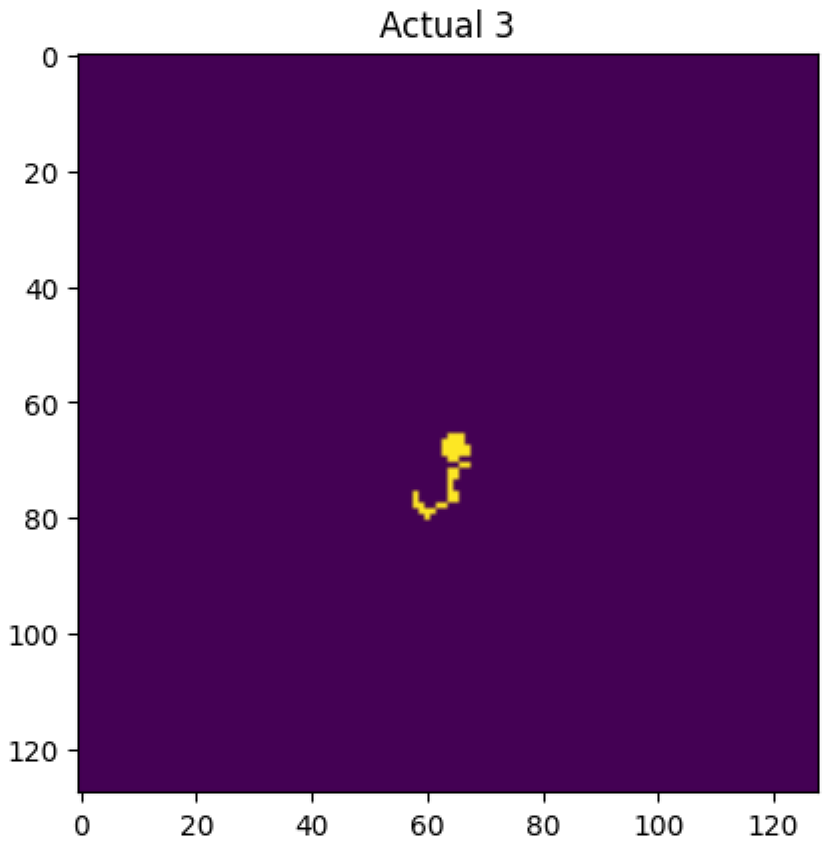
Actual 1

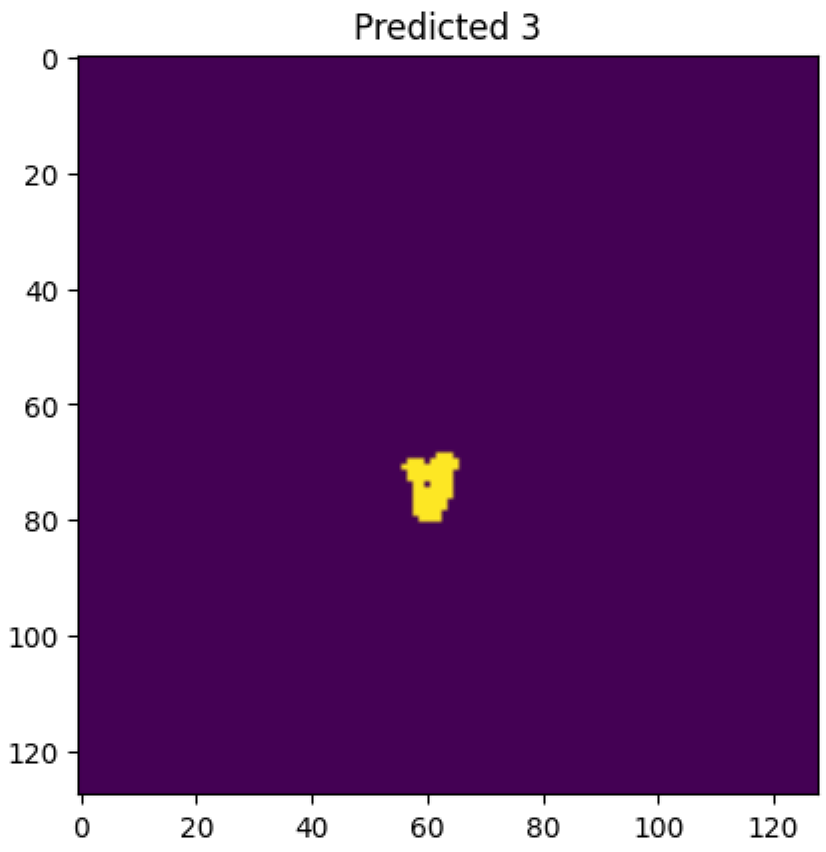


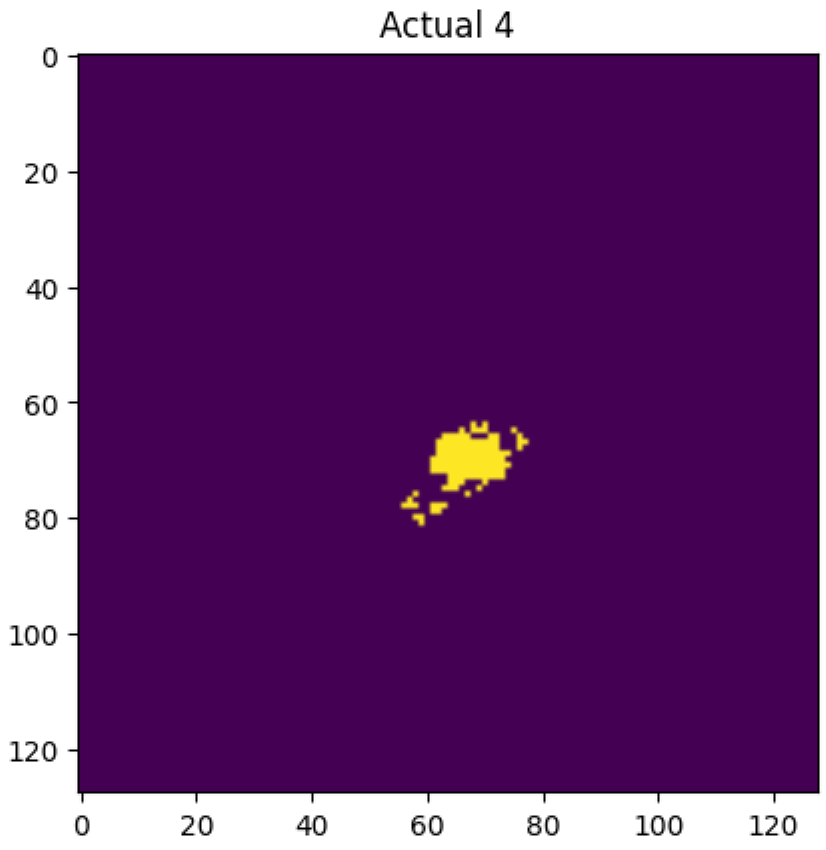

Predicted 1
0
20
40
60
80
100
120
0
20
40
60
80
100
120

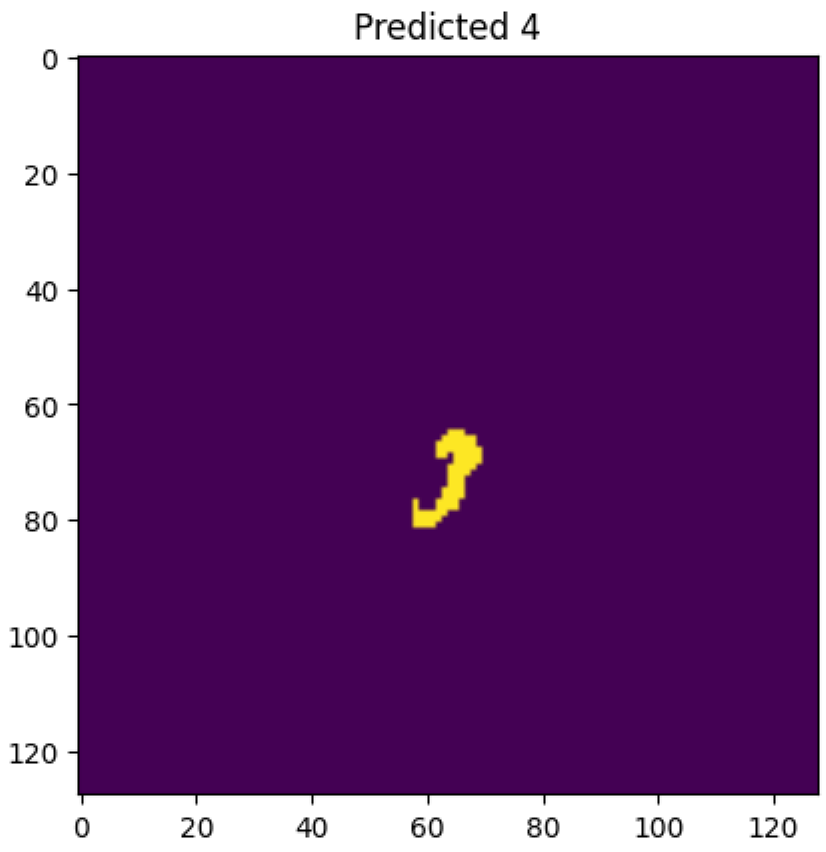

Actual 2
0
20
40
60
80
100
120
0
20
40
60
80
100
120

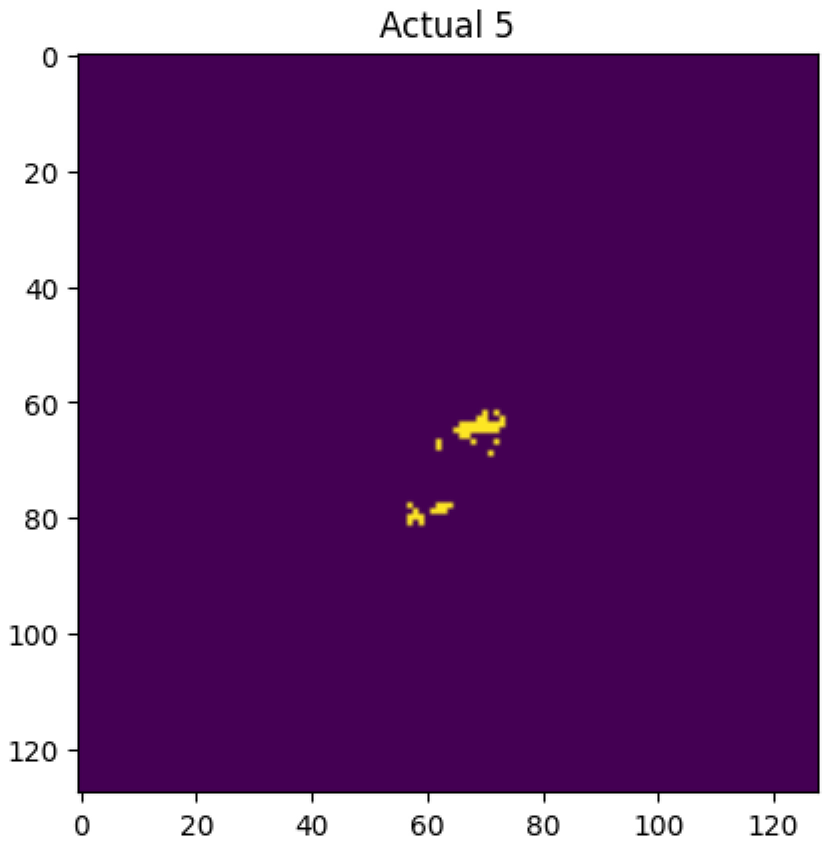

Predicted 2
0
20
40
60
80
100
120
0
20
40
60
80
100
120

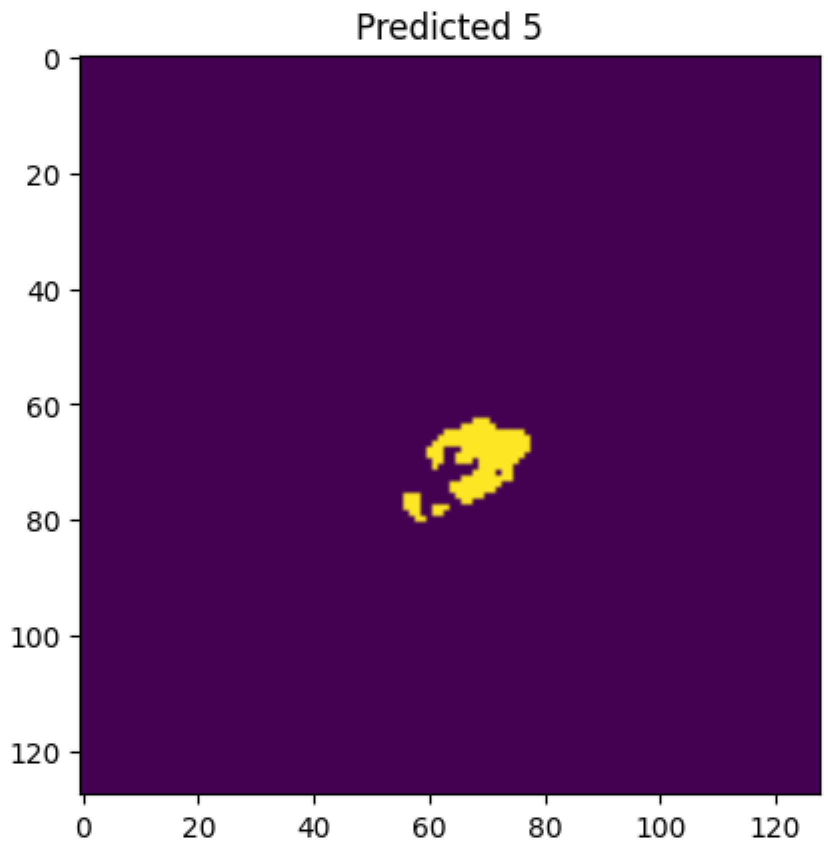

Actual 3
0
20
40
60
80
100
120
0
20
40
60
80
100
120

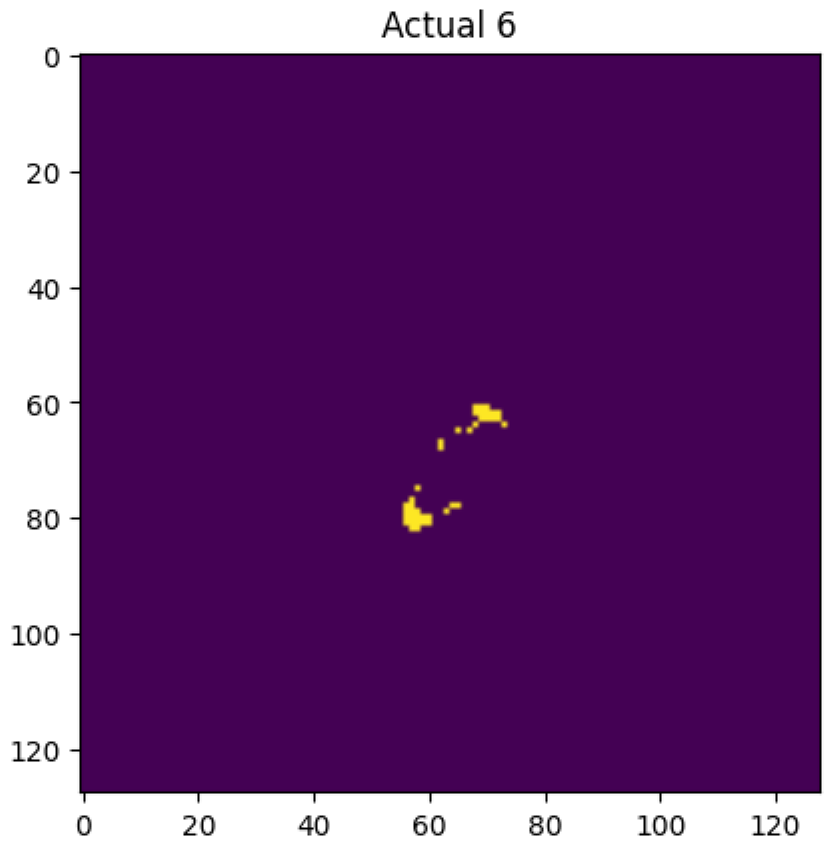

Predicted 3
0
20
40
60
80
100
120
0
20
40
60
80
100
120

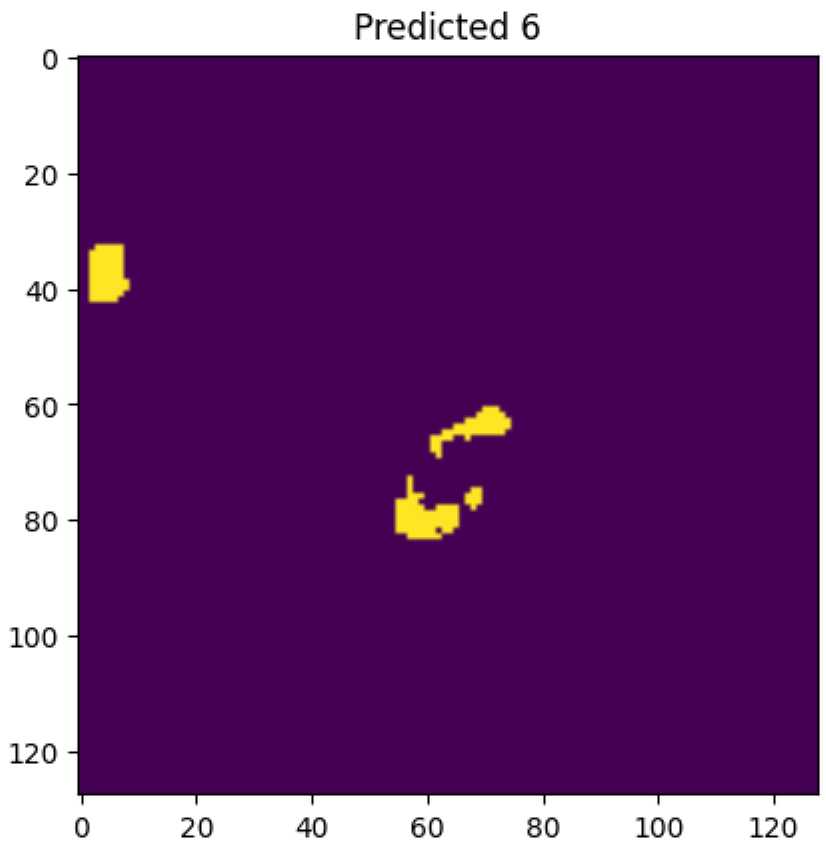

Actual 4
0
20
40
60
80
100
120
0
20
40
60
80
100
120

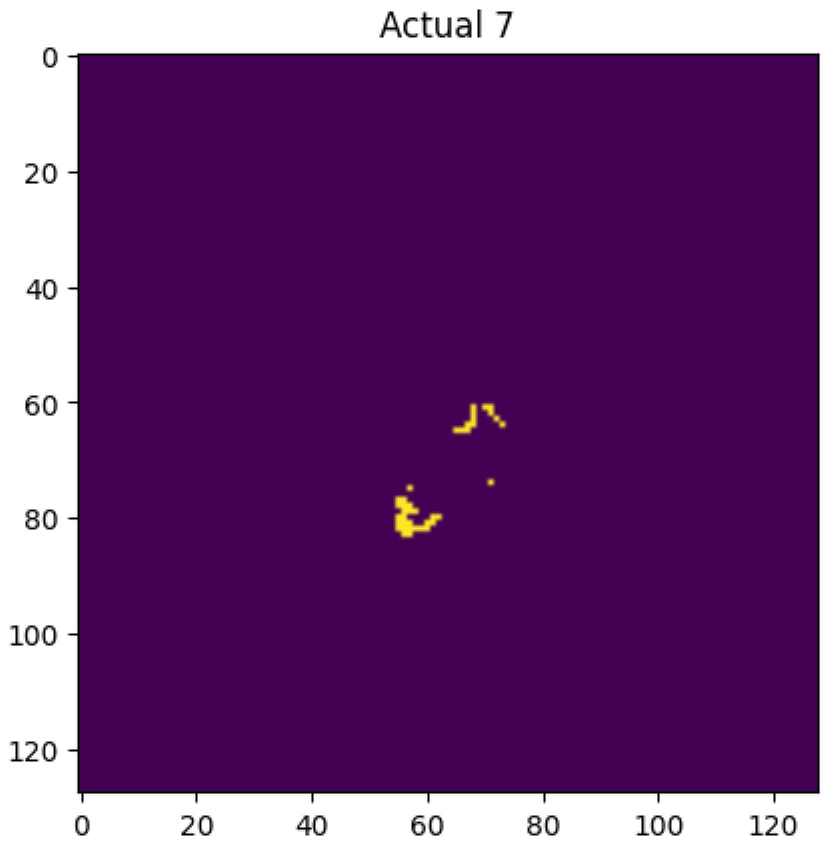

Predicted 4
0
20
40
60
80
100
120
0
20
40
60
80
100
120

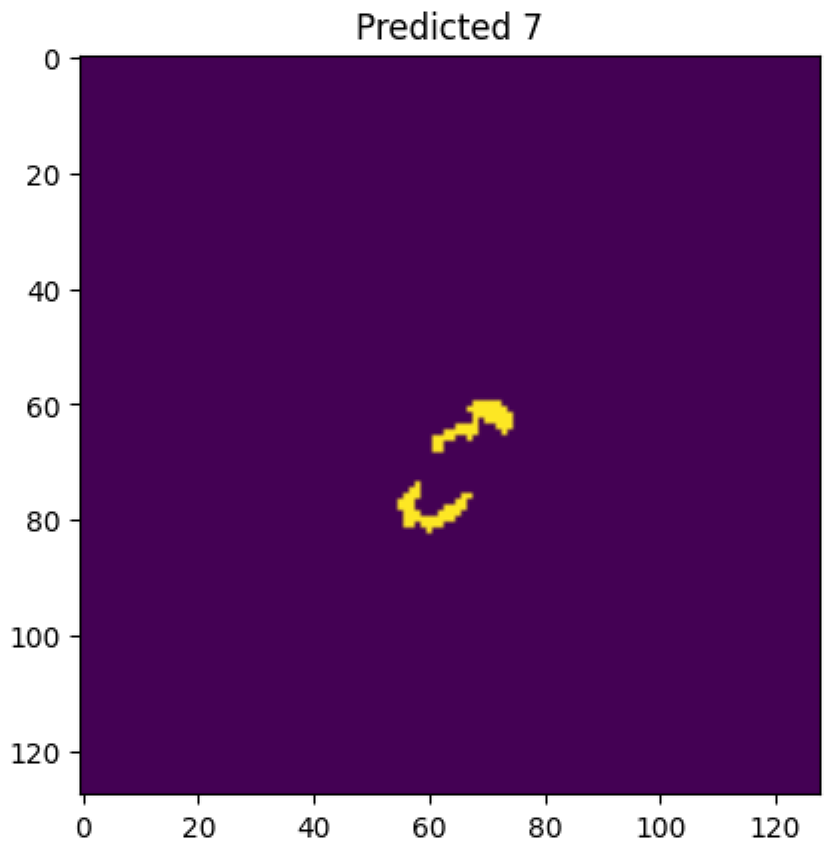

Actual 5
0
20
40
60
80
100
120
0
20
40
60
80
100
120

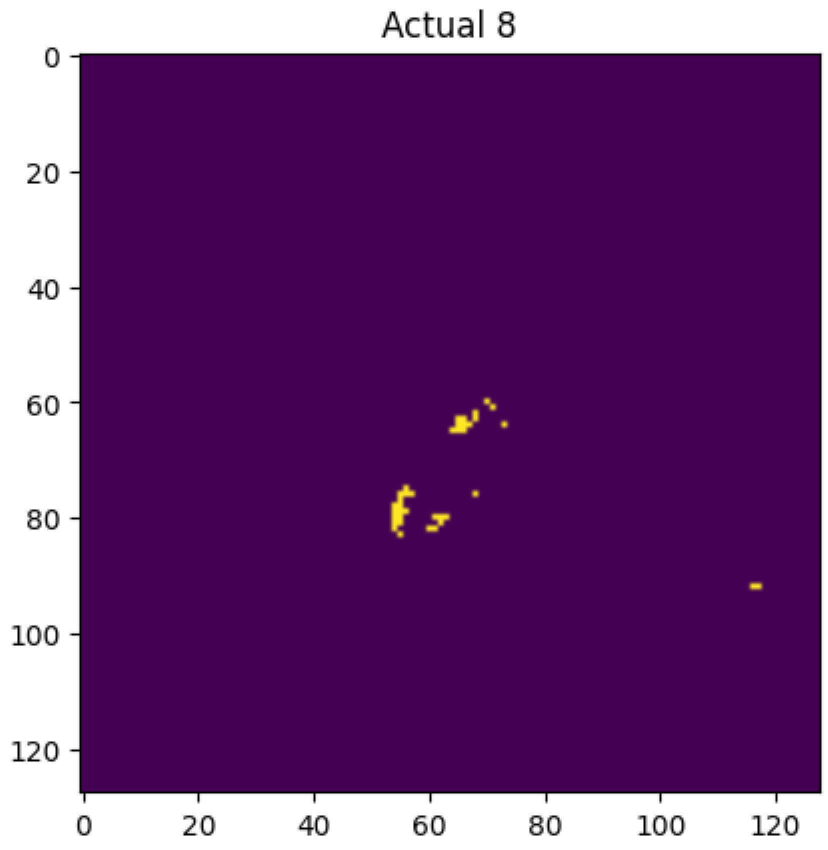

Predicted 5
0
20
40
60
80
100
120
0
20
40
60
80
100
120

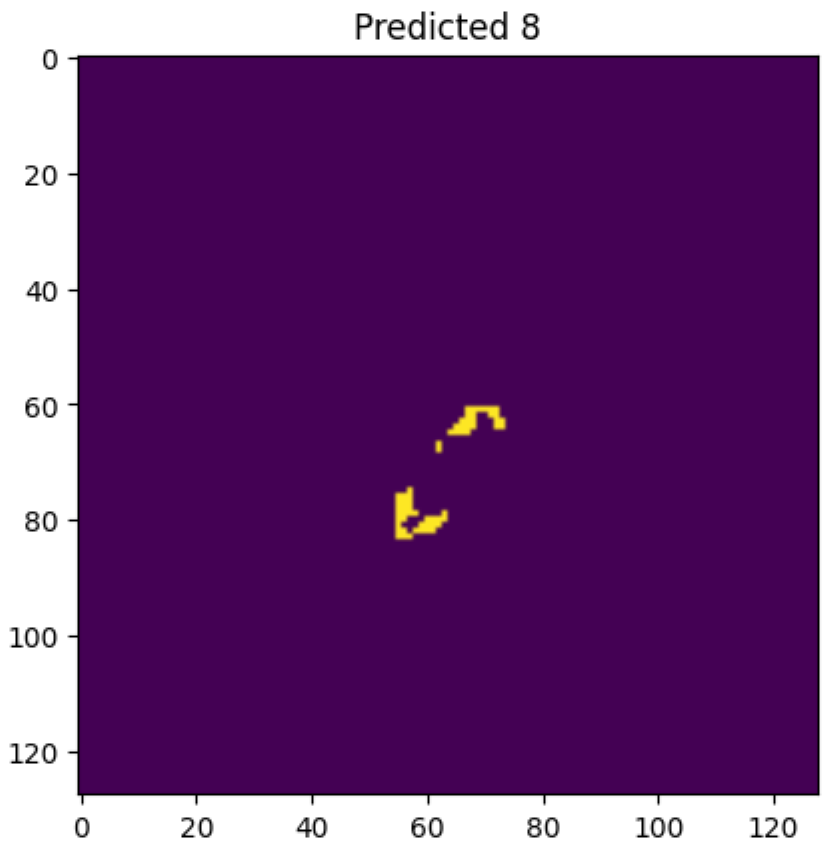

Actual 6
0
20
40
60
80
100
120
0
20
40
60
80
100
120

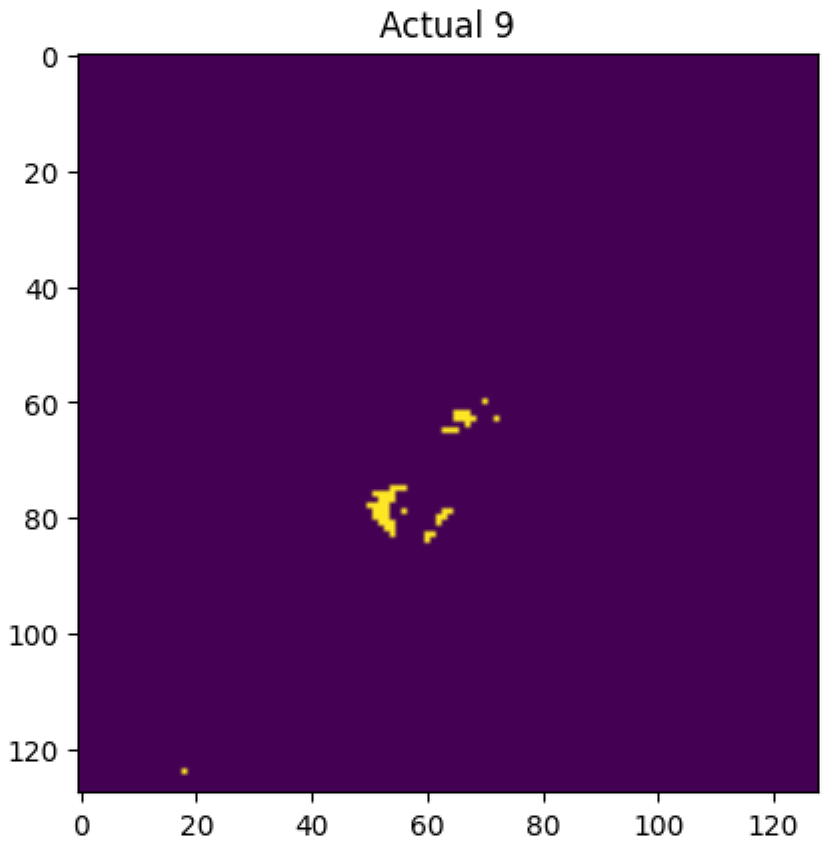

Predicted 6
0
20
40
60
80
100
120

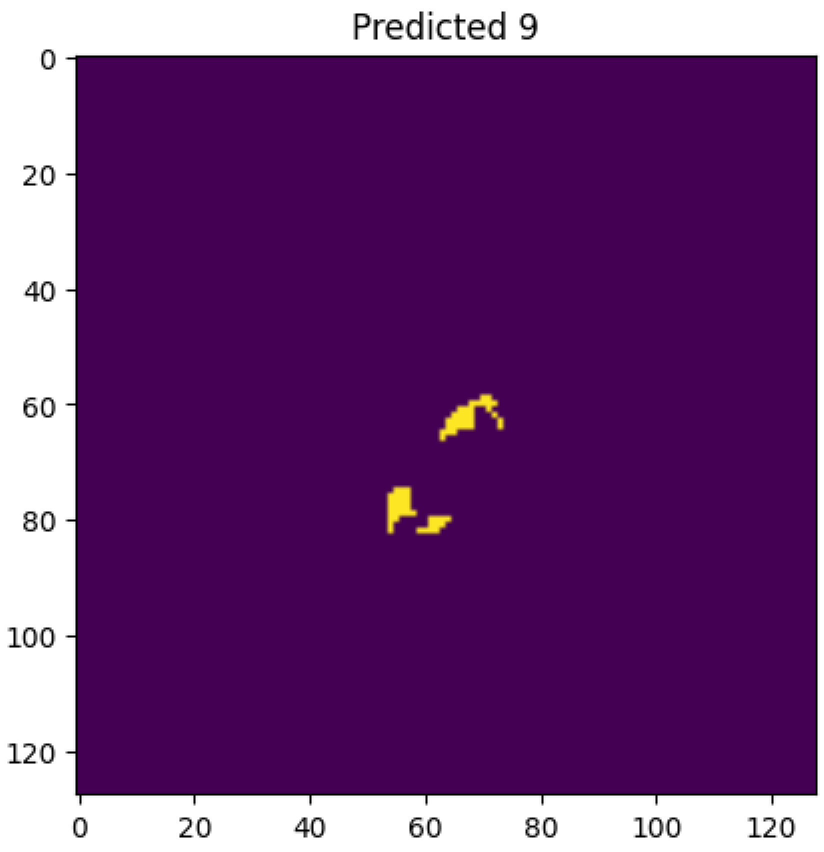

Actual 7
0
20
40
60
80
100
120

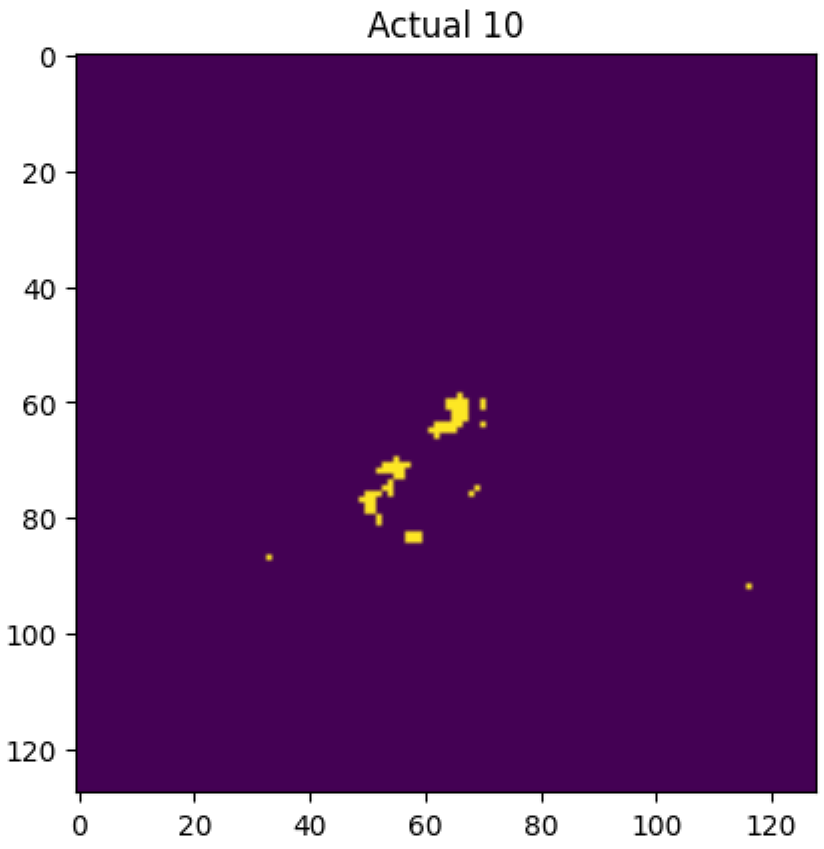

Predicted 7
0
20
40
60
80
100
120
0
20
40
60
80
100
120

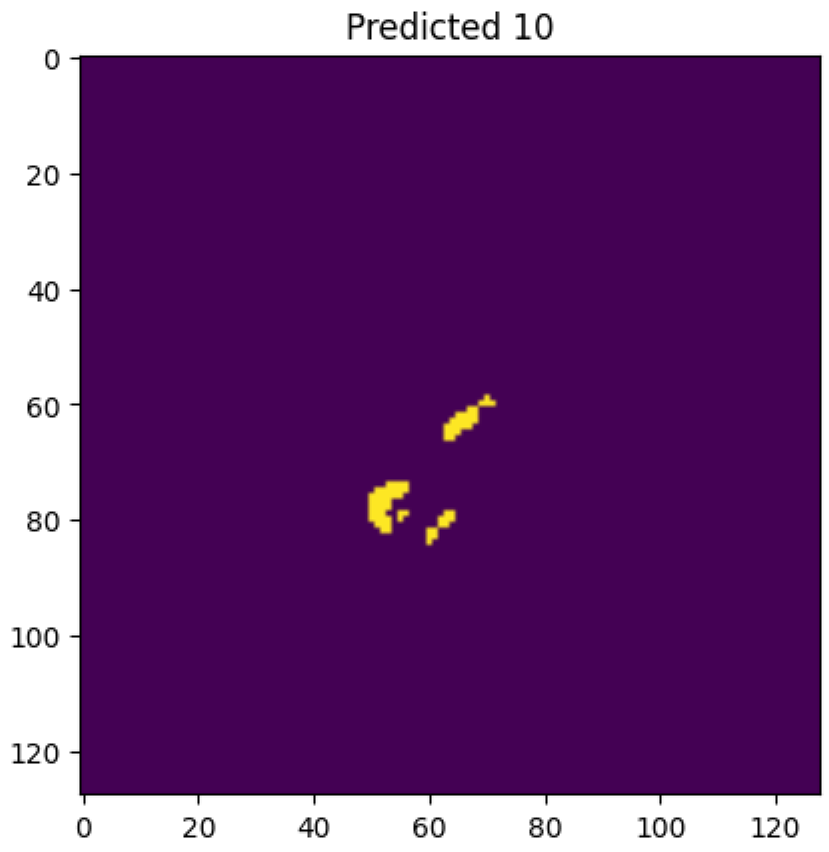

Actual 8
0
20
40
60
80
100
120
0
20
40
60
80
100
120

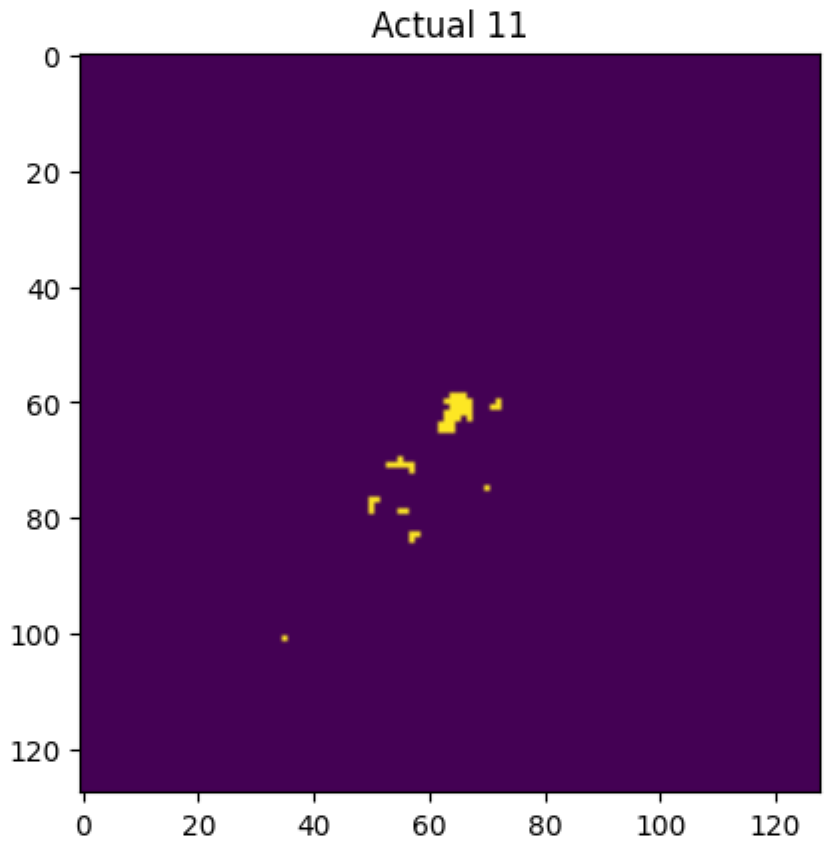

Predicted 8
0
20
40
60
80
100
120
0
20
40
60
80
100
120

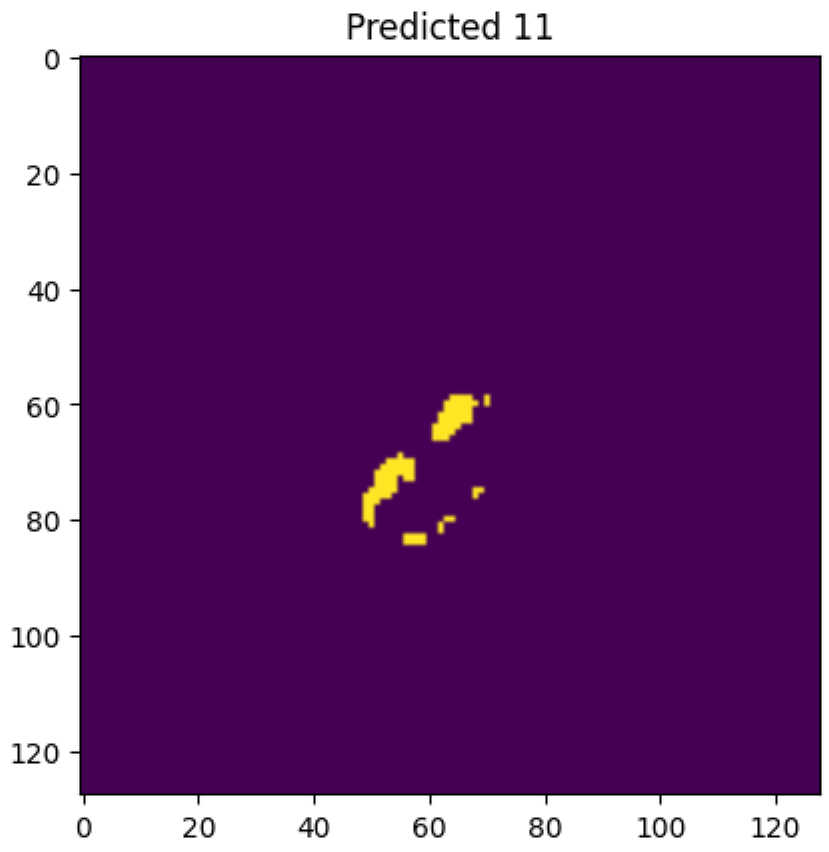

Actual 9
0
20
40
60
80
100
120
0
20
40
60
80
100
120

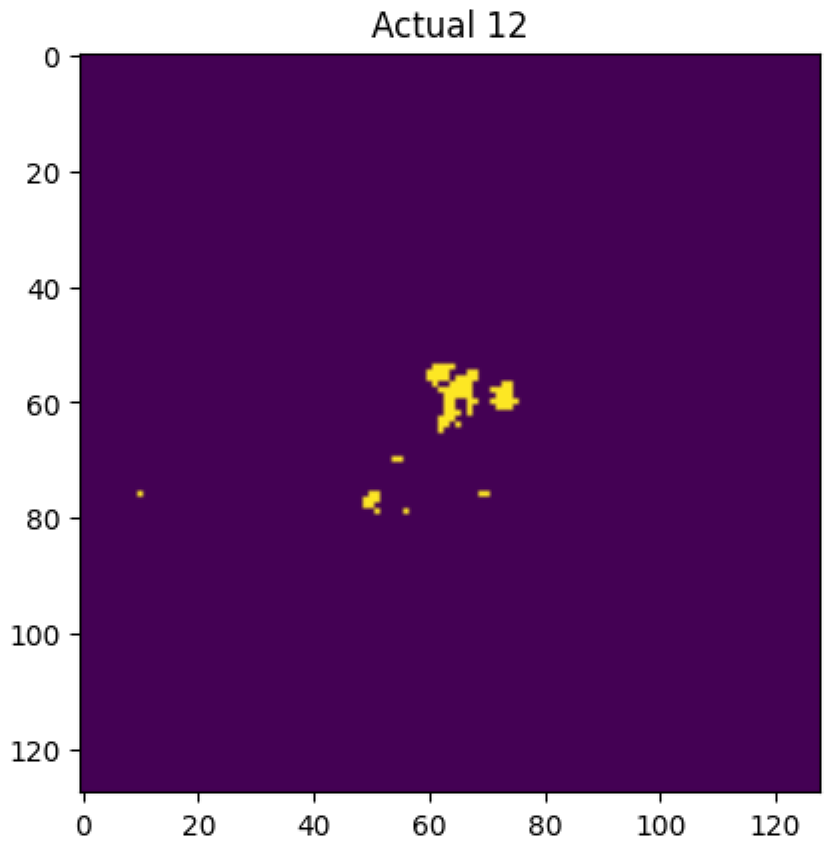

Predicted 9
0
20
40
60
80
100
120
0
20
40
60
80
100
120

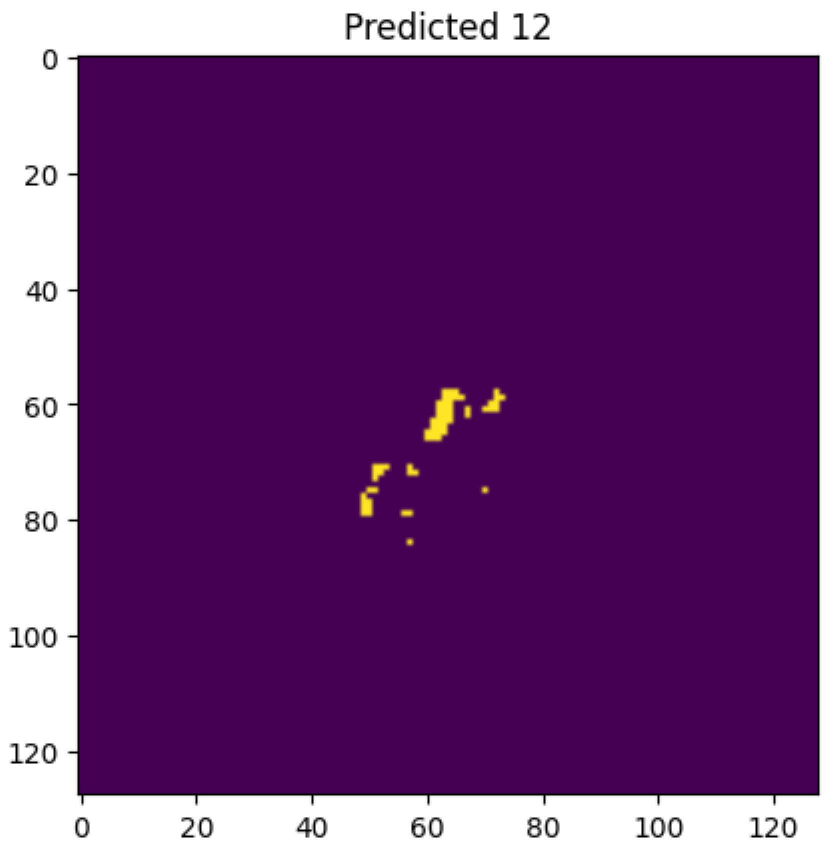

Actual 10
0
20
40
60
80
100
120
0
20
40
60
80
100
120

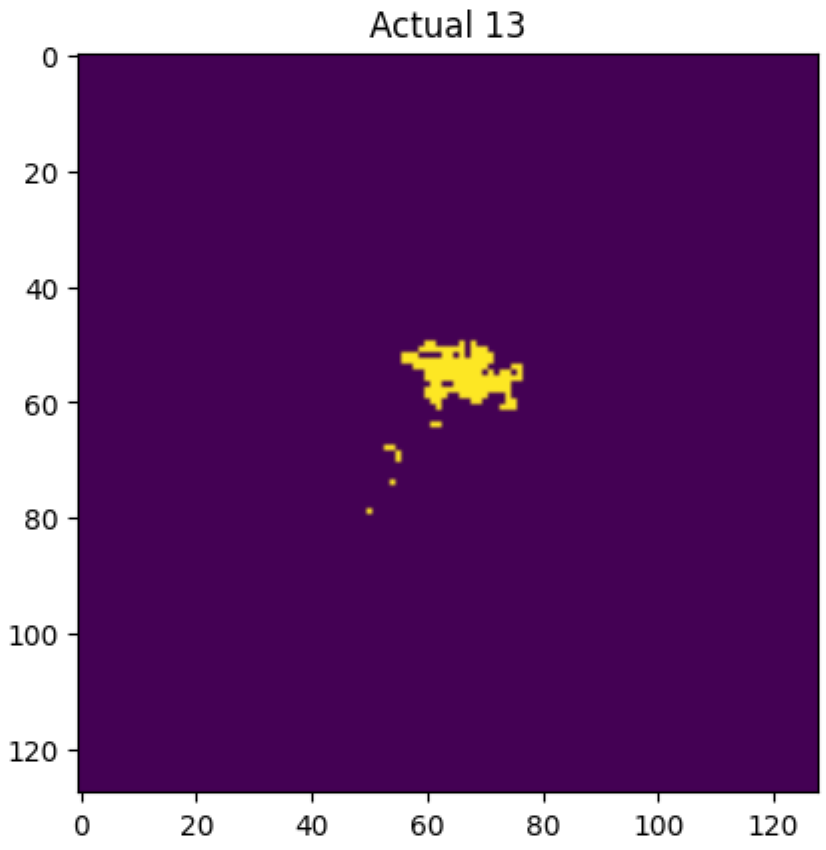

Predicted 10
0
20
40
60
80
100
120
0
20
40
60
80
100
120

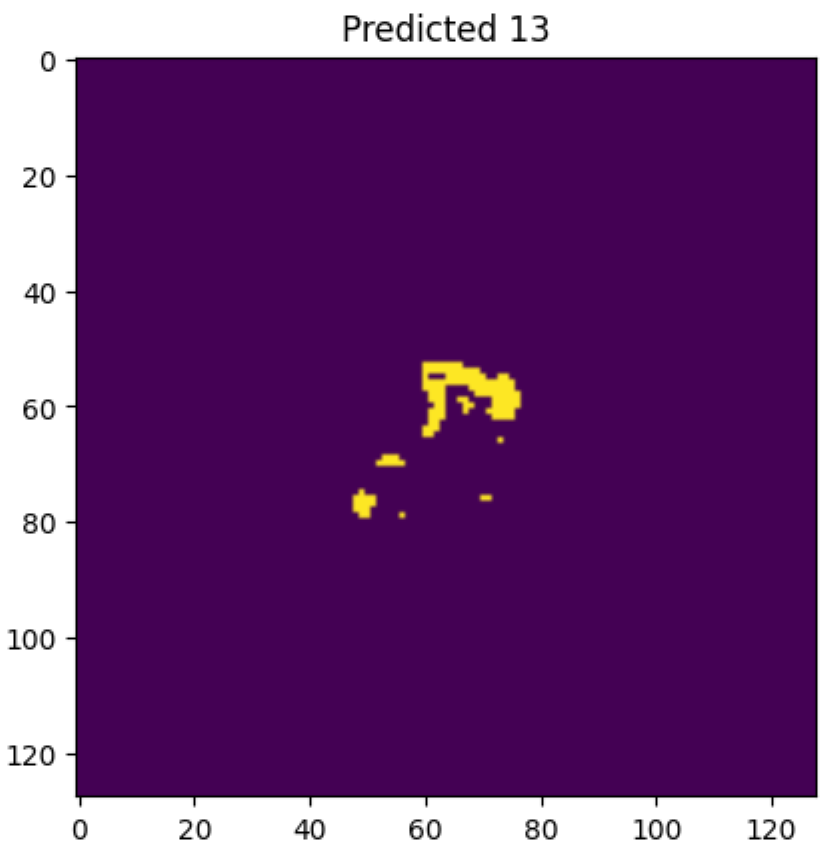

Actual 11
0
20
40
60
80
100
120
0
20
40
60
80
100
120

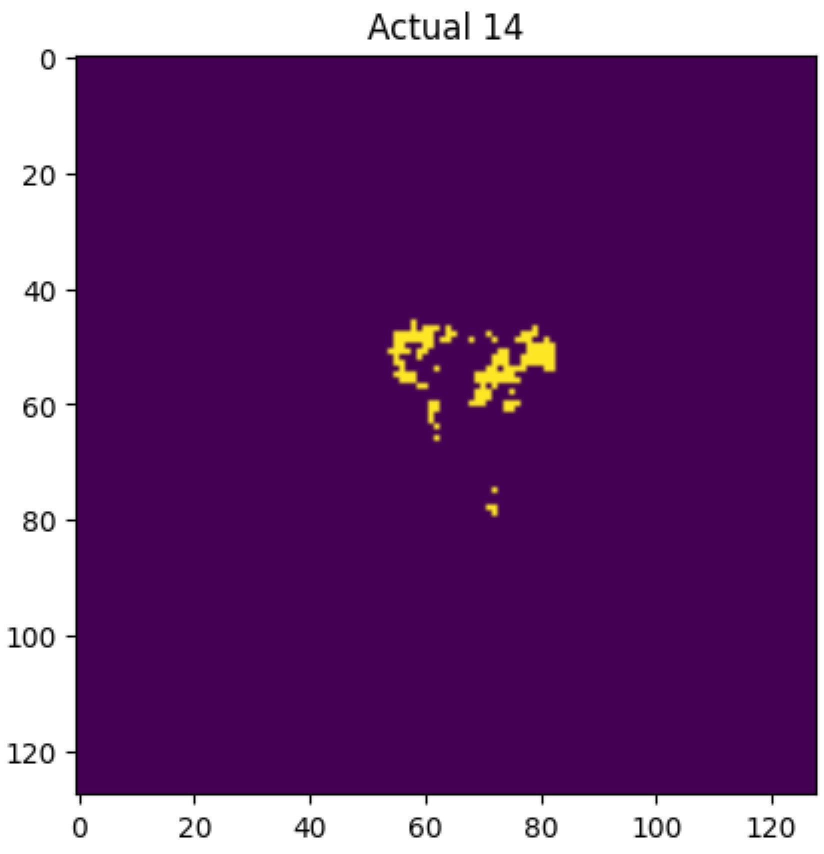

Predicted 11
0
20
40
60
80
100
120
0
20
40
60
80
100
120

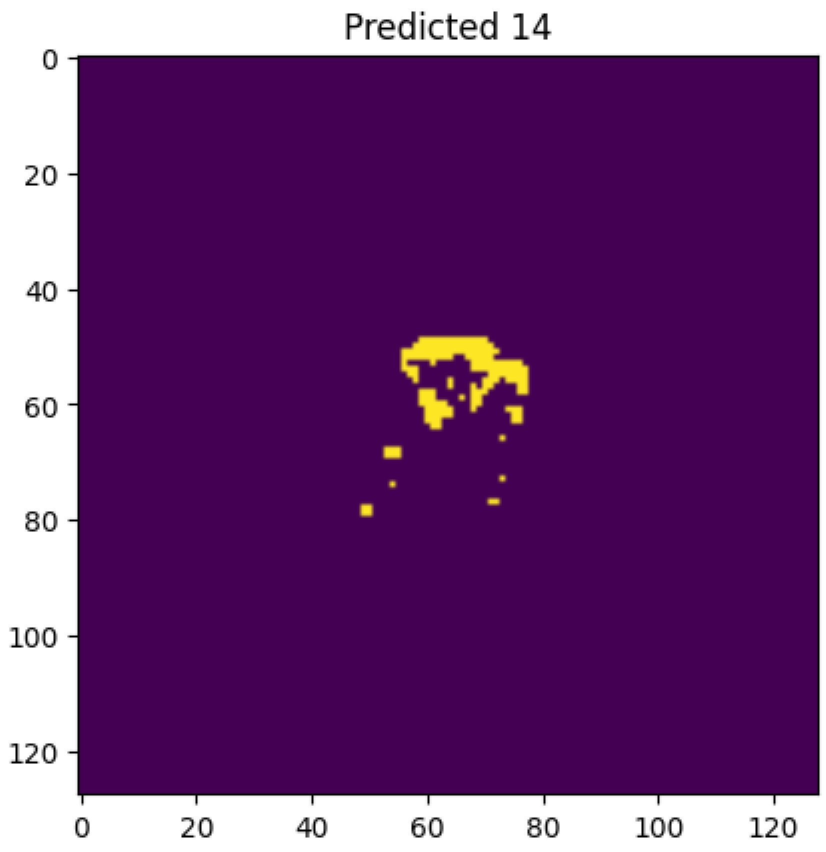

Actual 12
0
20
40
60
80
100
120
0
20
40
60
80
100
120


Predicted 12
0
20
40
60
80
100
120
0
20
40
60
80
100
120


Actual 13
0
20
40
60
80
100
120
0
20
40
60
80
100
120


Predicted 13
0
20
40
60
80
100
120
0
20
40
60
80
100
120


Actual 14
0
20
40
60
80
100
120
0
20
40
60
80
100
120


Predicted 14
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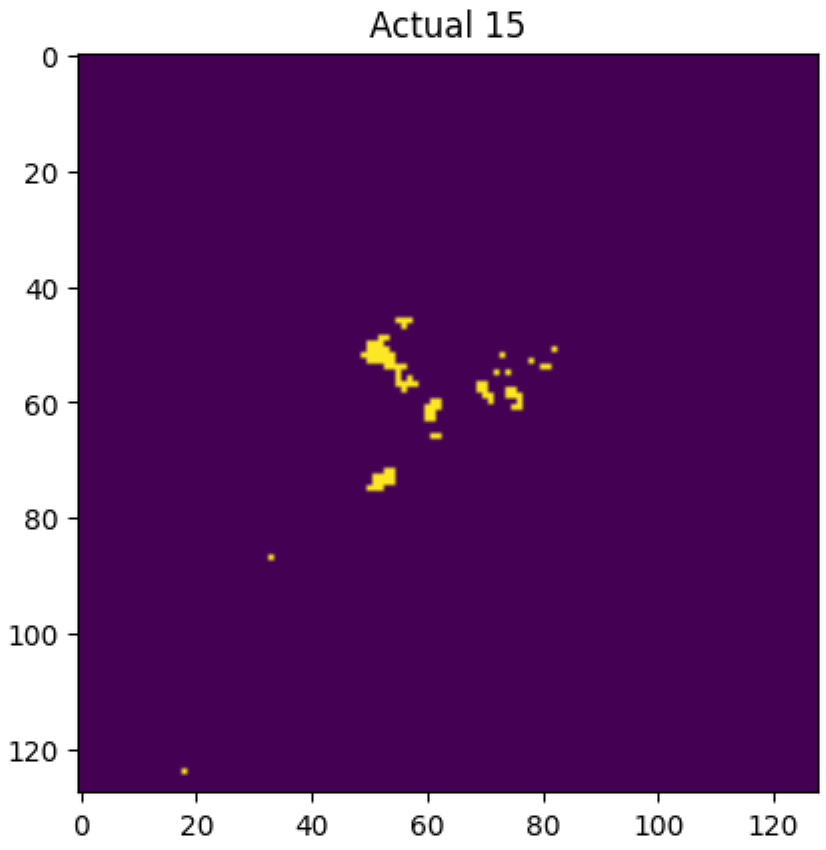
Actual 15
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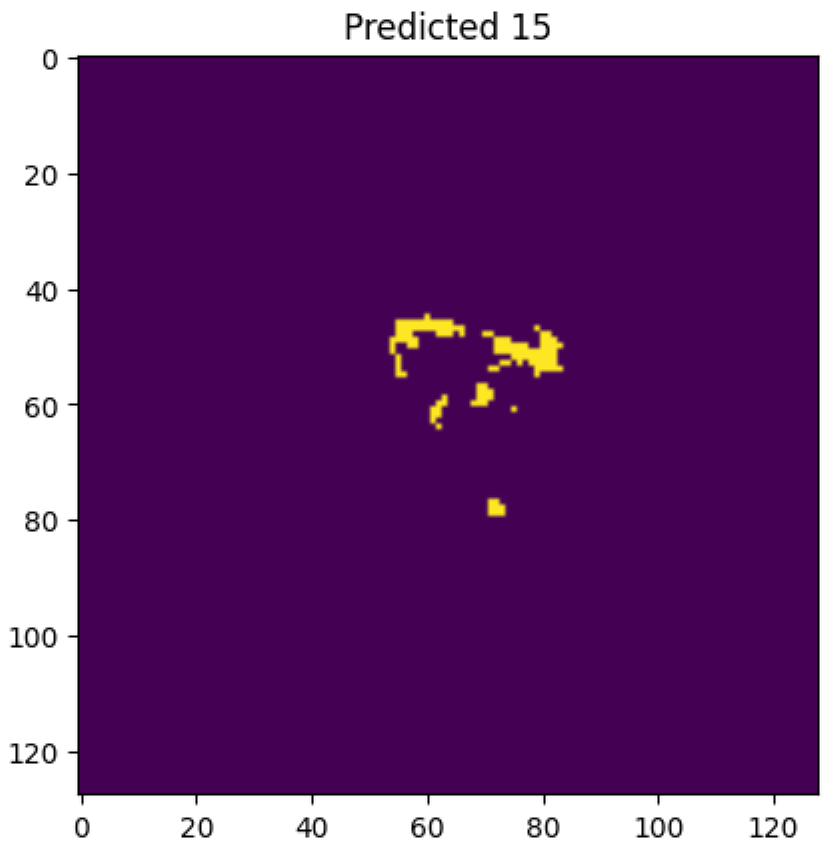
Predicted 15
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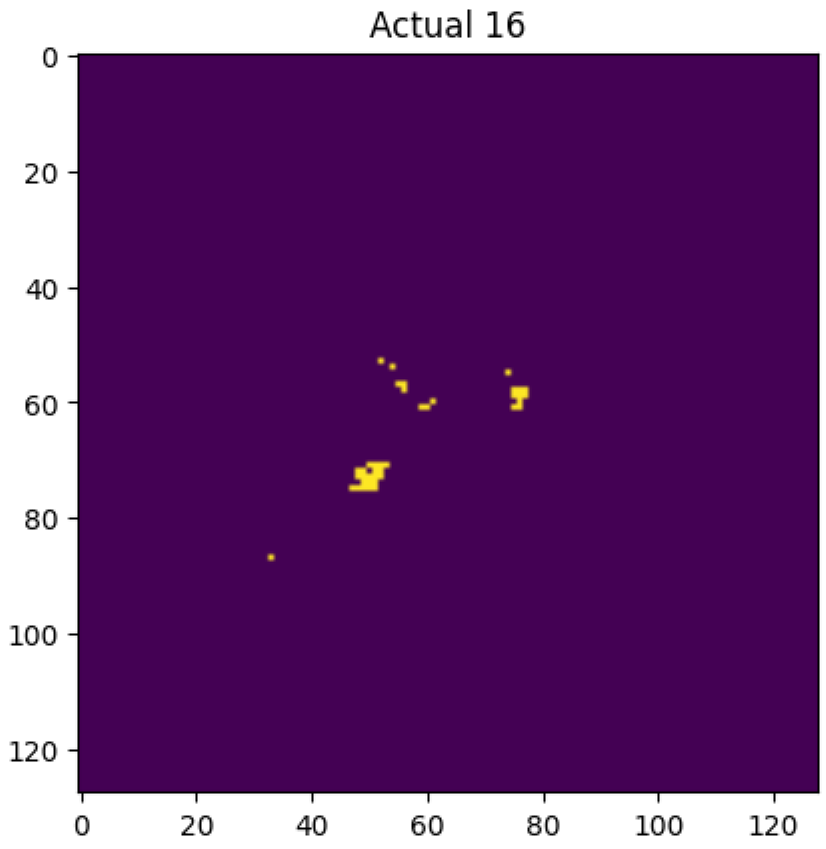
Actual 16
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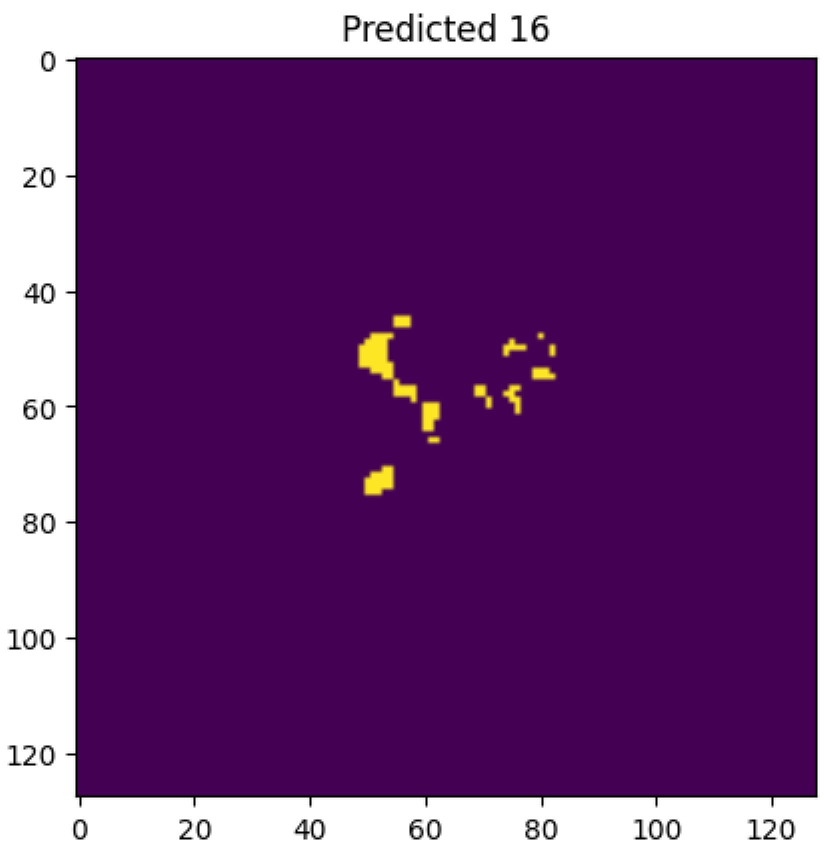
Predicted 16
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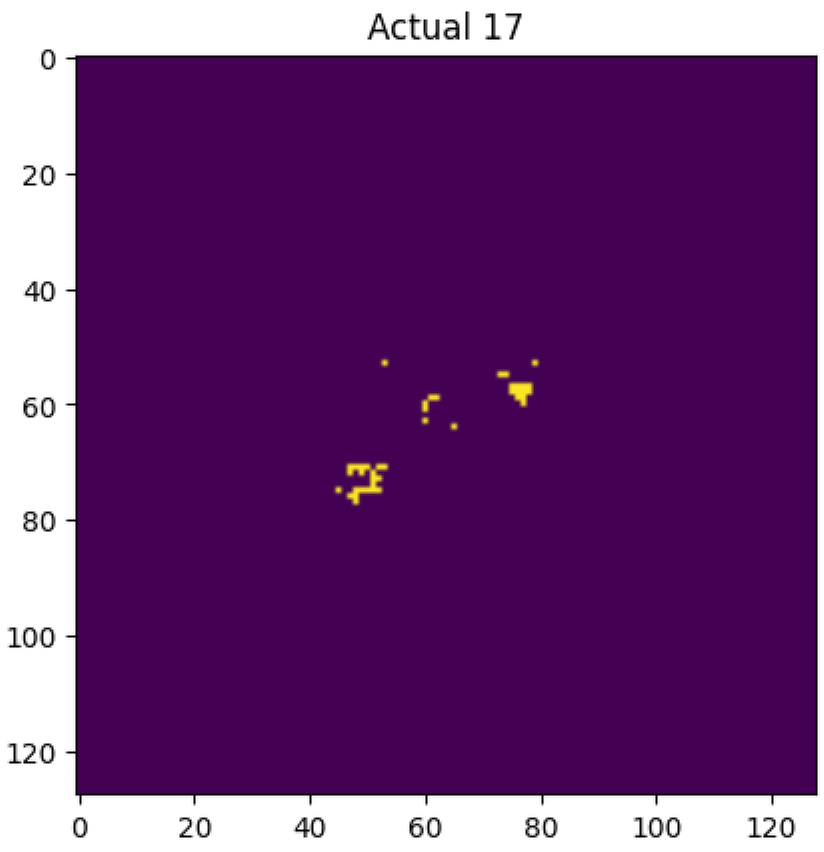
Actual 17
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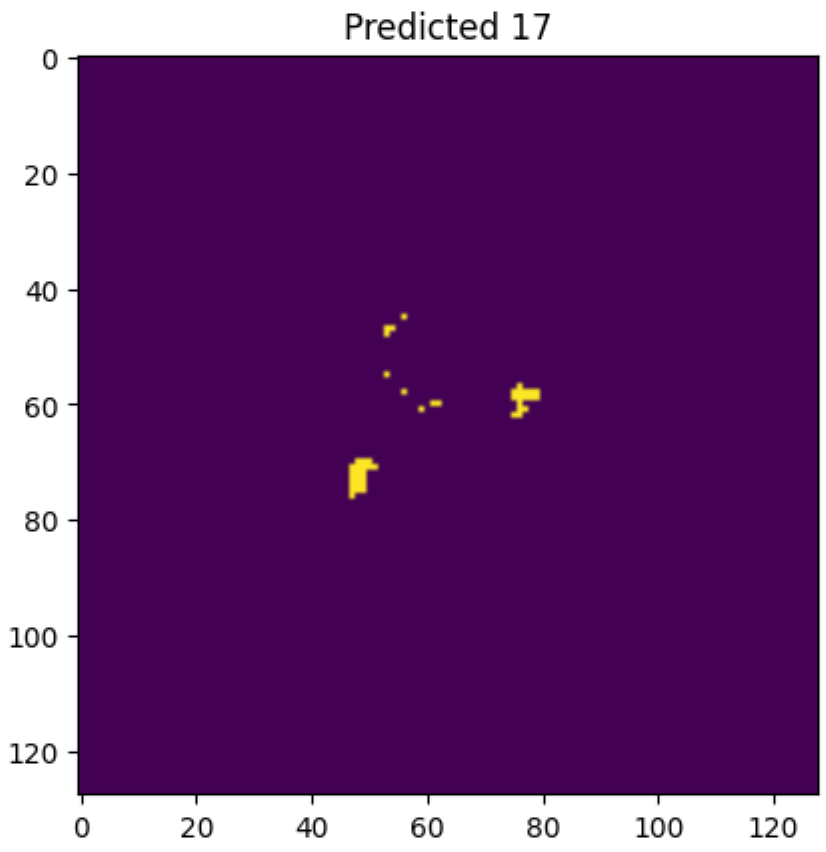
Predicted 17
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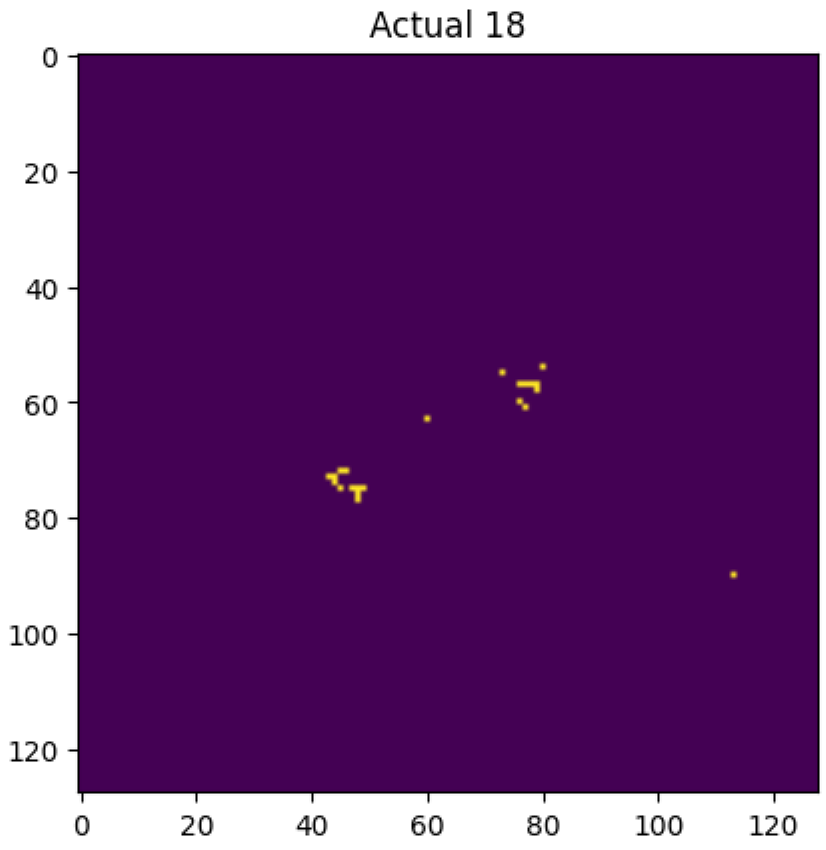
Actual 18
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0
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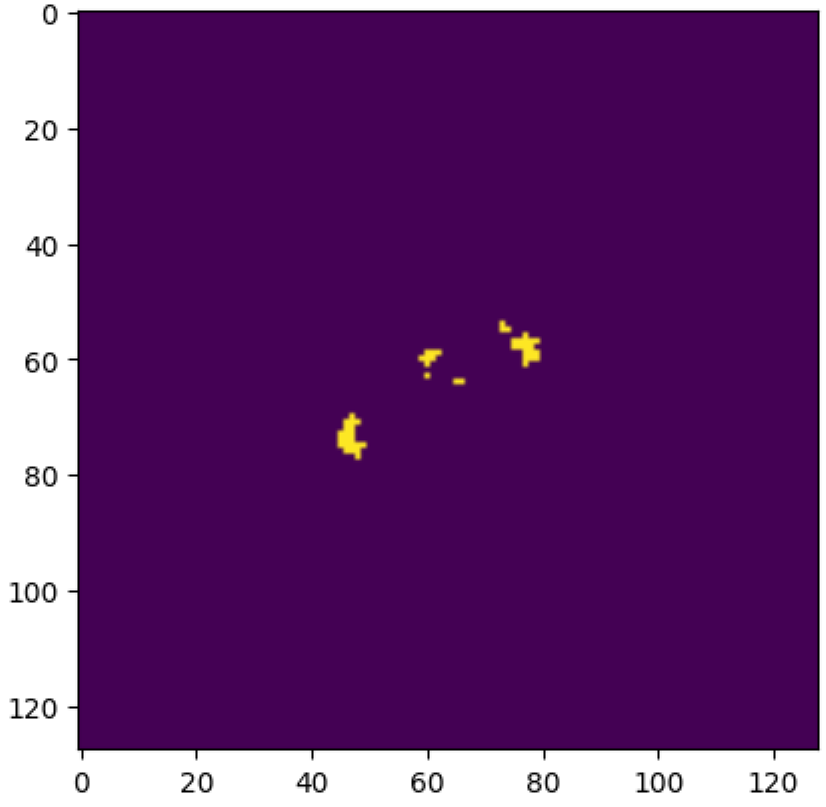
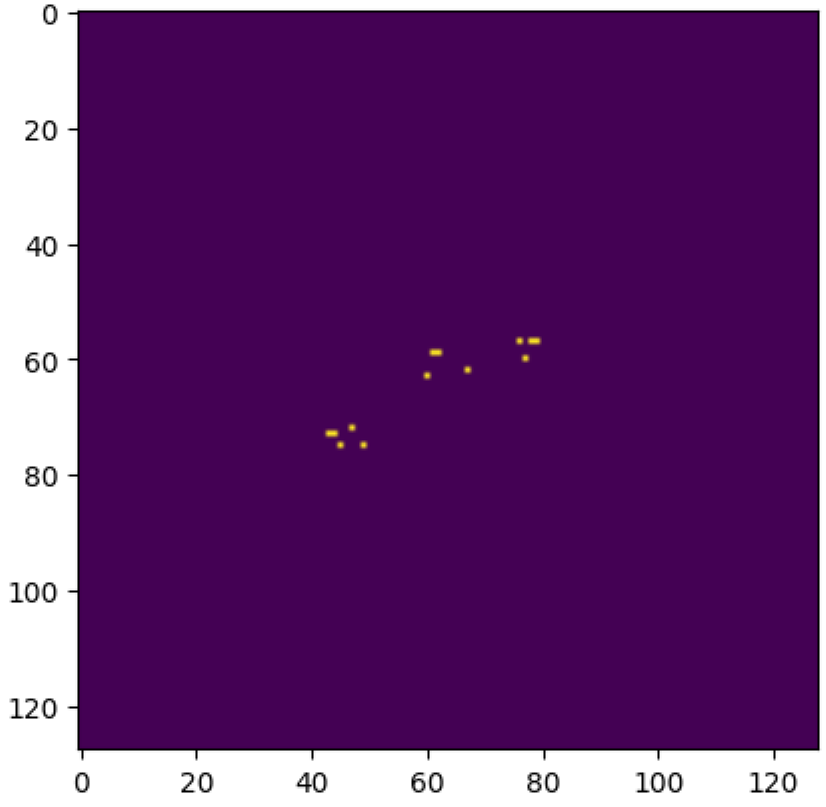
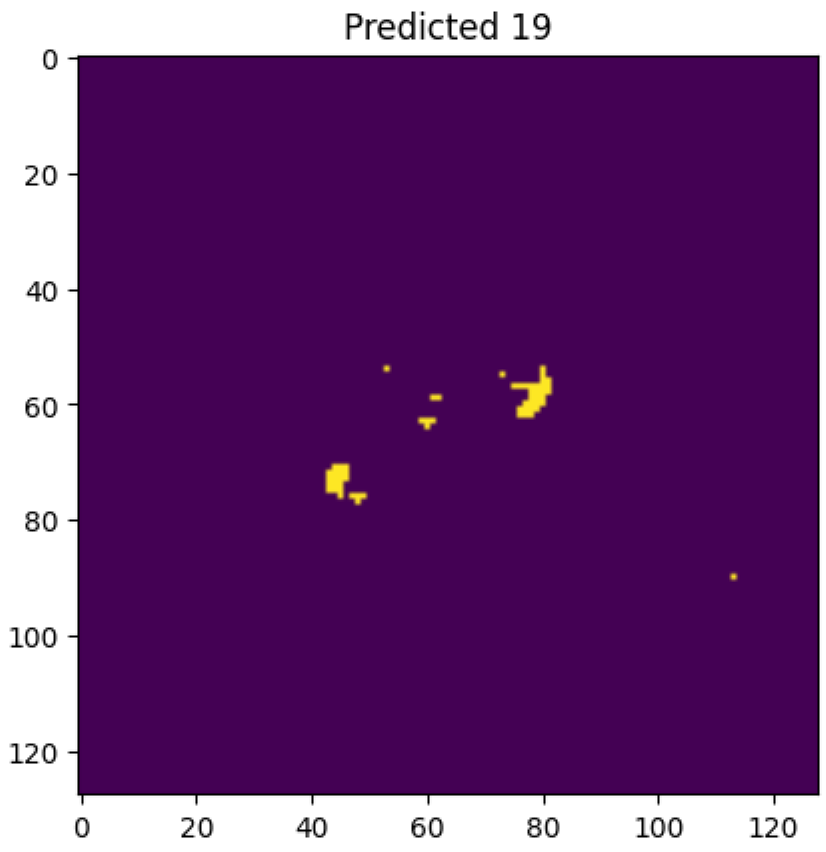
Predicted 18



Actual 19




Predicted 19
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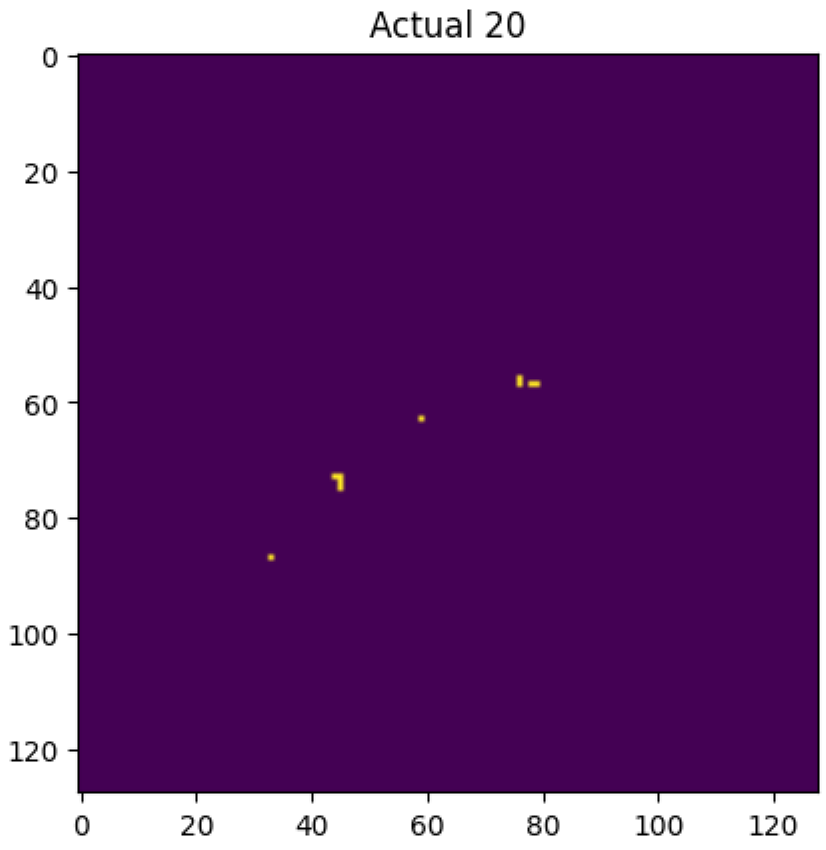
Actual 20
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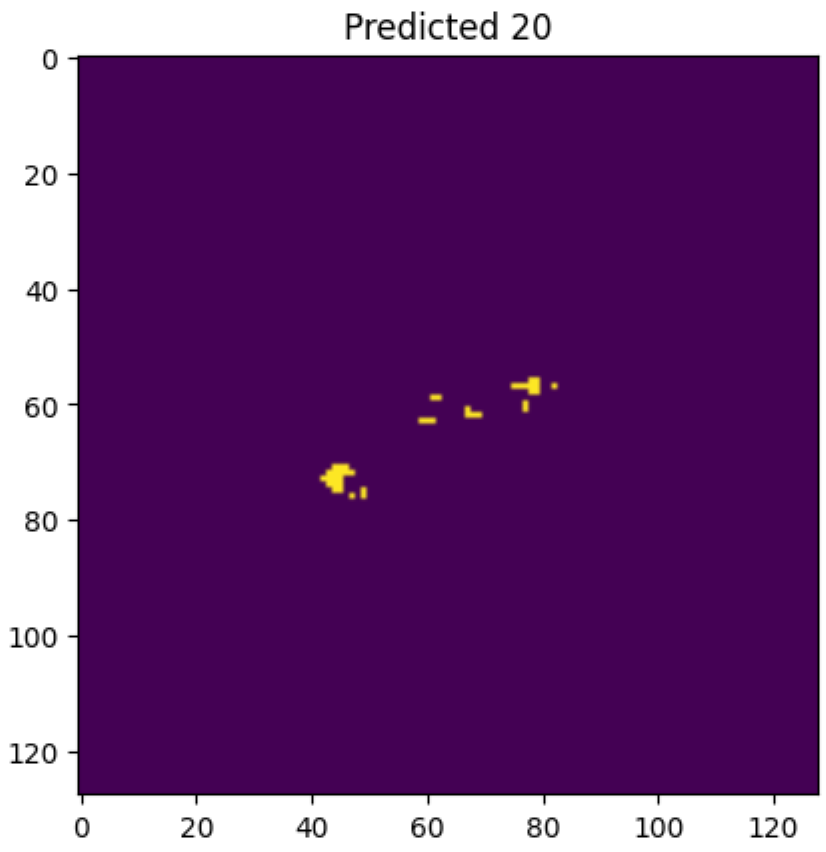
Predicted 20
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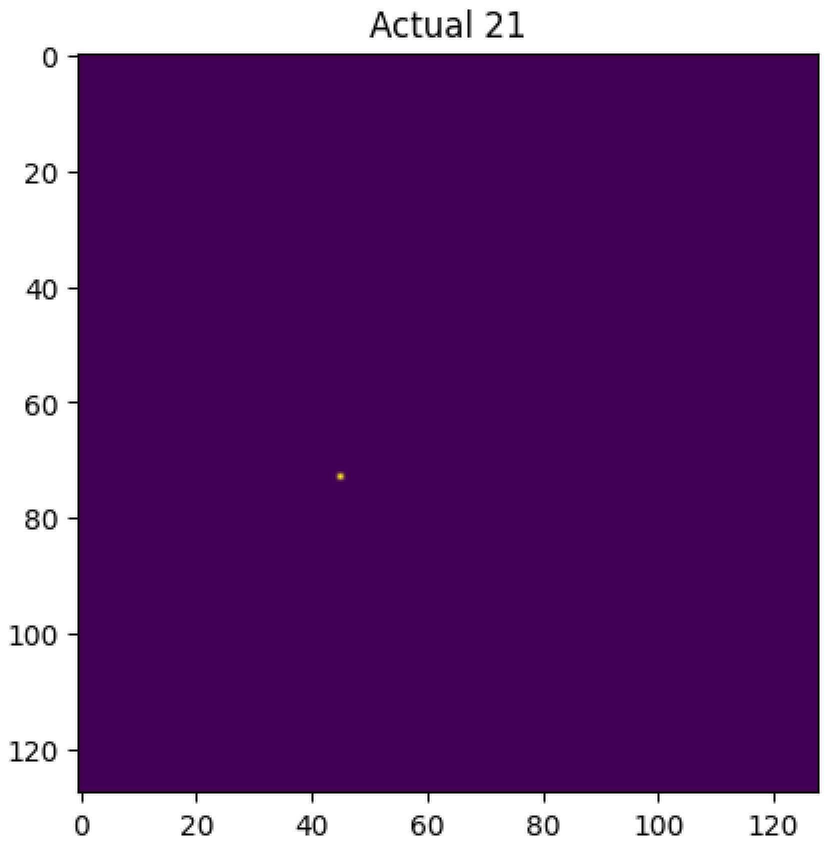
Actual 21
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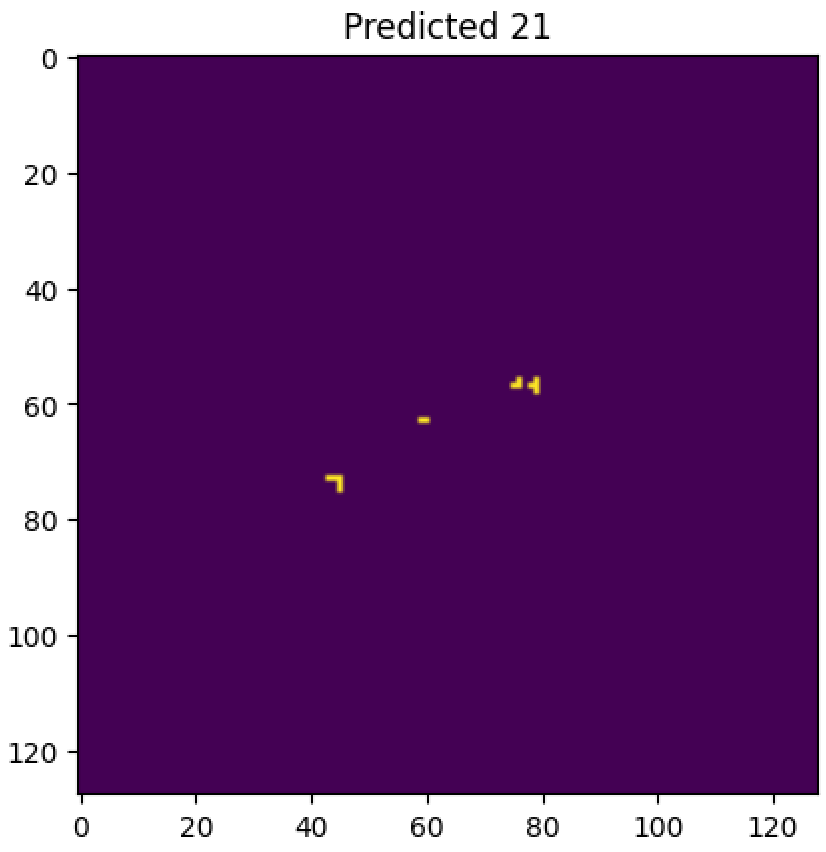
Predicted 21
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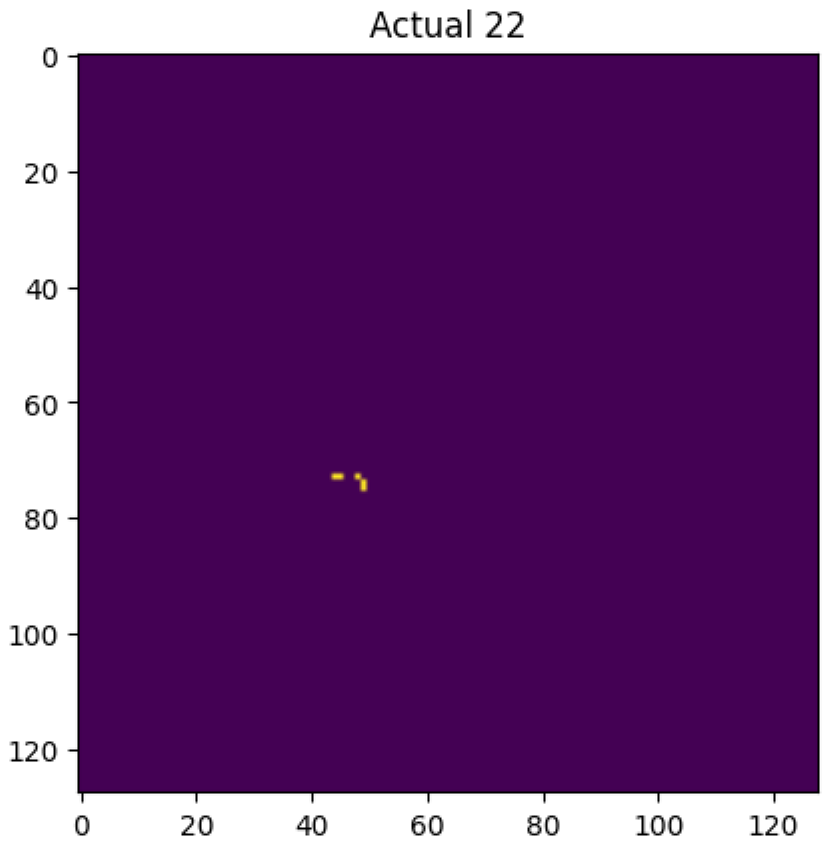
Actual 22
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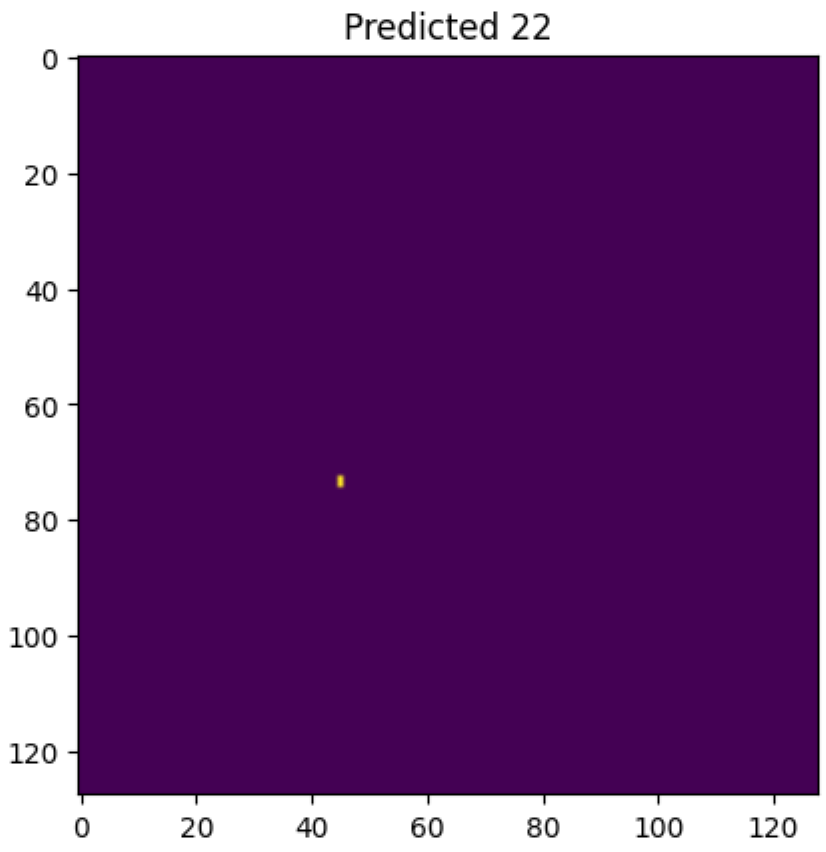
Predicted 22
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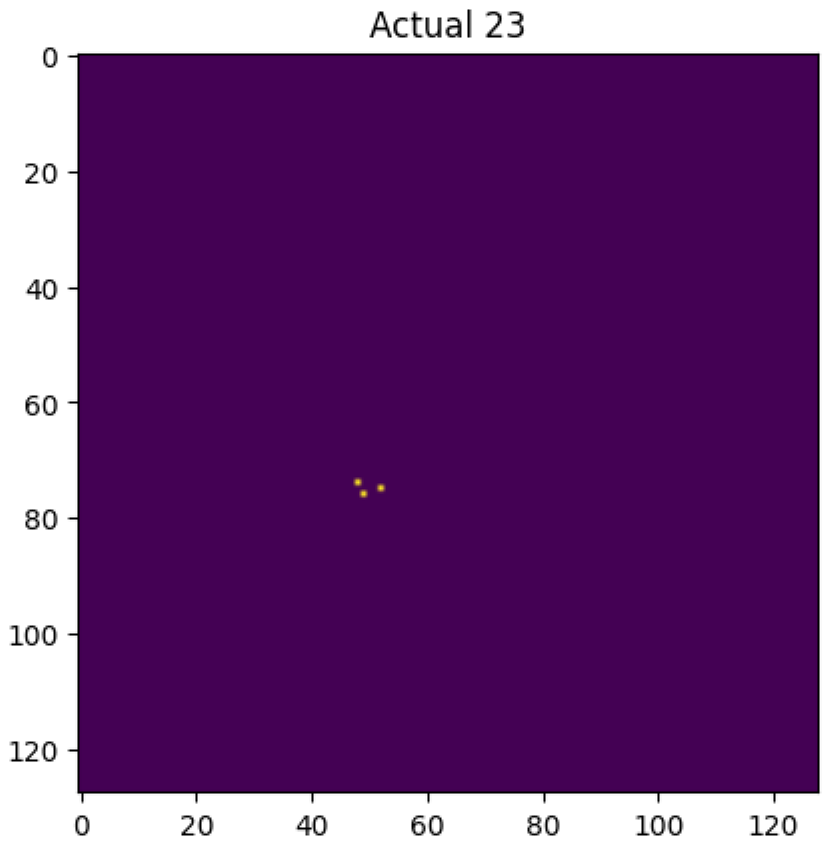
Actual 23
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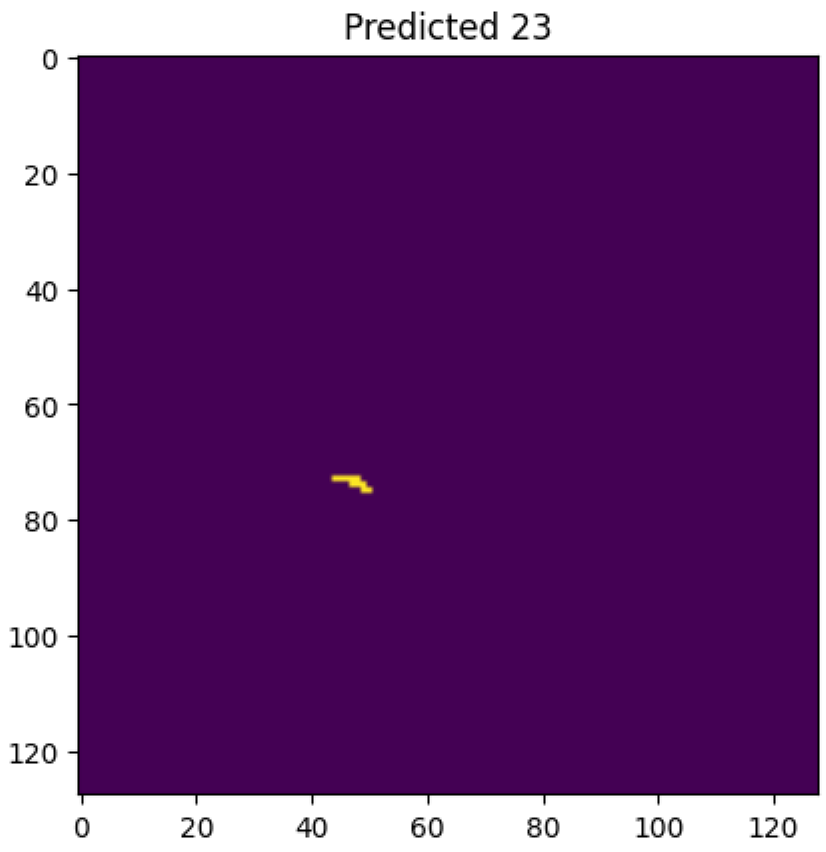

Predicted 23
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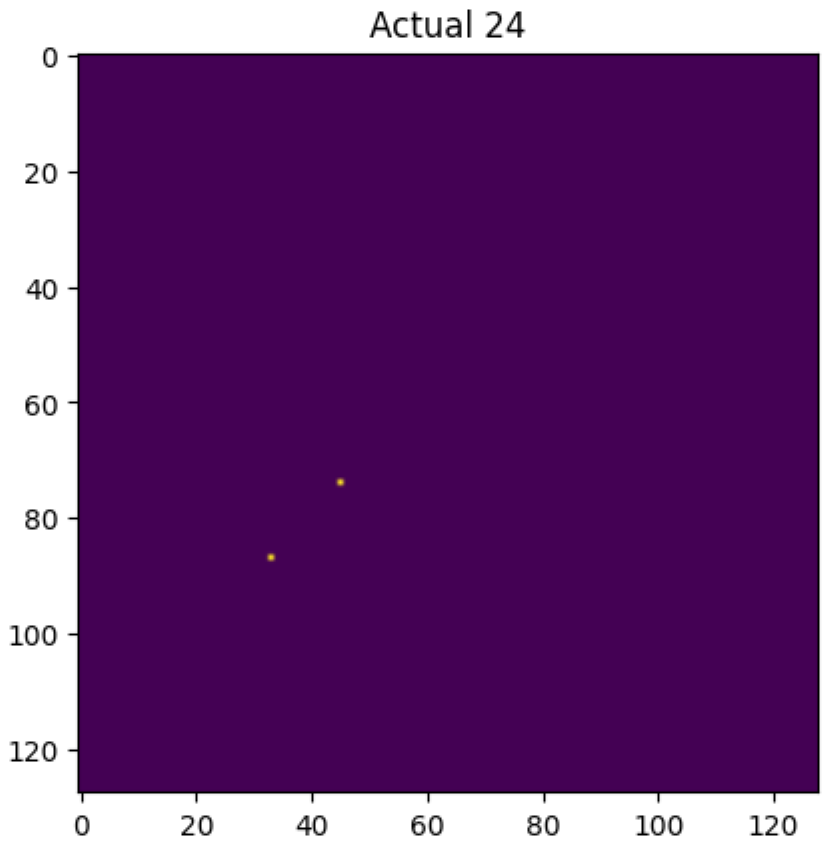

Actual 24
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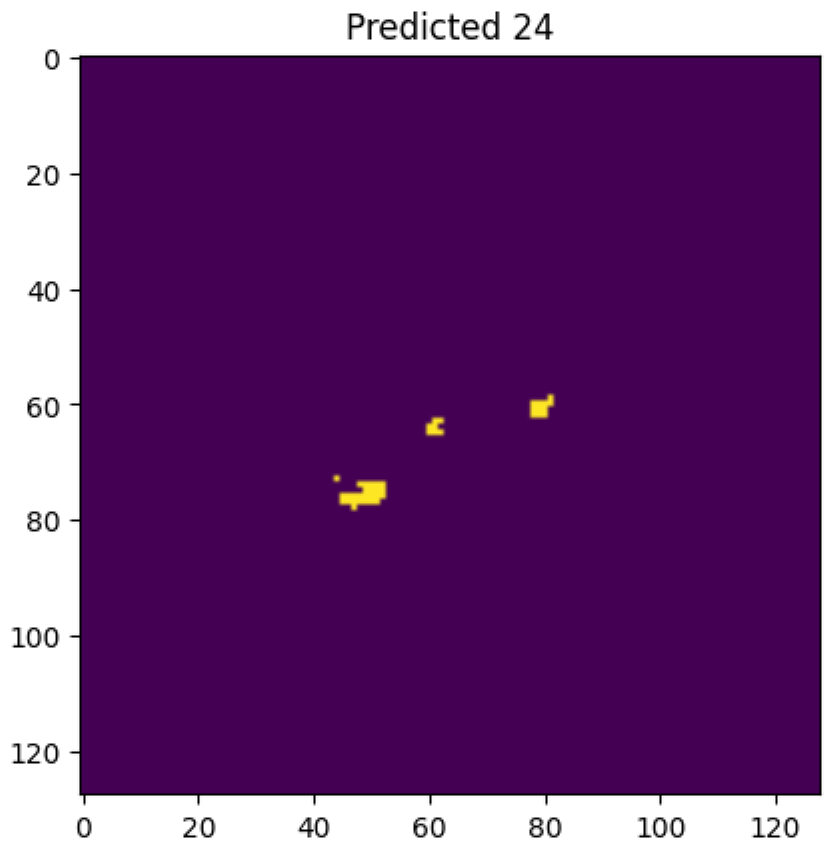
Predicted 24
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60
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100
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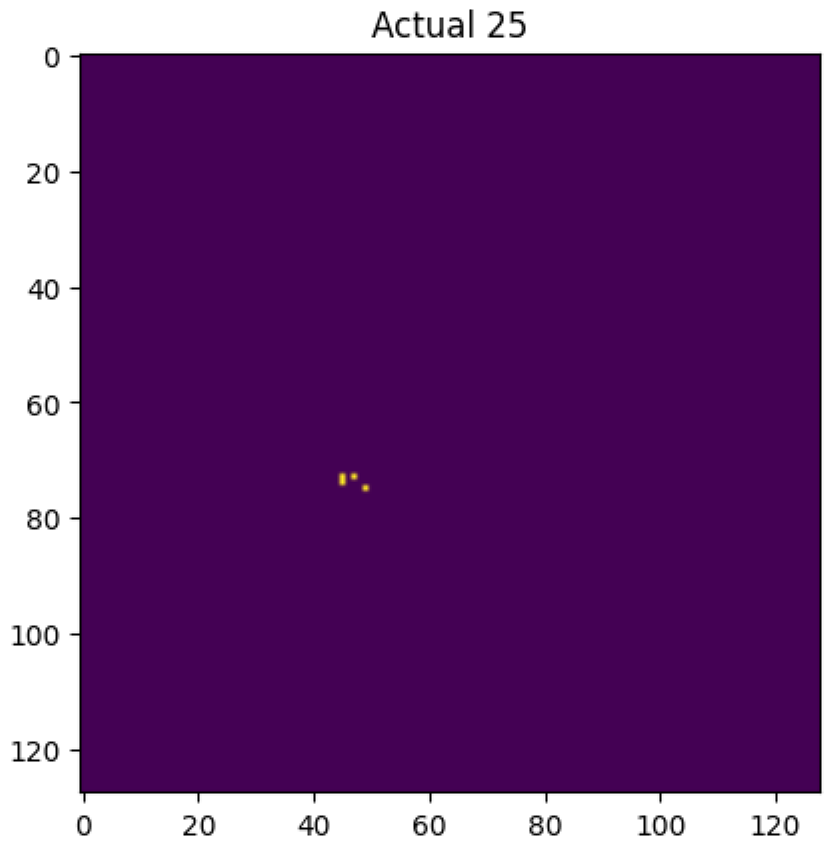
Actual 25
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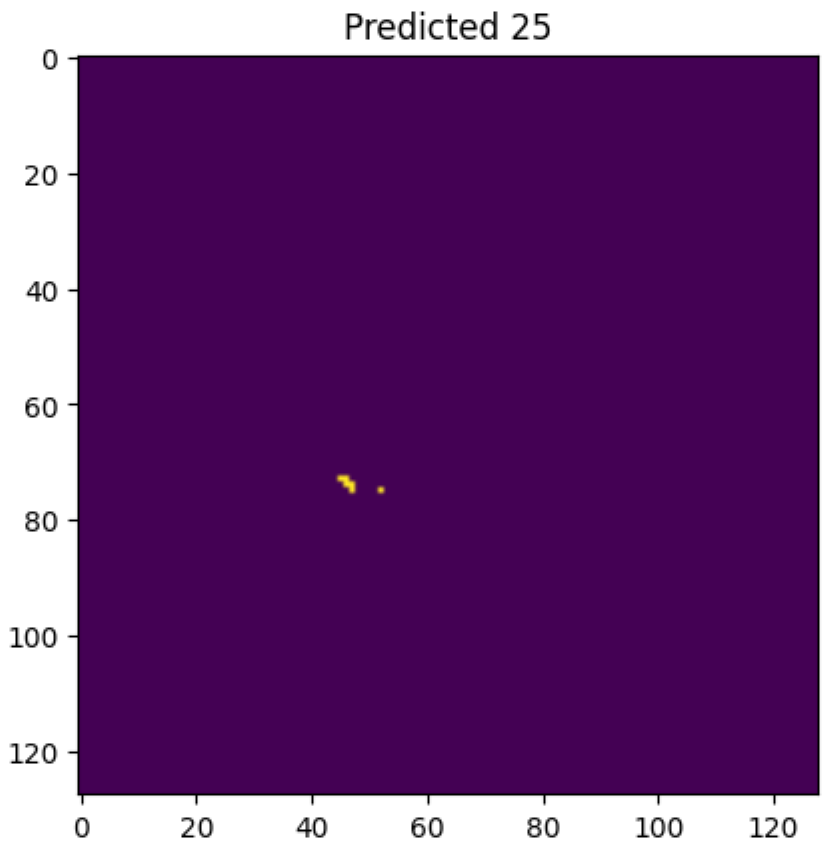
Predicted 25
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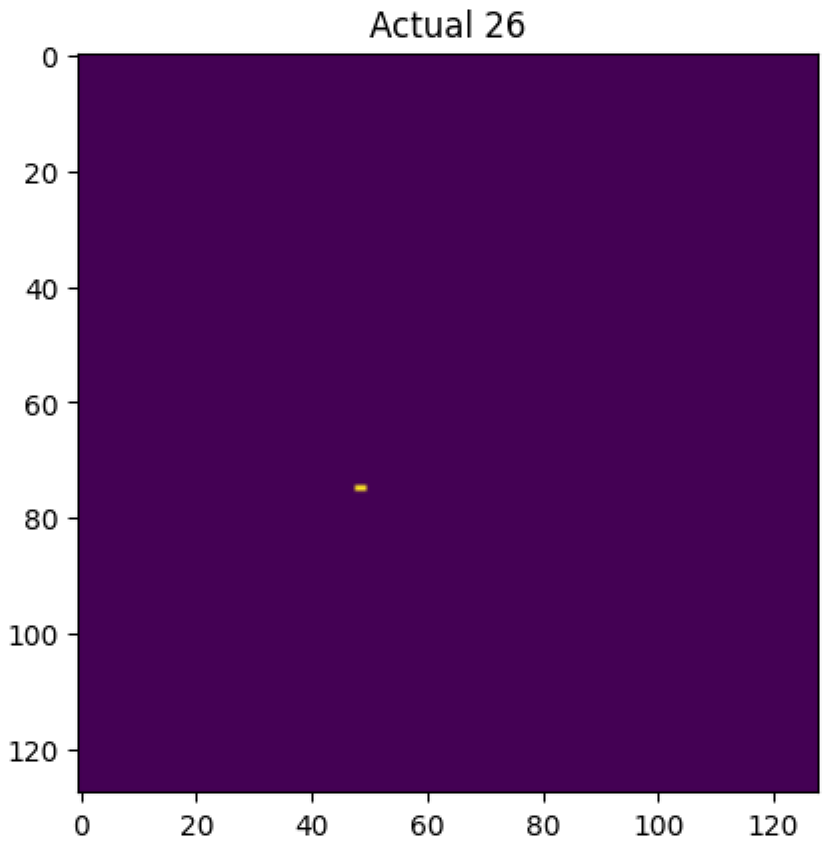
Actual 26
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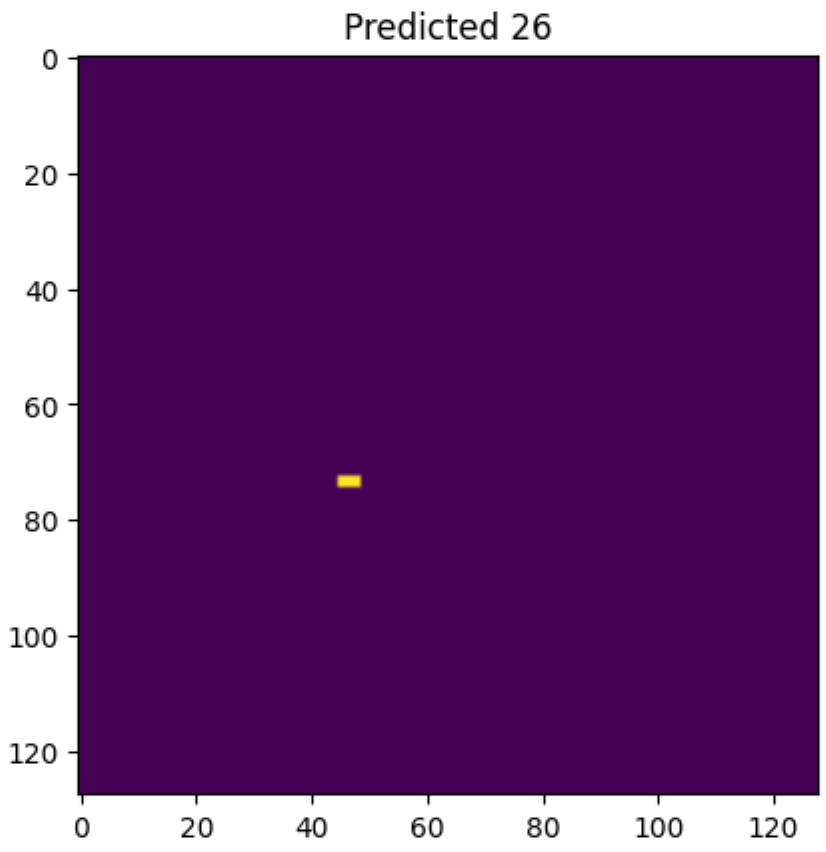
Predicted 26
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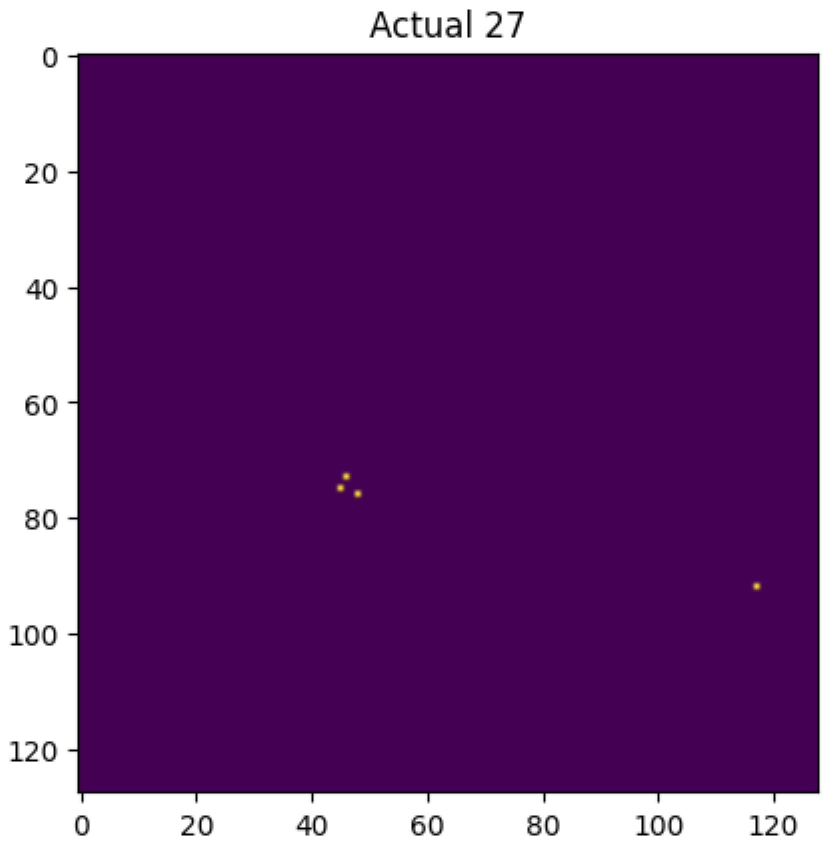
Actual 27
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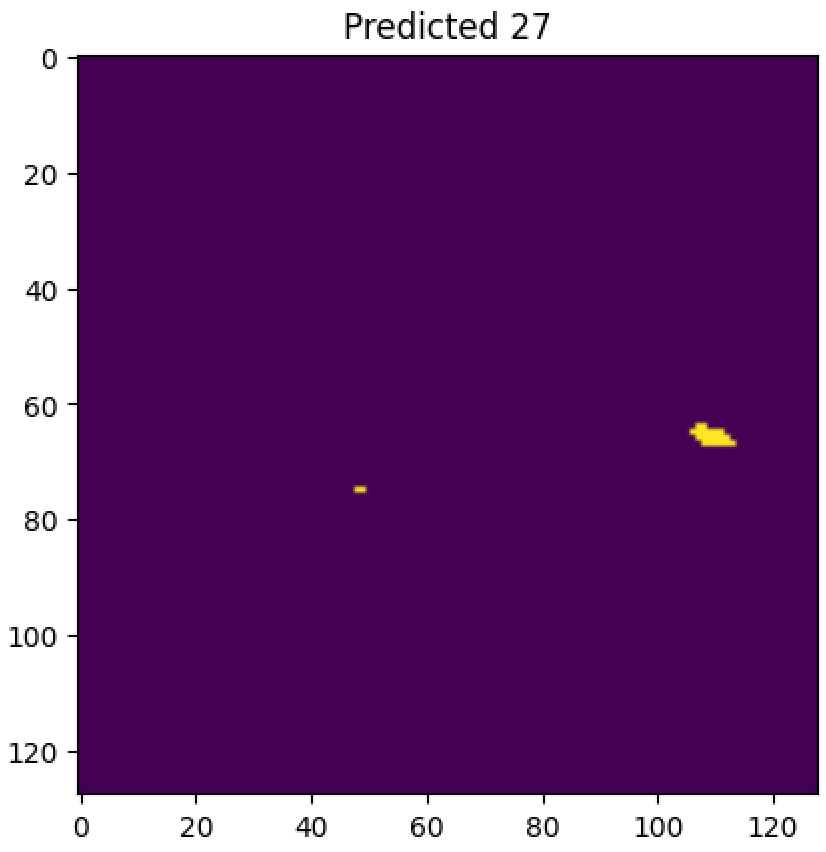
Predicted 27
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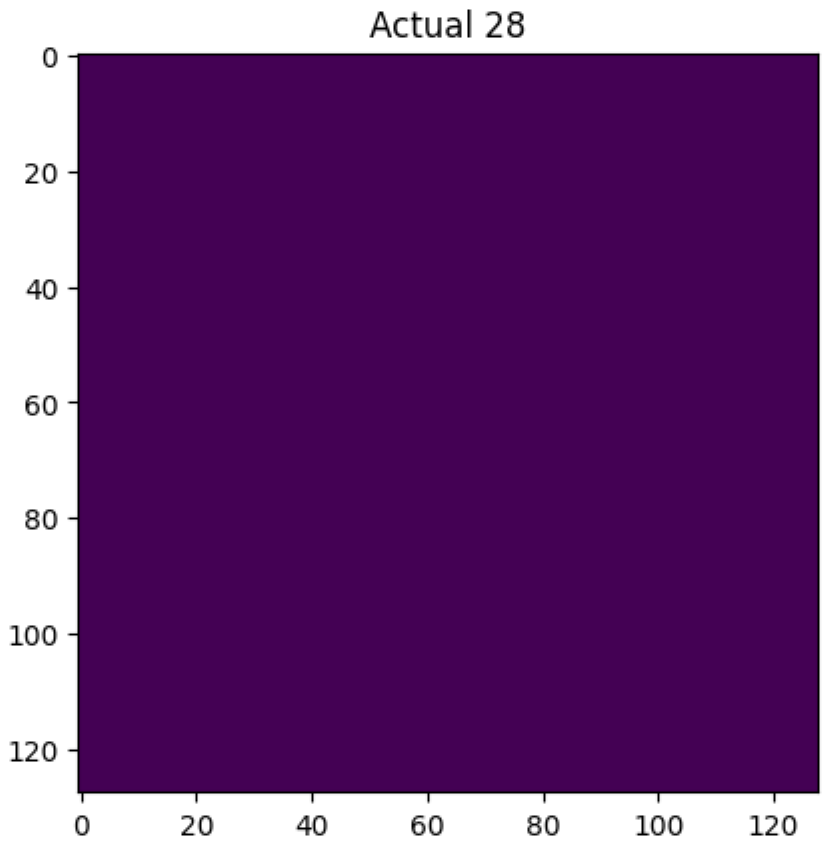
Actual 28
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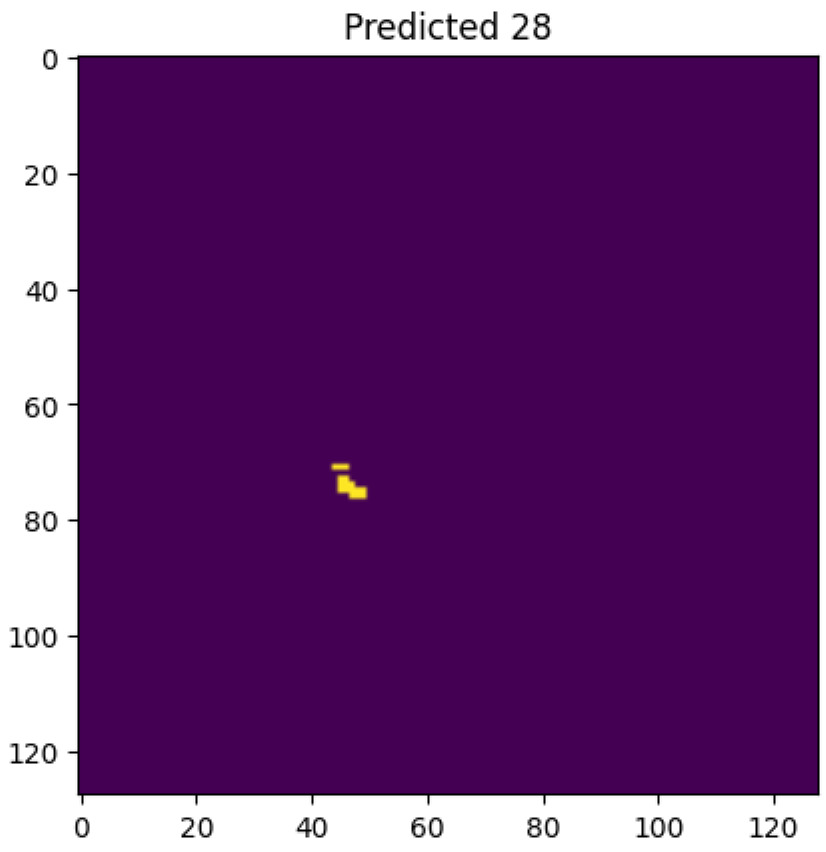
Predicted 28
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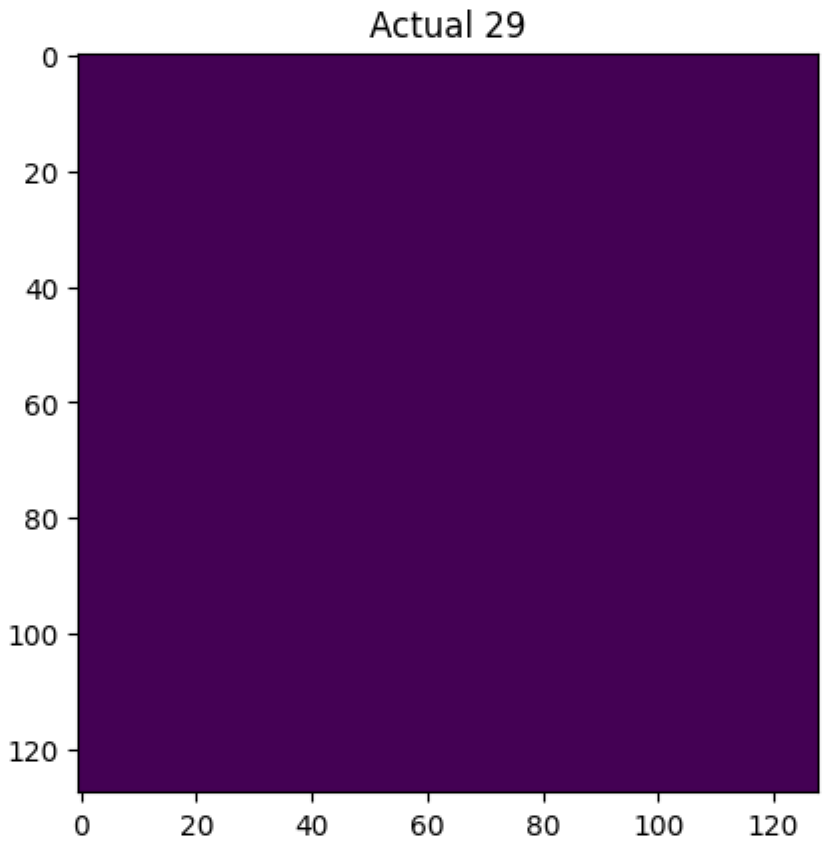
Actual 29
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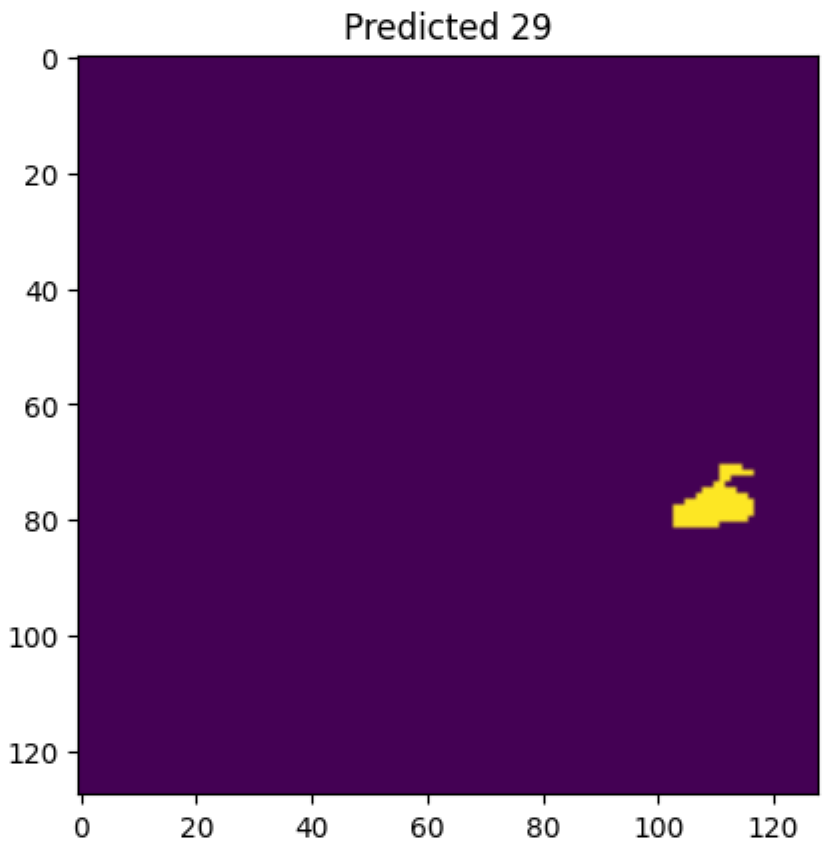
Predicted 29
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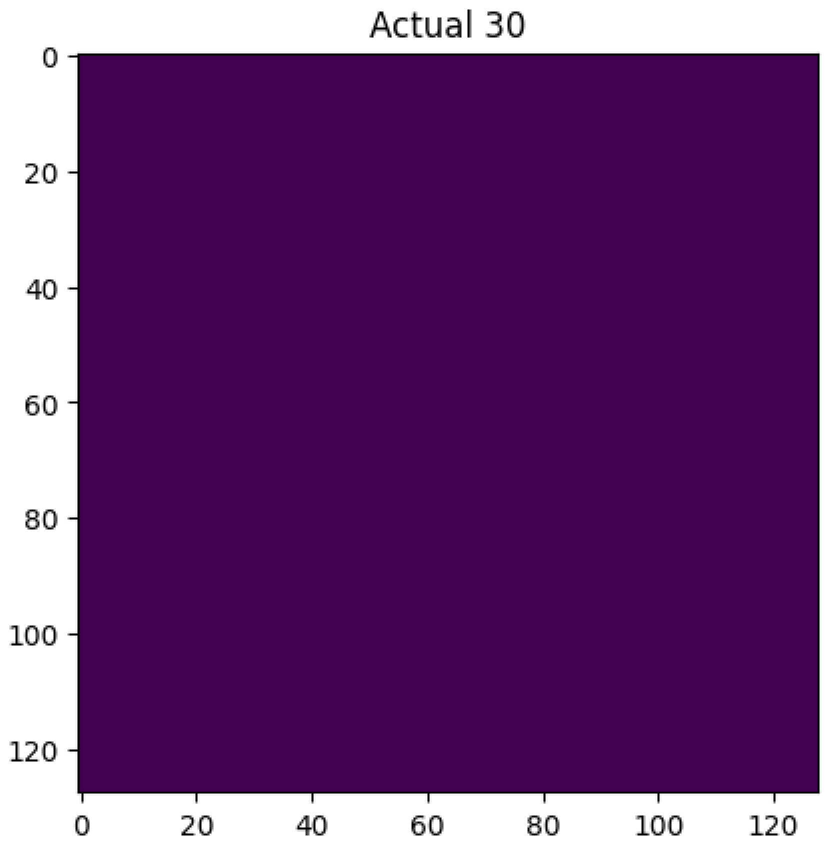
Actual 30
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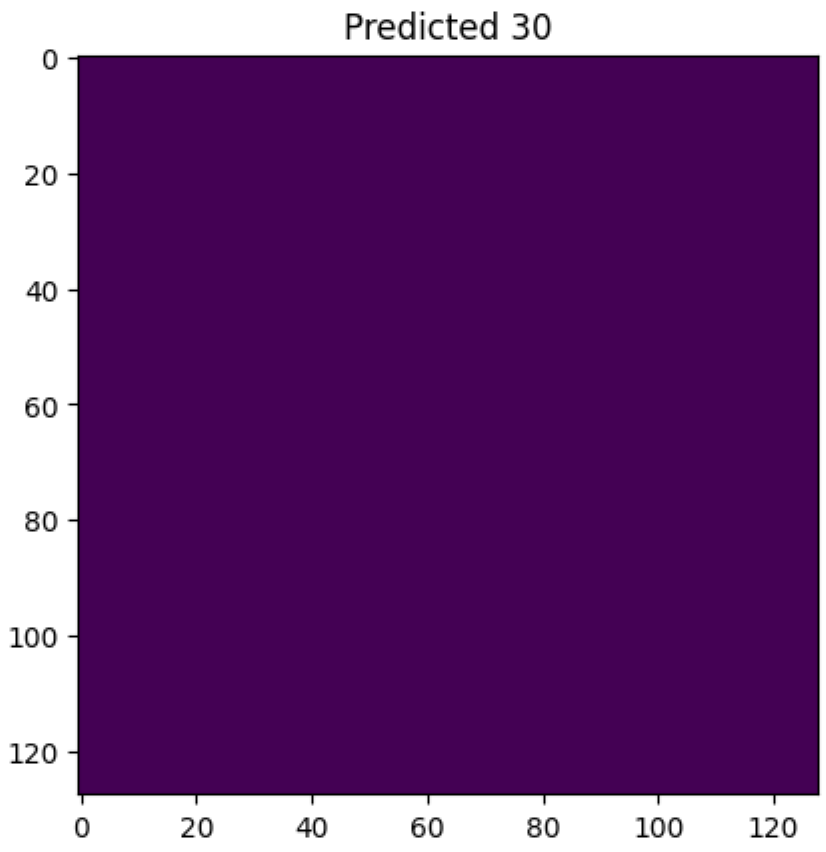
Predicted 30
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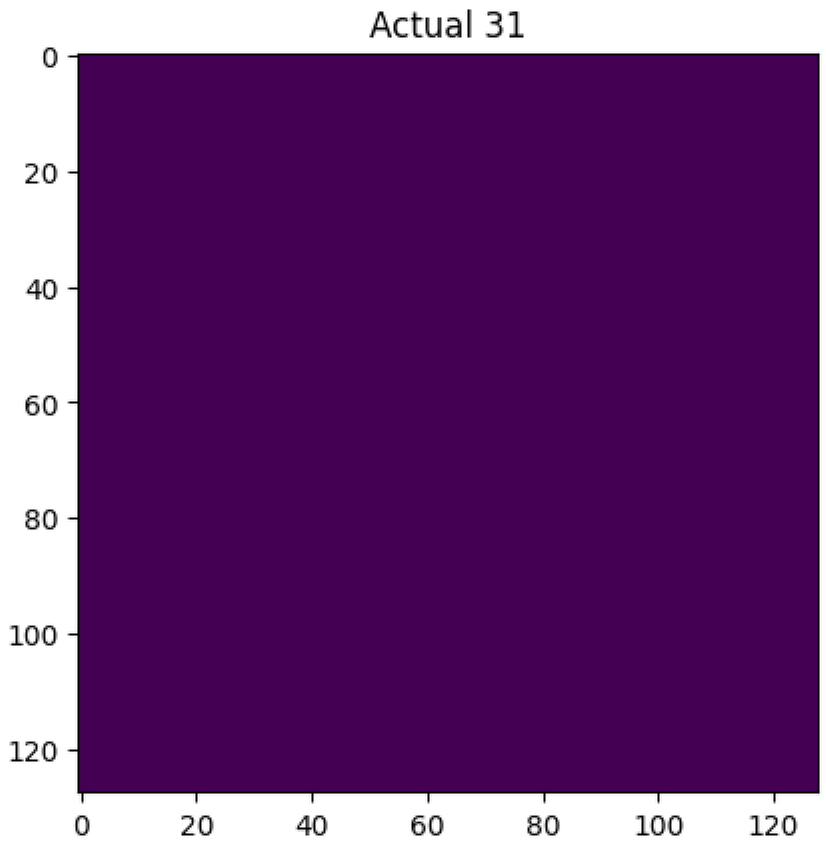
Actual 31
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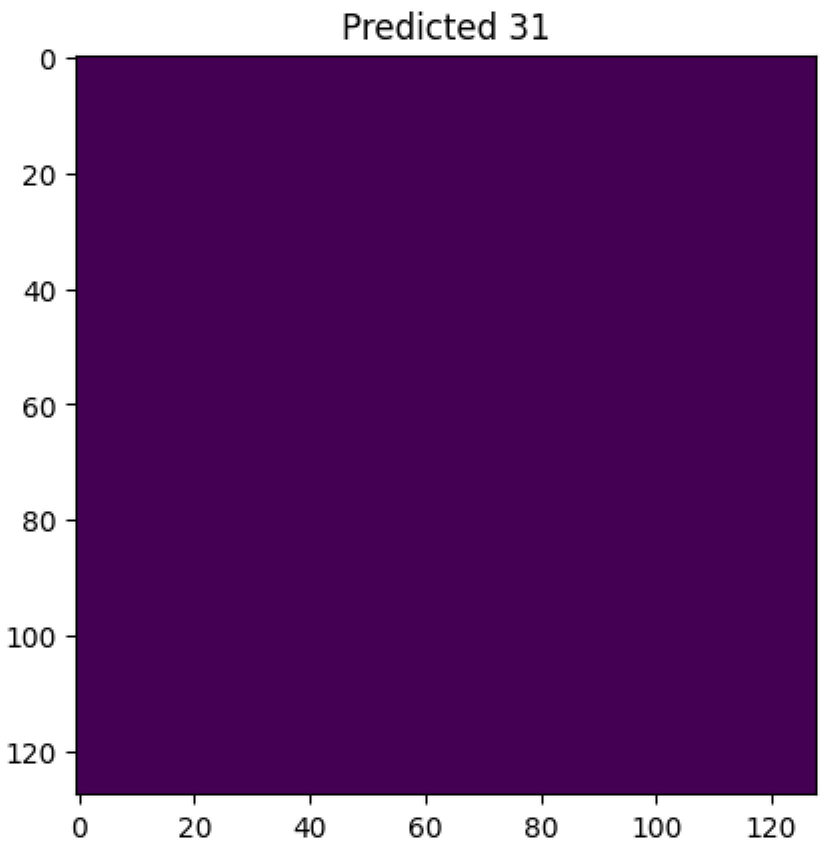
Predicted 31
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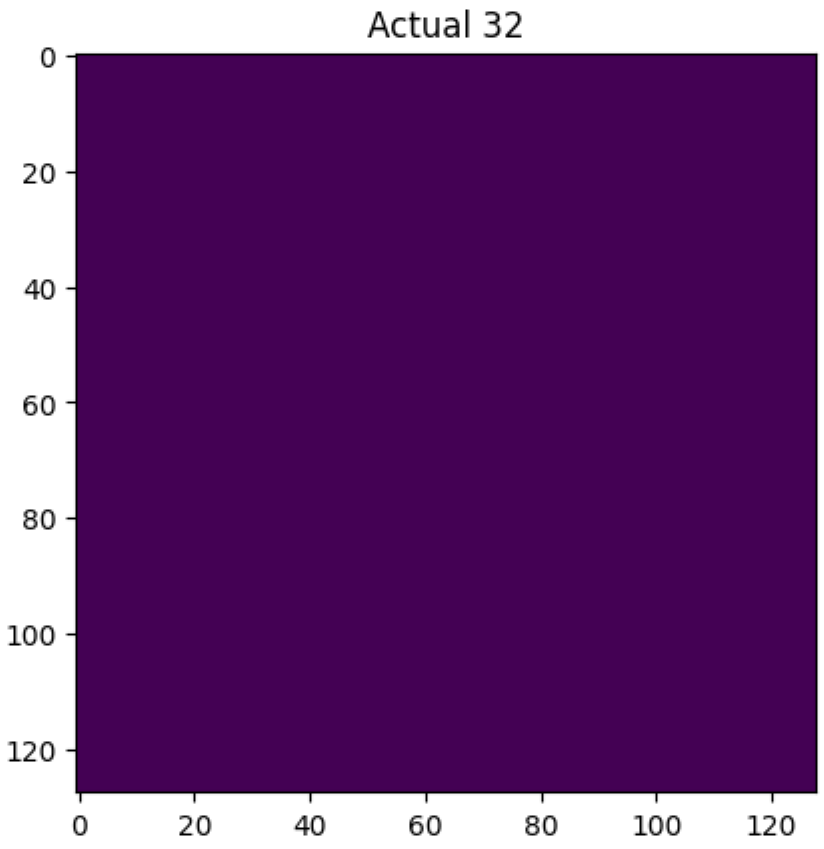
Actual 32
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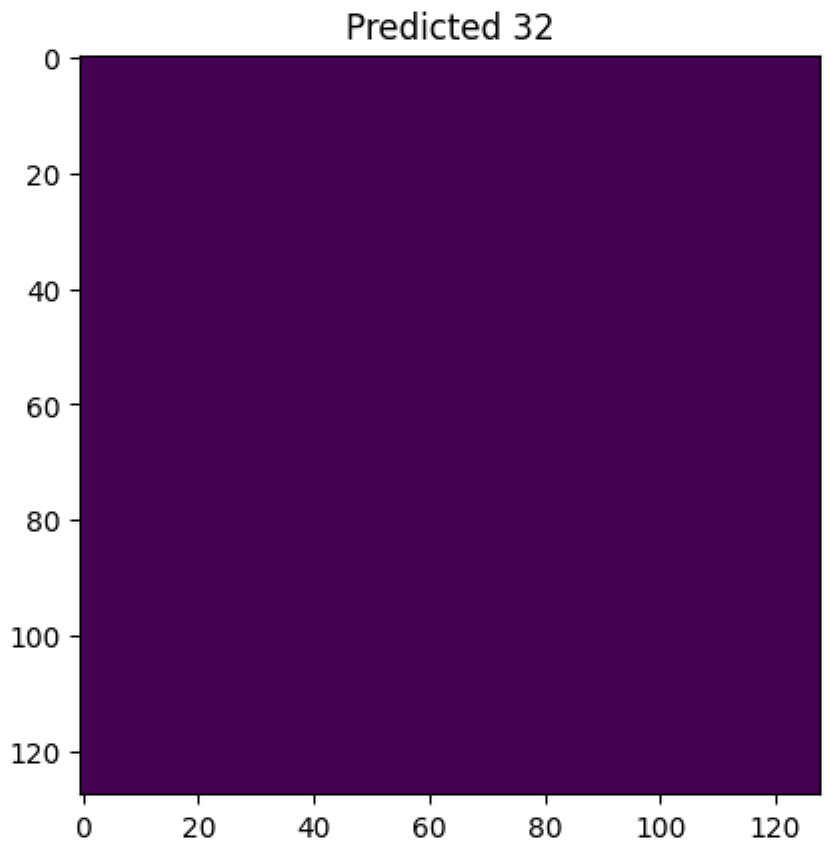
Predicted 32
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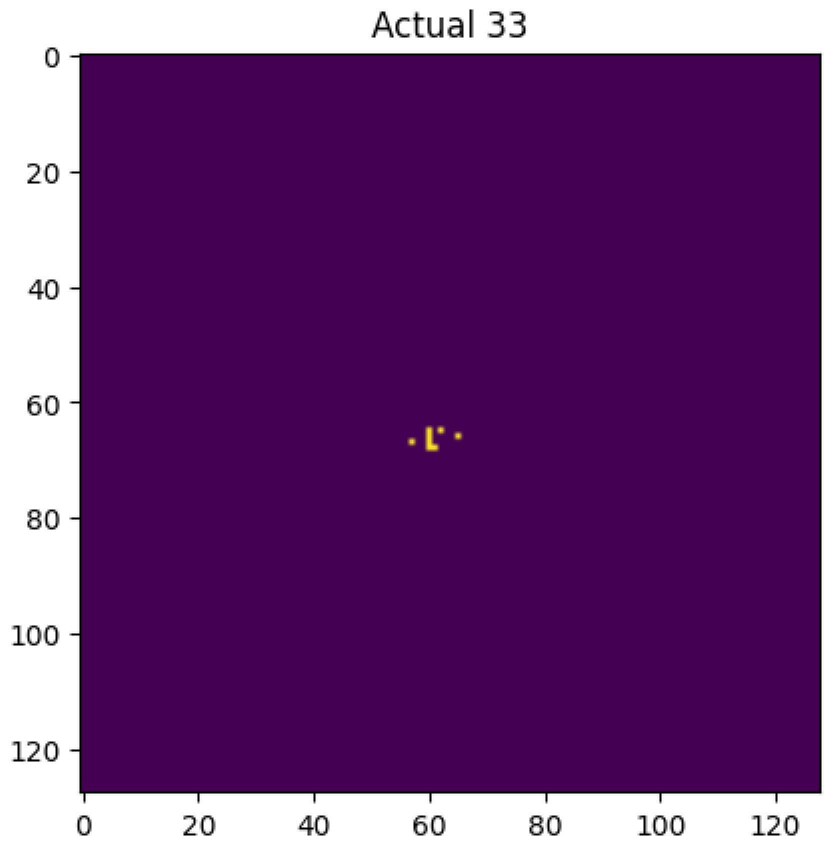
Actual 33
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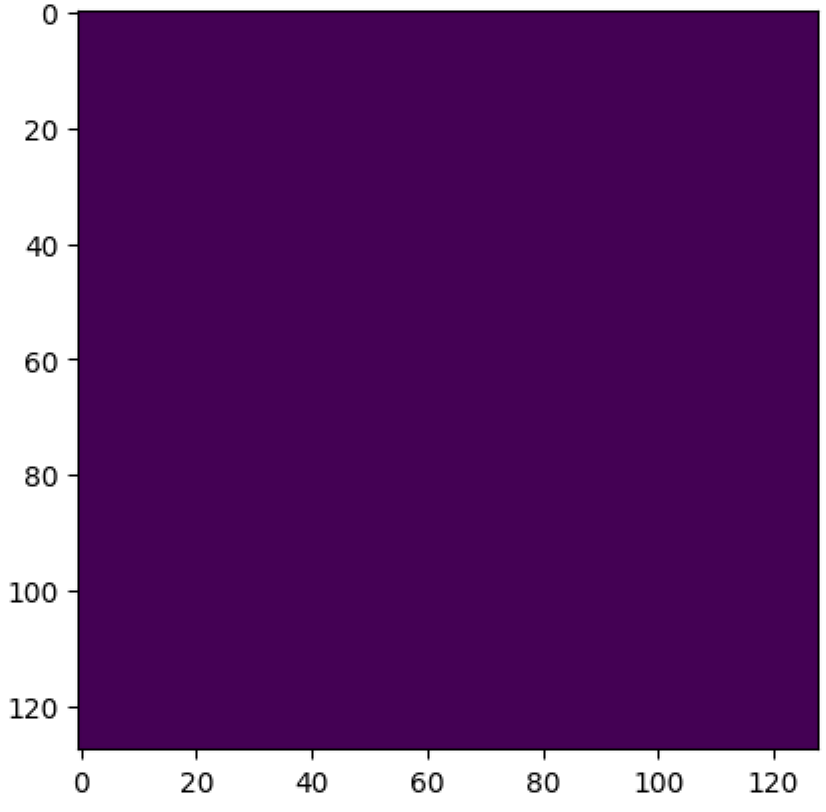
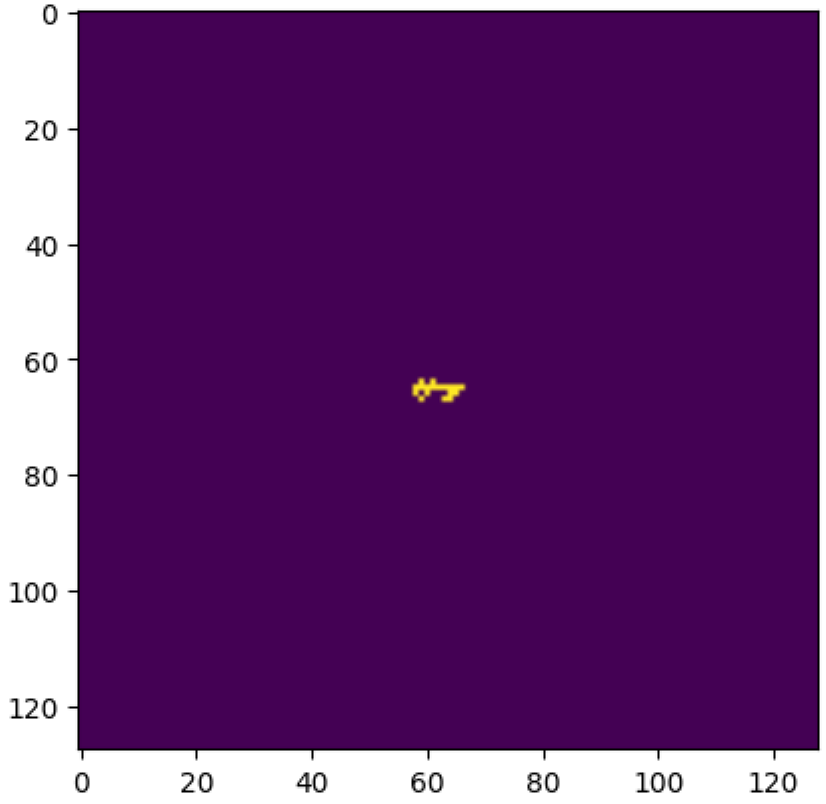
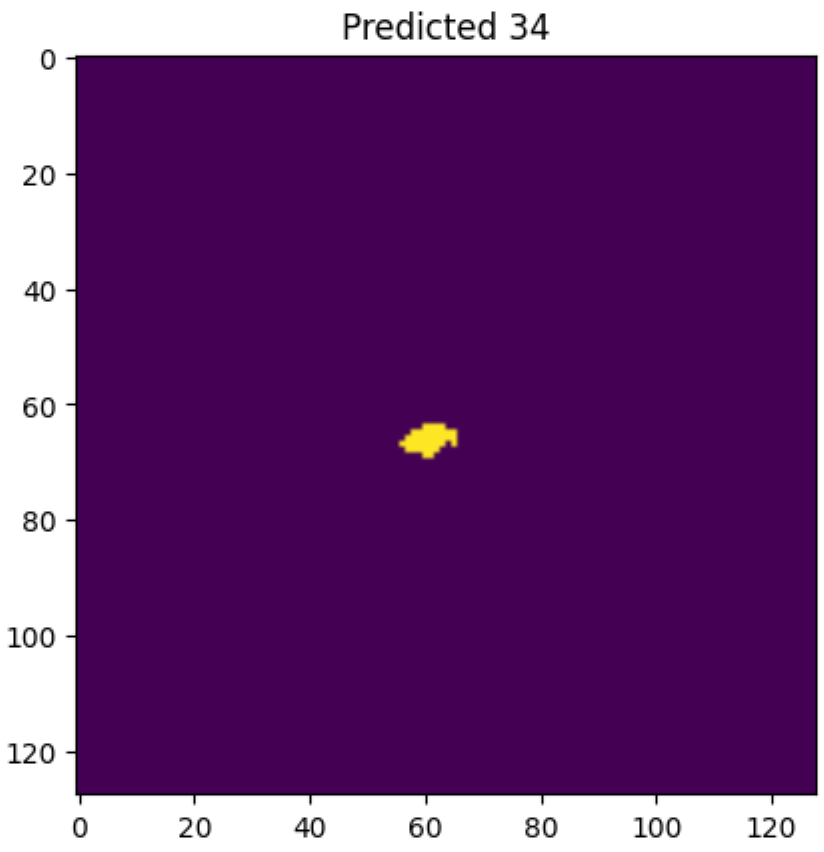
Predicted 33



Actual 34




Predicted 34
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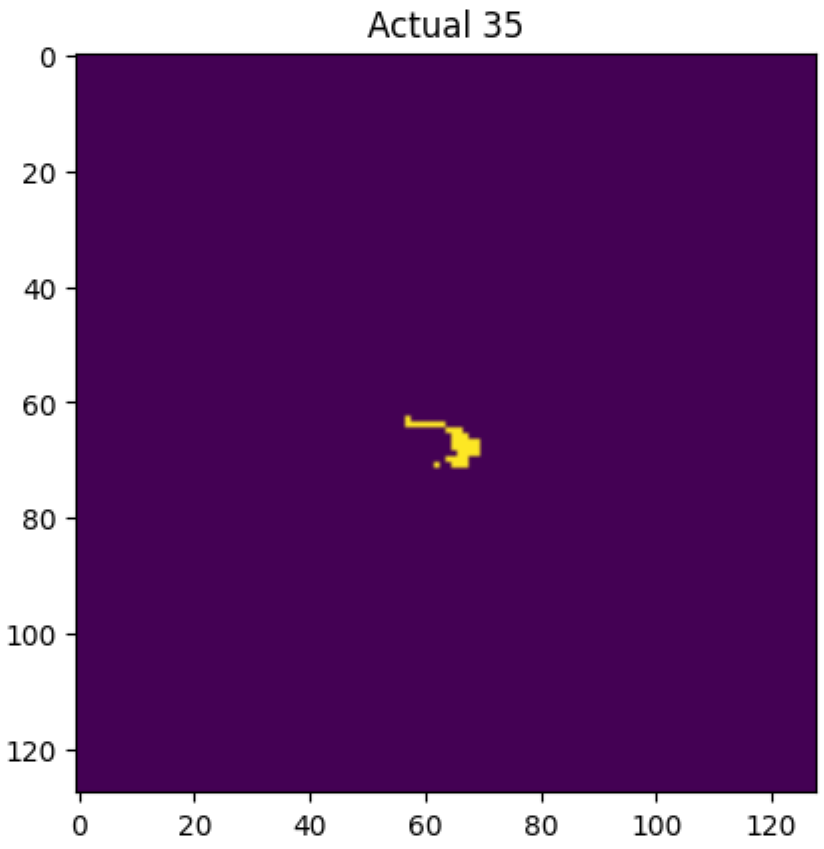
Actual 35
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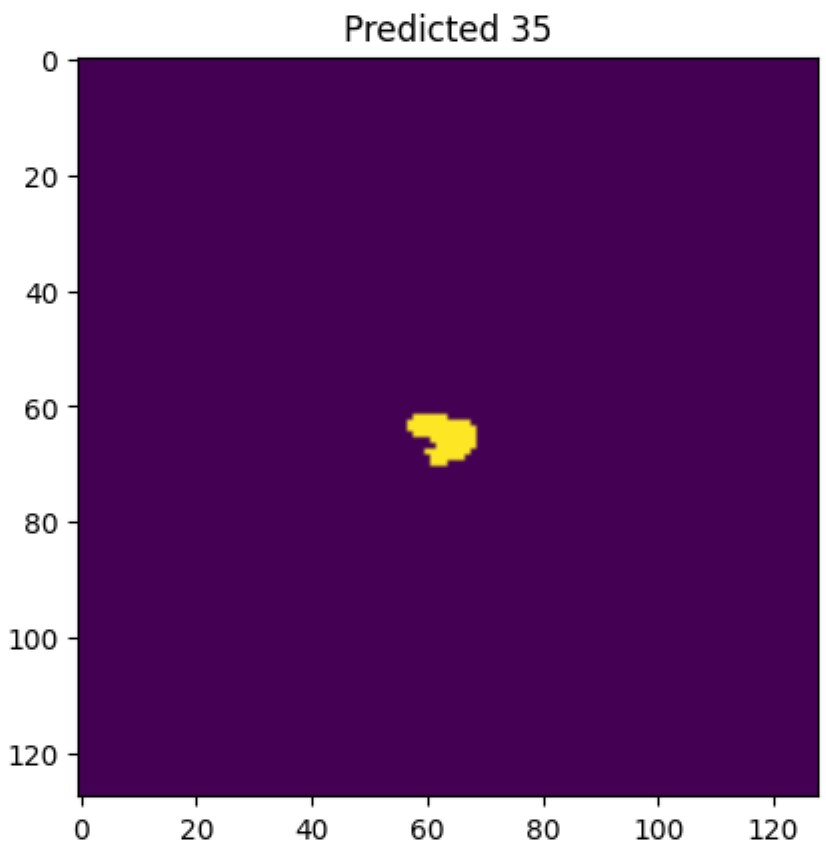
Predicted 35
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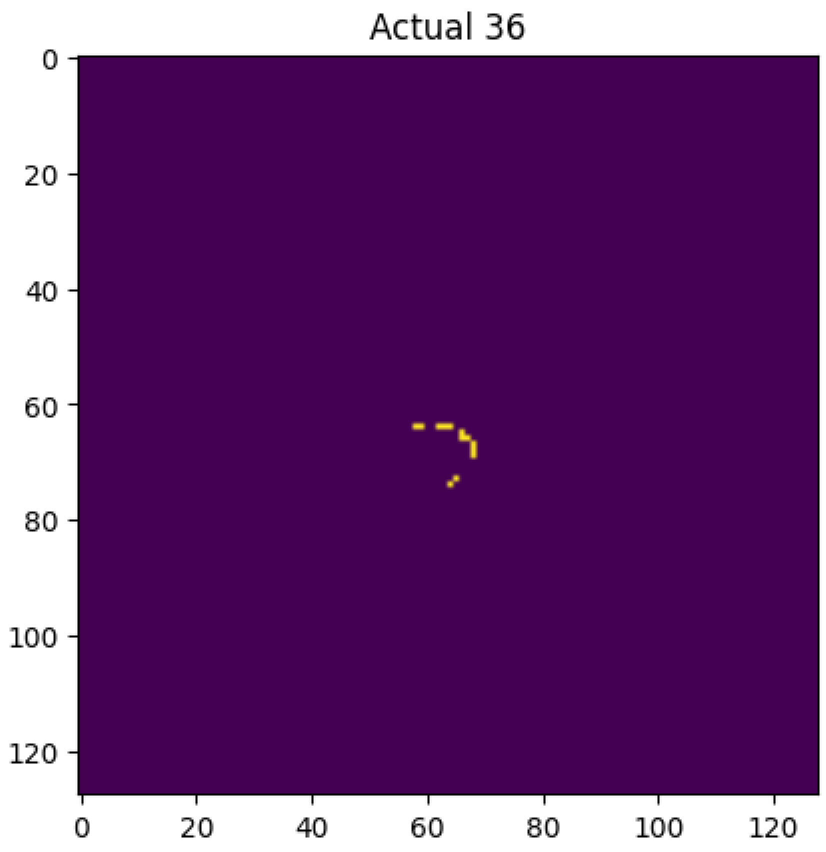
Actual 36
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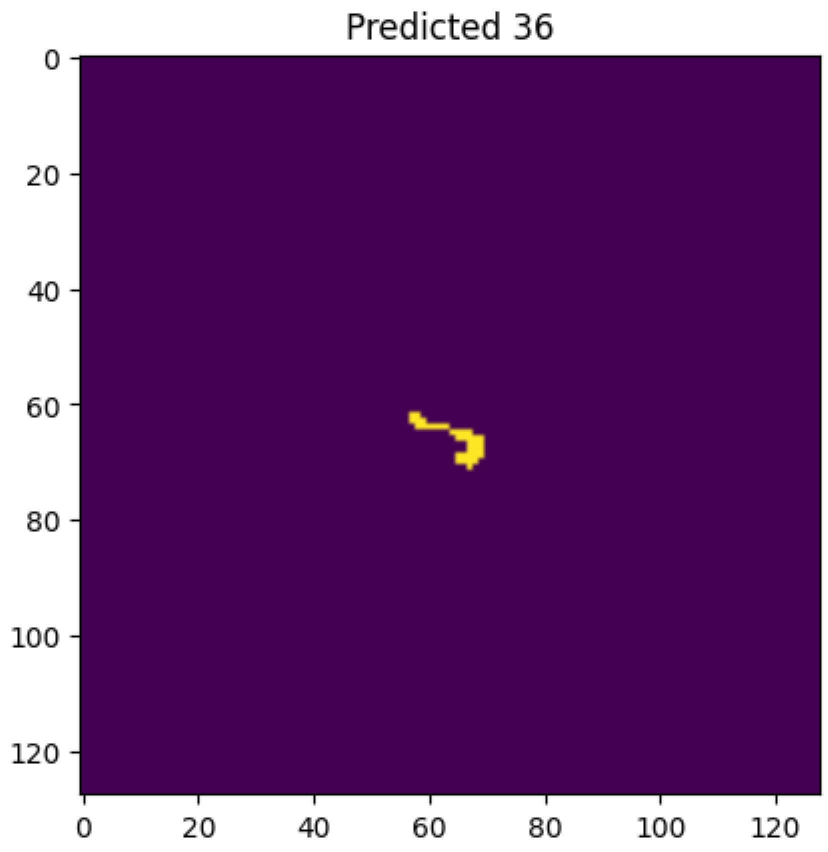
Predicted 36
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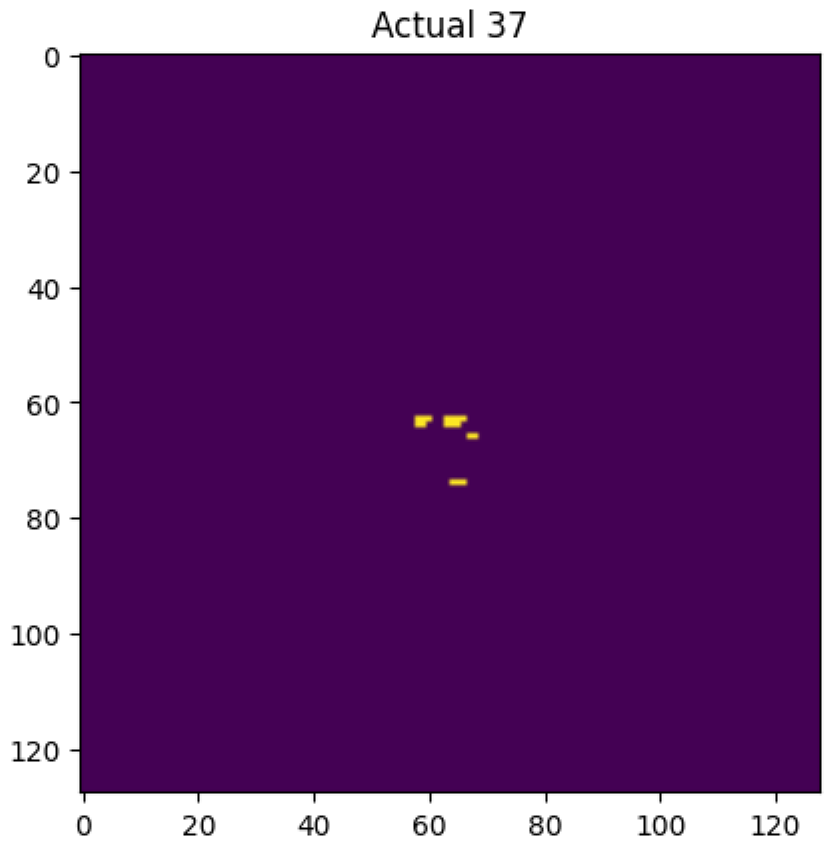
Actual 37
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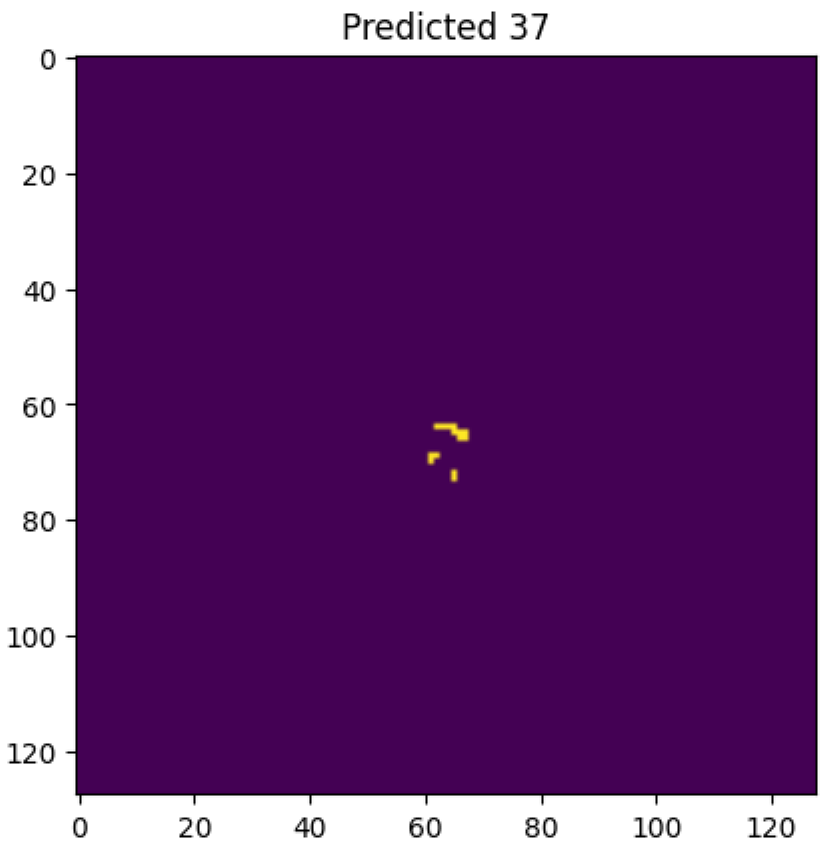
Predicted 37
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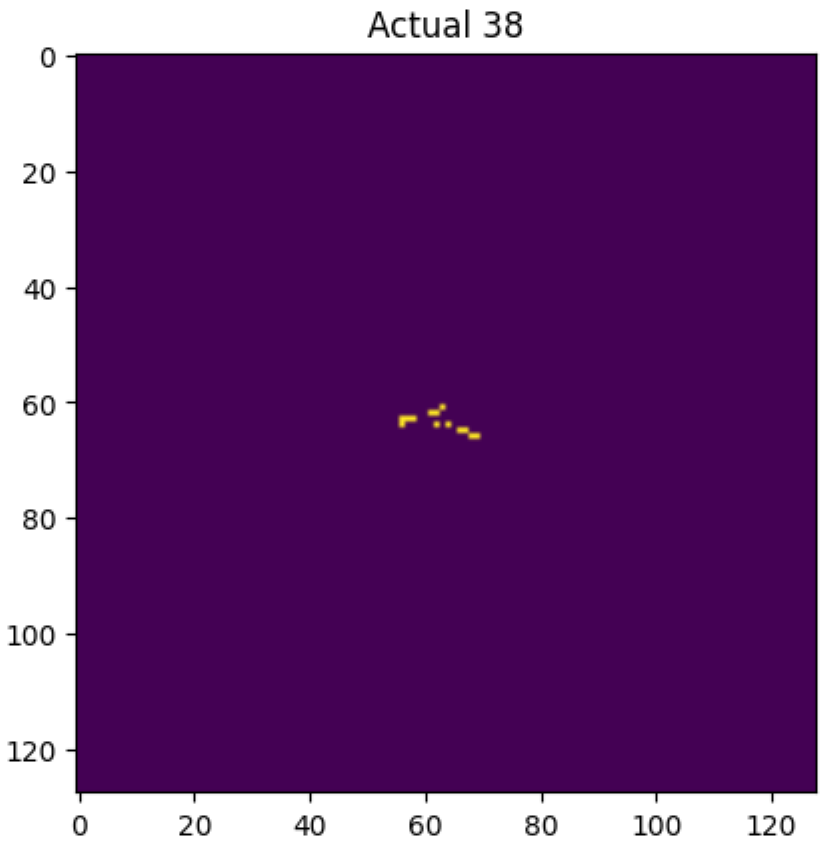
Actual 38
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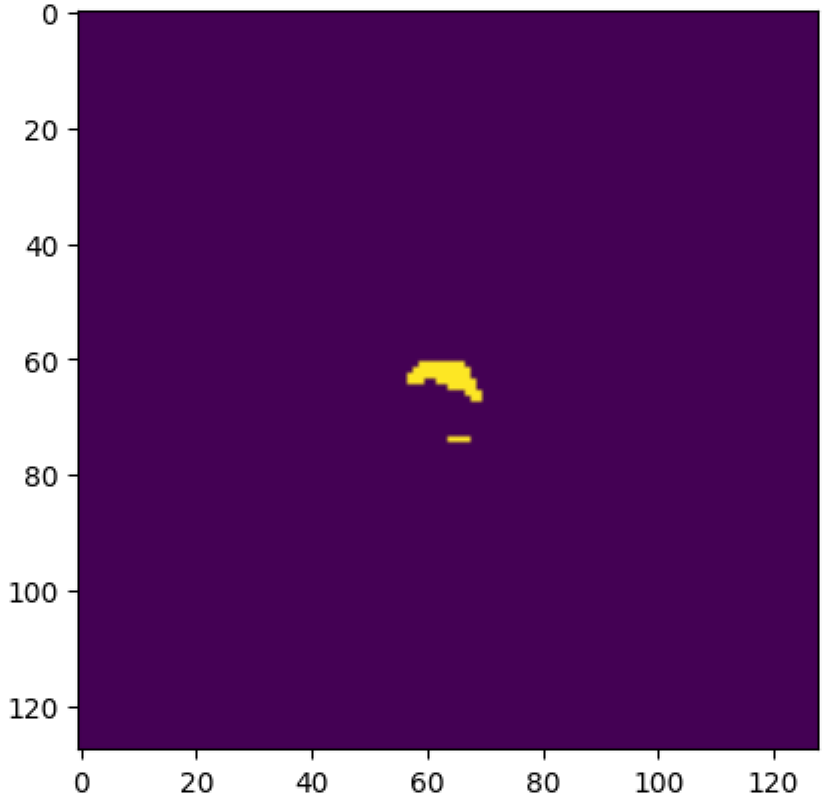
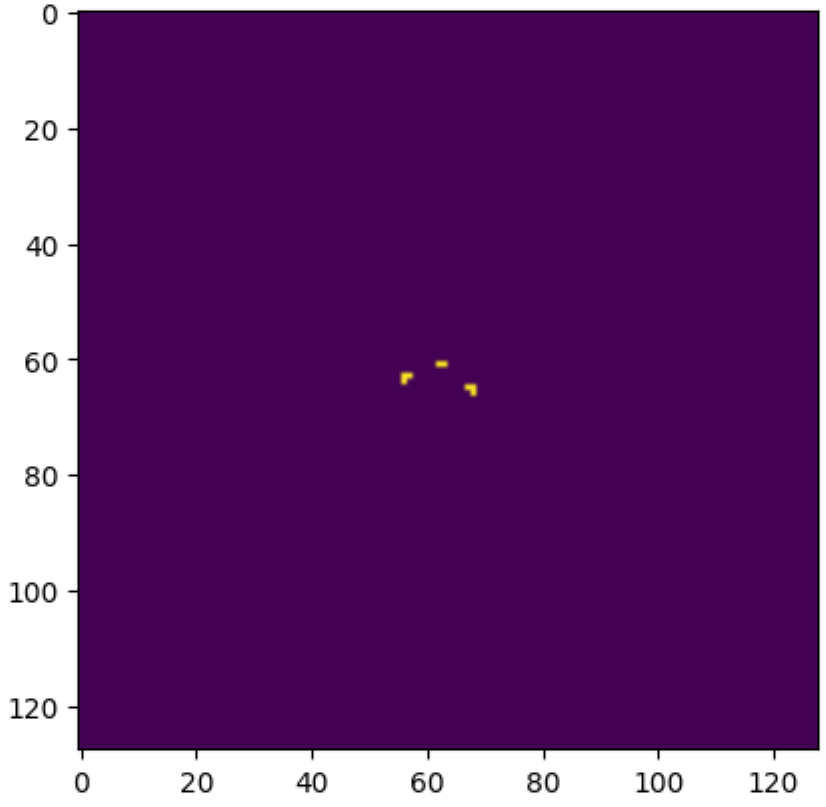
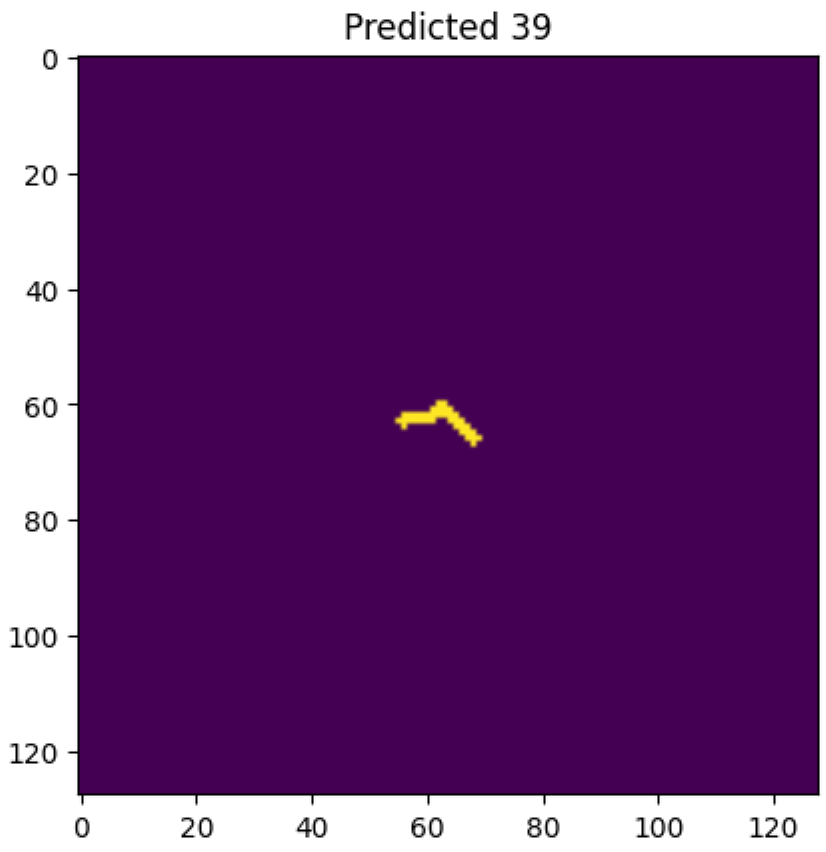
Predicted 38



Actual 39




Predicted 39
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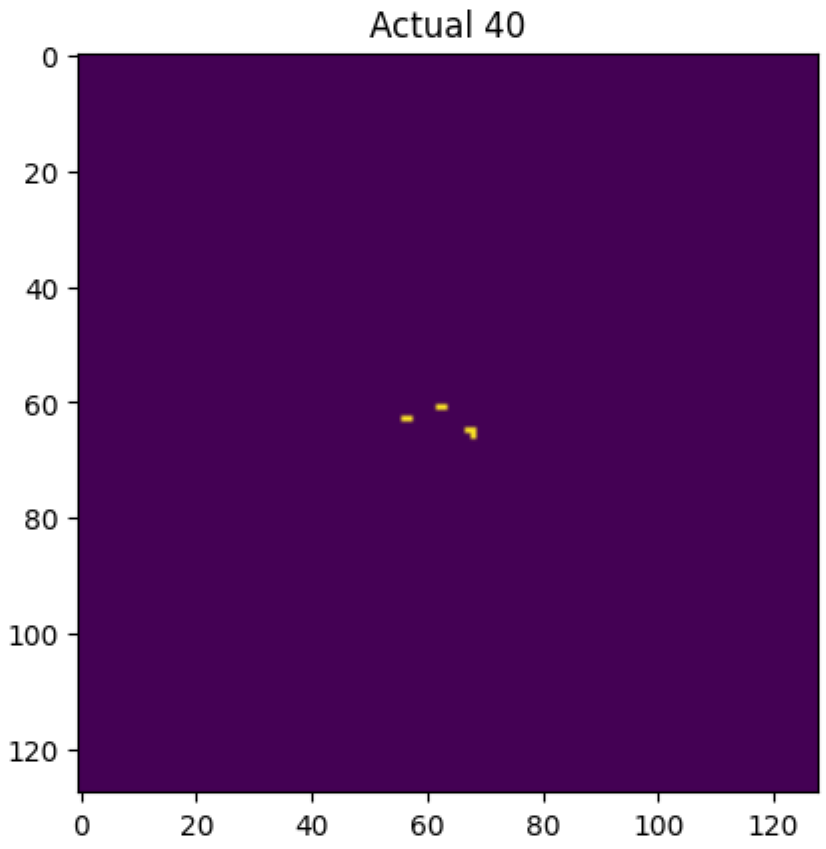
Actual 40
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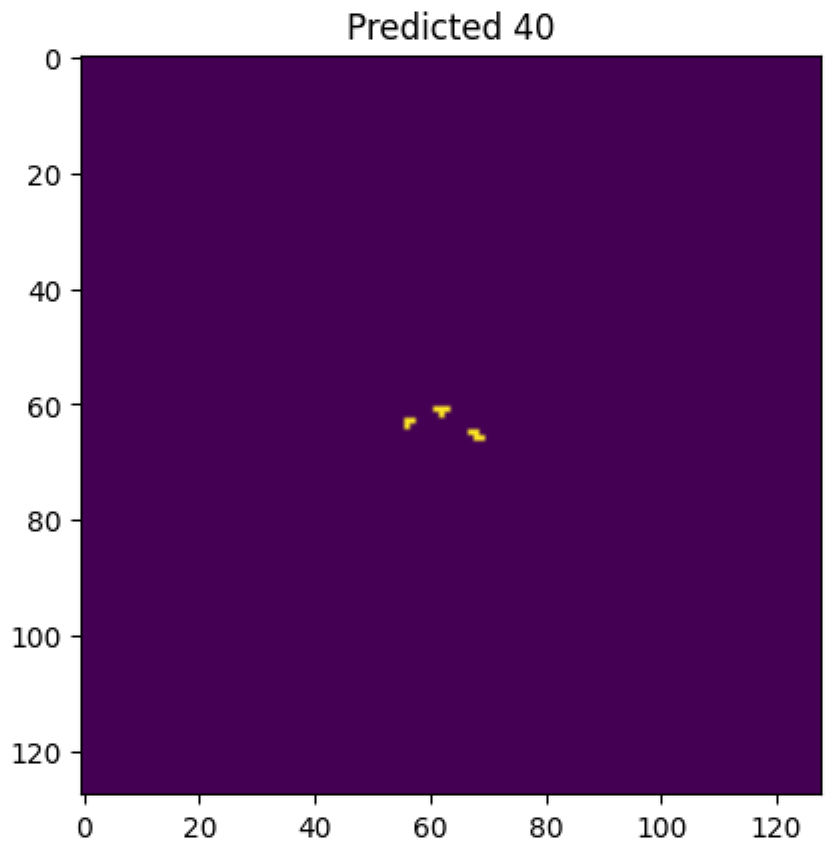
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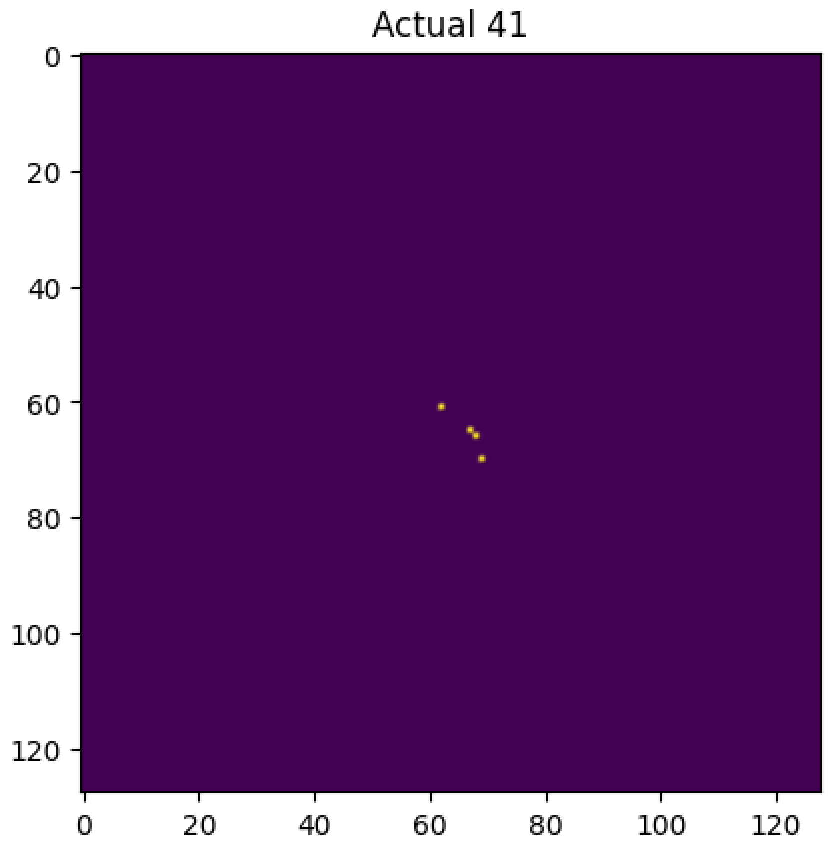
Actual 41
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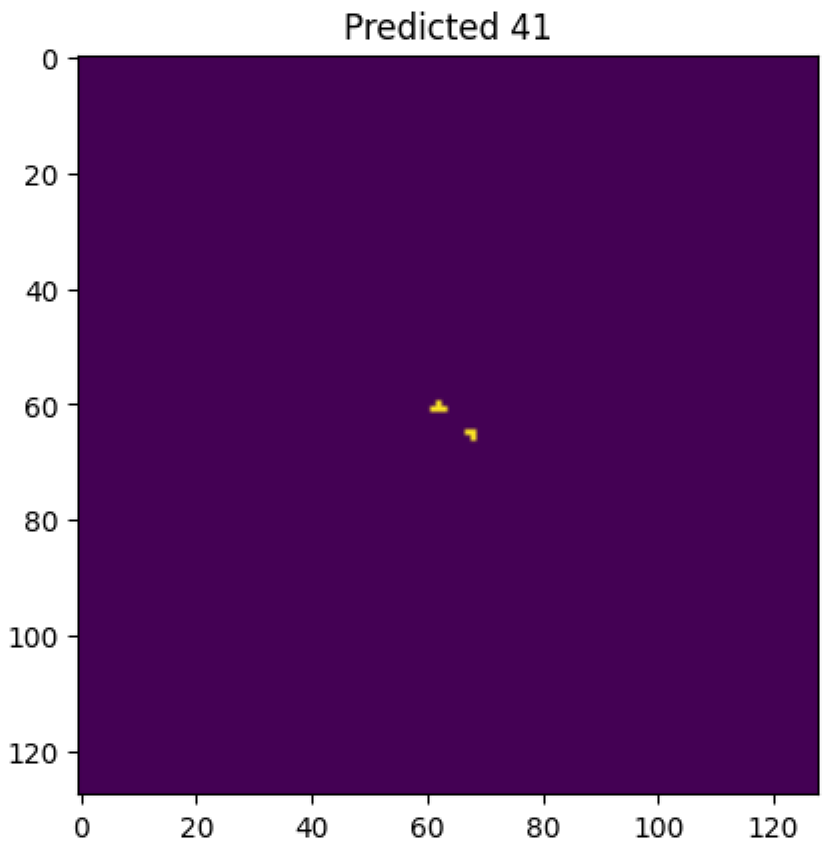
Predicted 41
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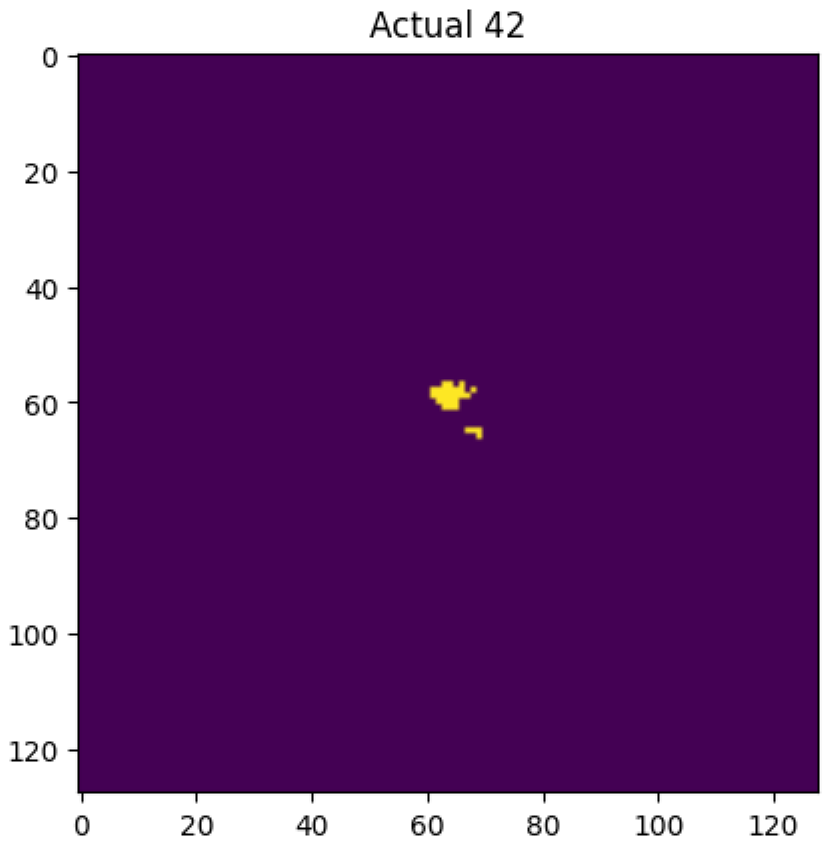
Actual 42
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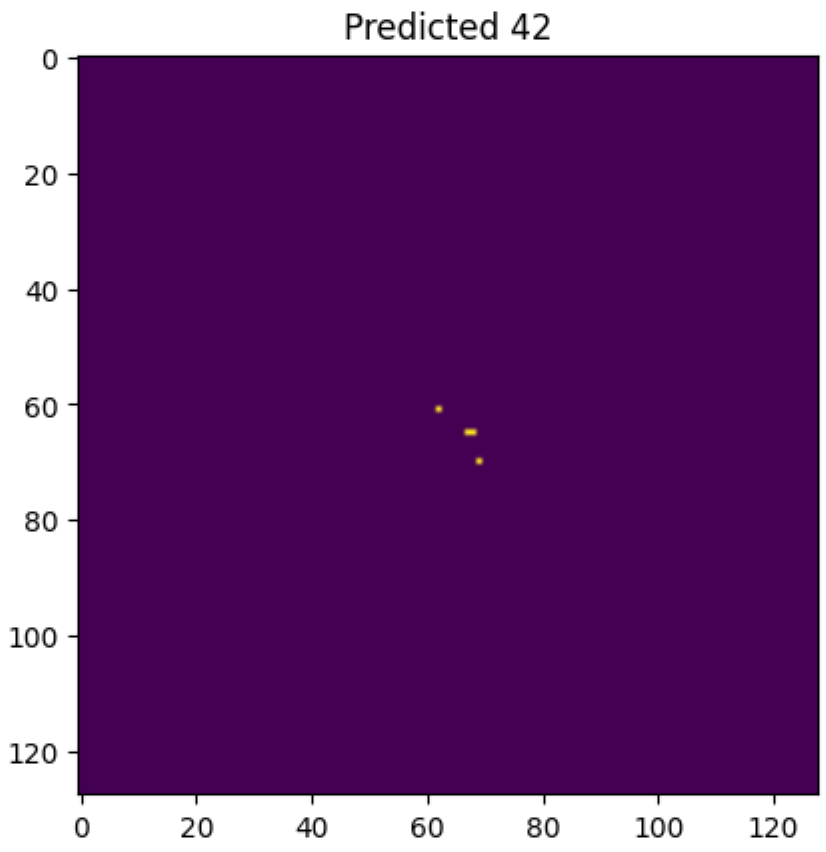
100
120


Predicted 42
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0
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100
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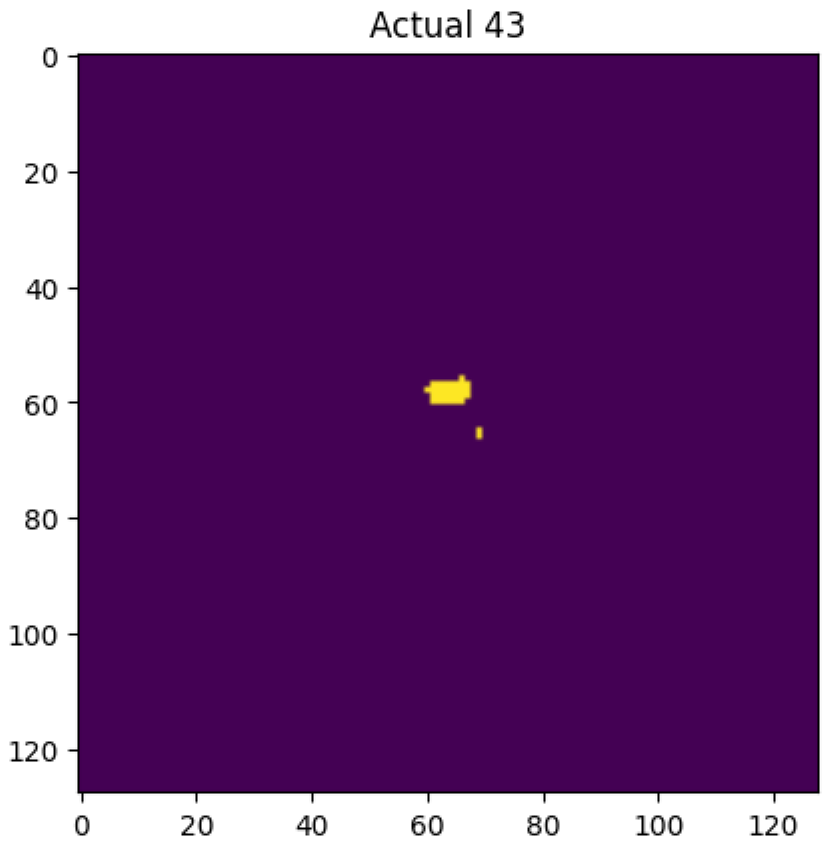
Actual 43
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60
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100
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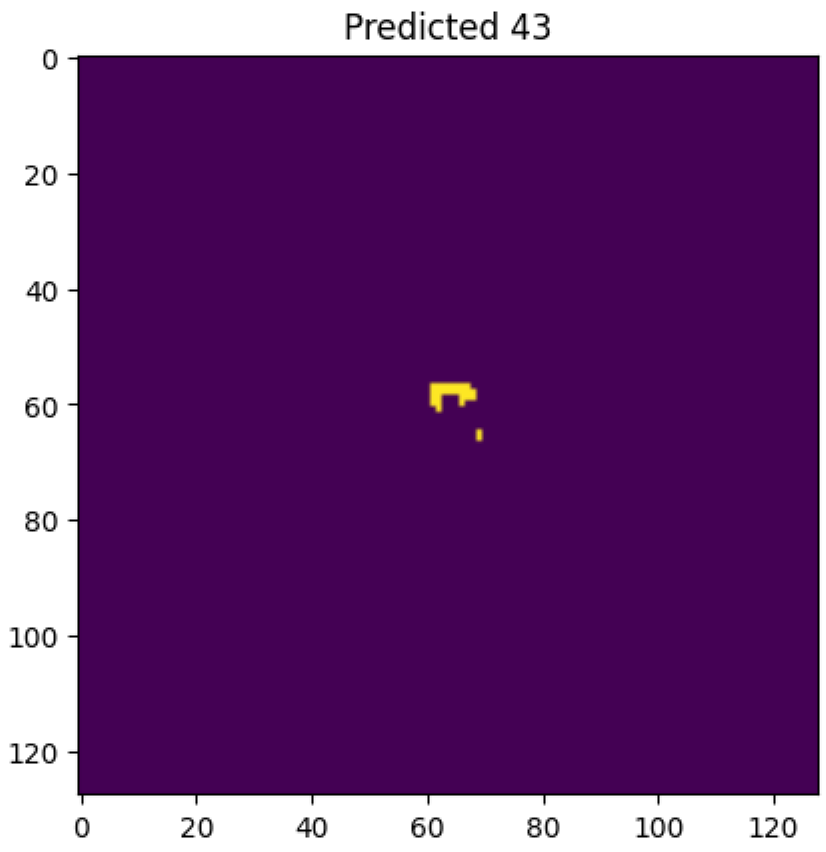
Predicted 43
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0
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60
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100
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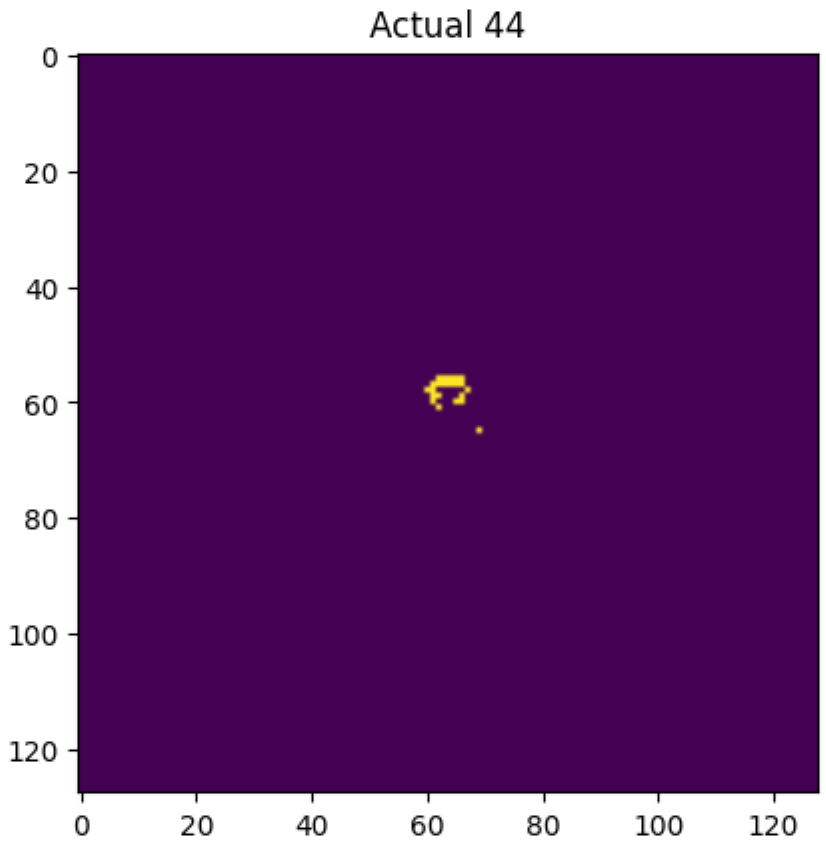
Actual 44
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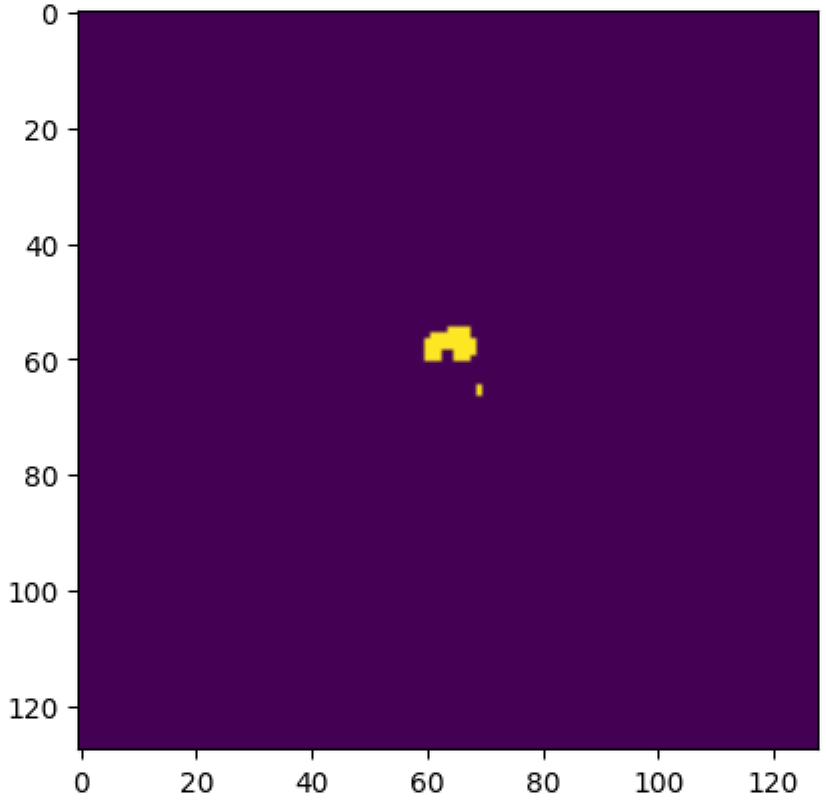
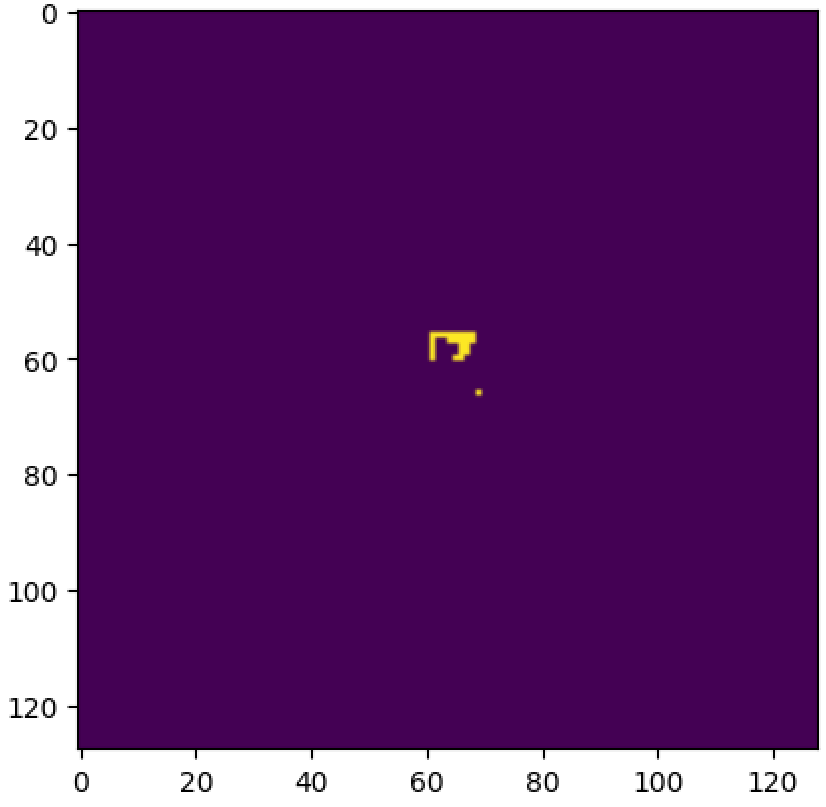
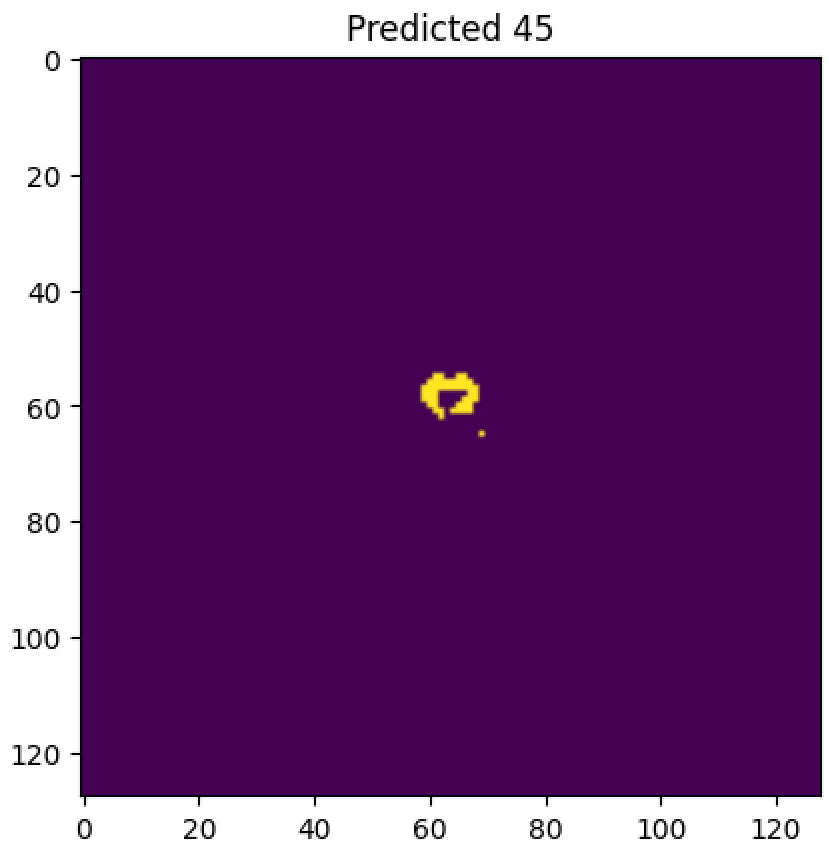
100
120
0
20
40
60
80
100
120

Predicted 44



Actual 45




Predicted 45
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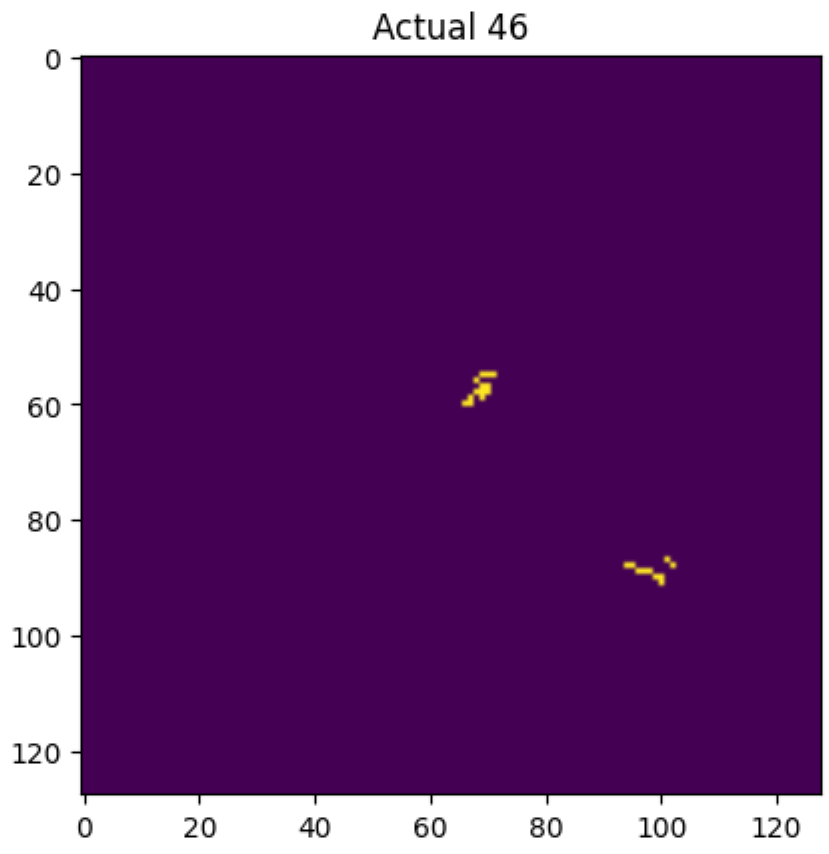
Actual 46
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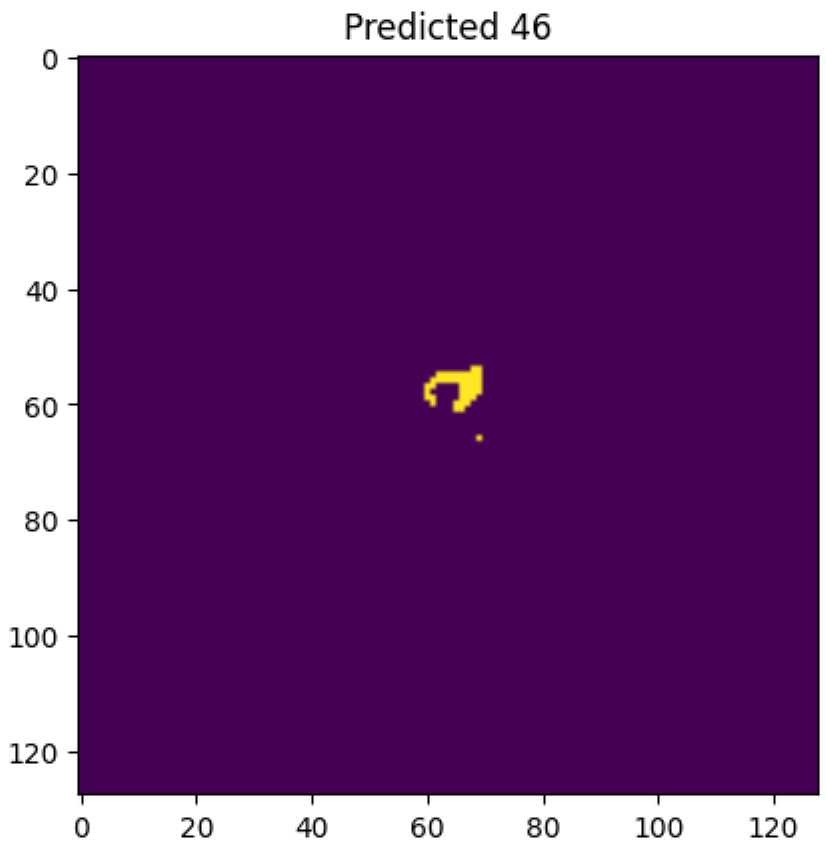
Predicted 46
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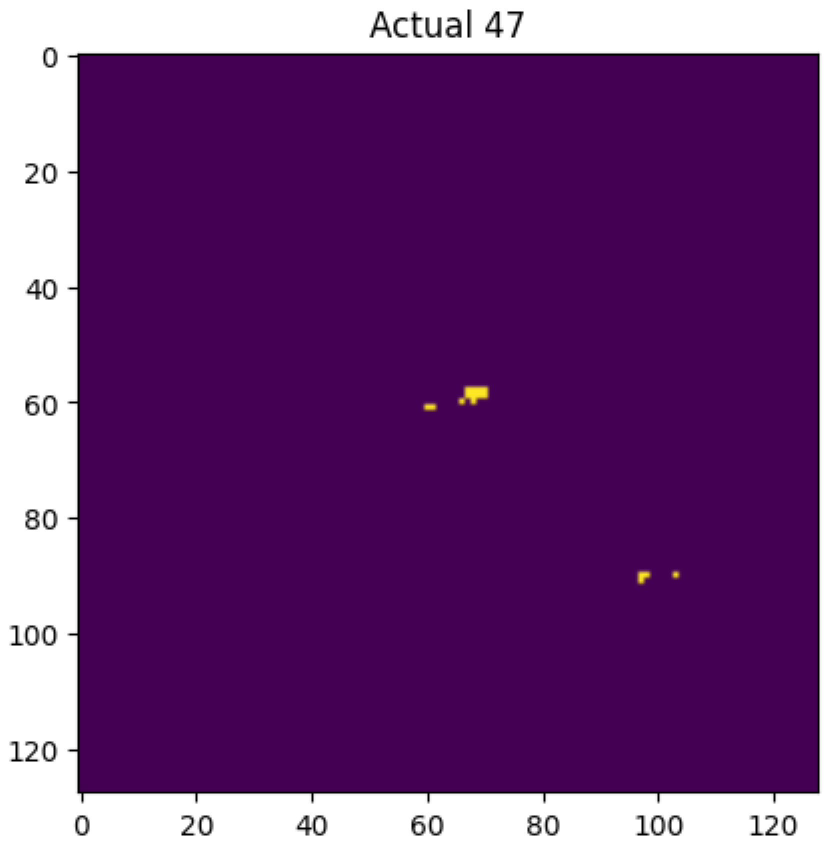
Actual 47
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0
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60
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100
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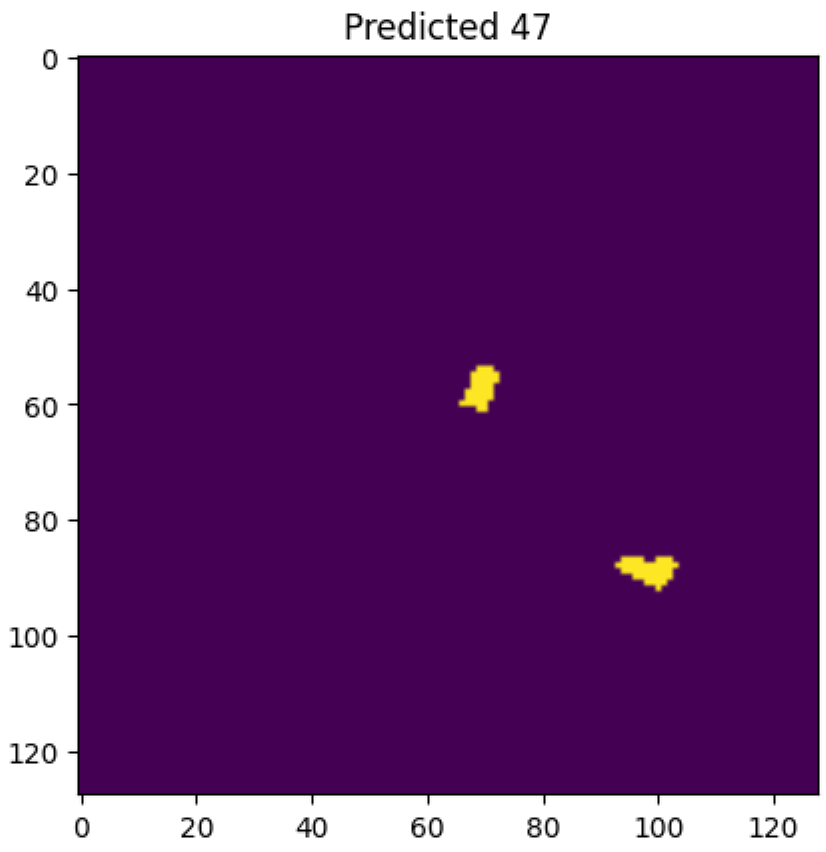
Predicted 47
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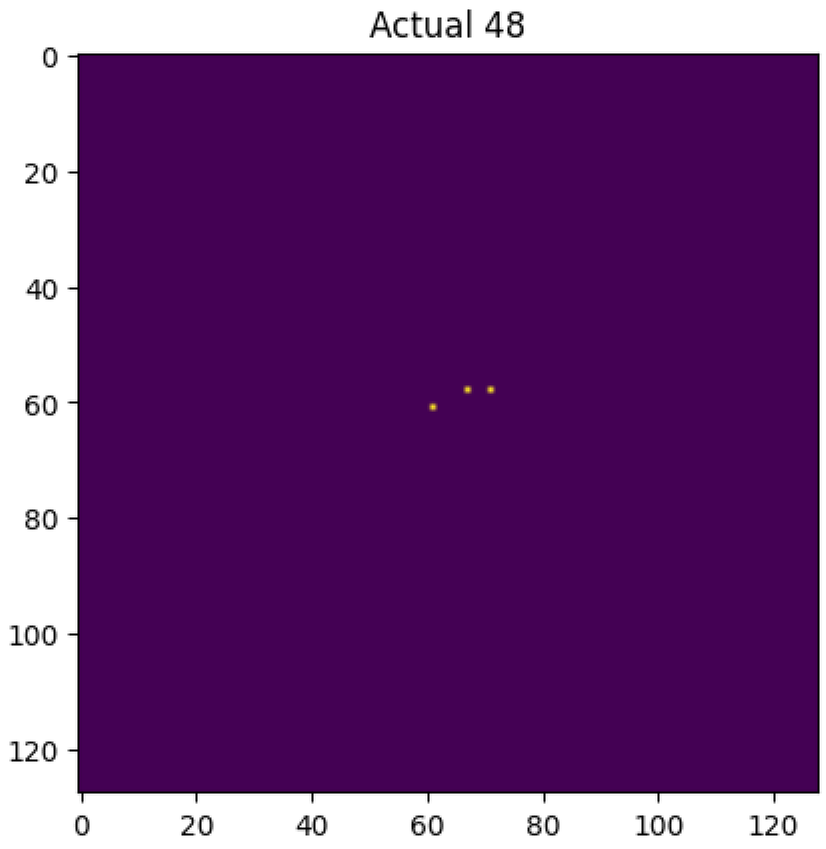
Actual 48
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60
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100
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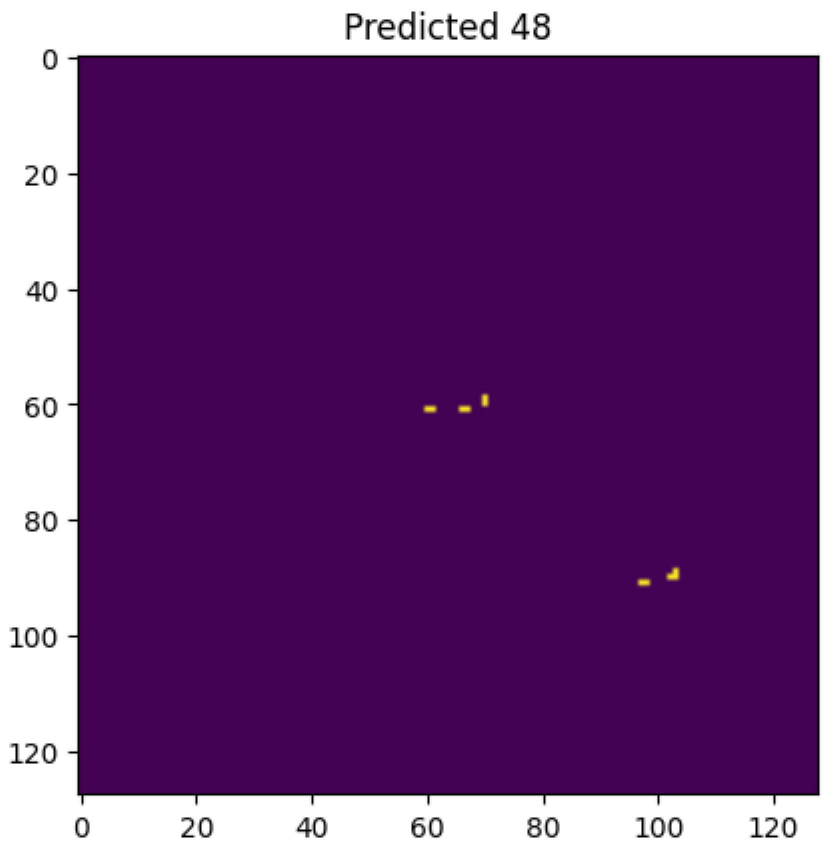
Predicted 48
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100
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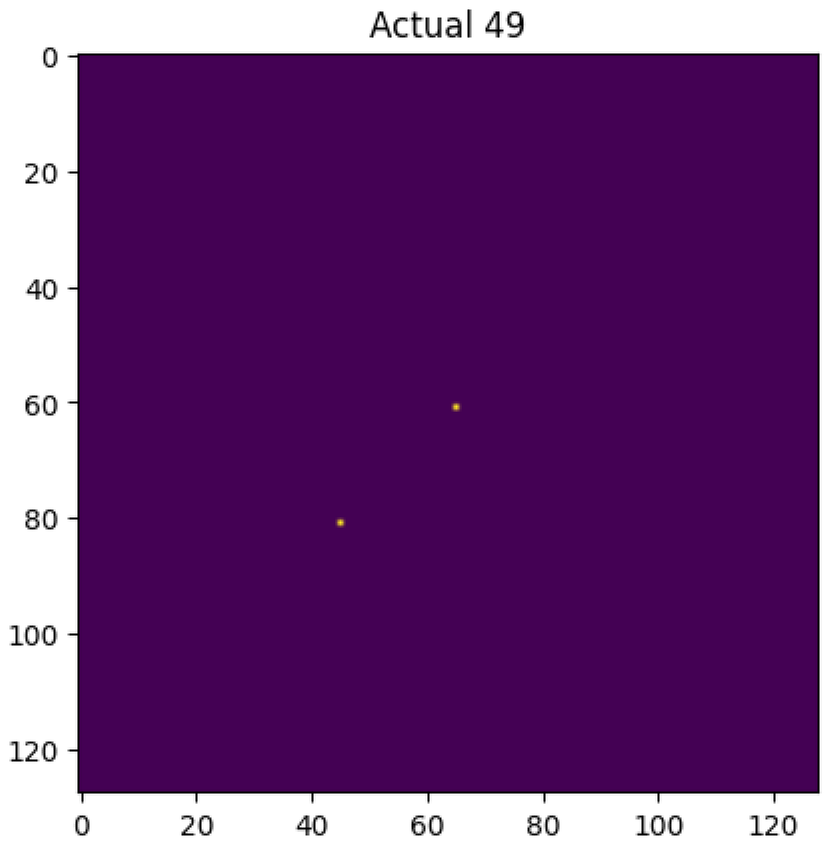
Actual 49
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80
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60
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100
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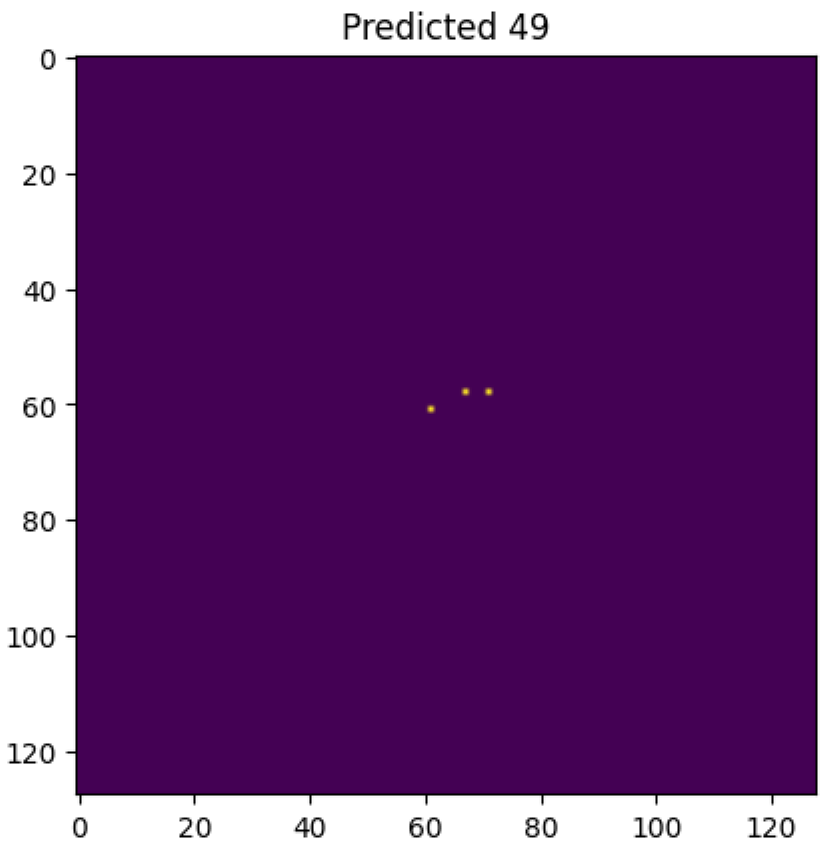
Predicted 49
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60
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100
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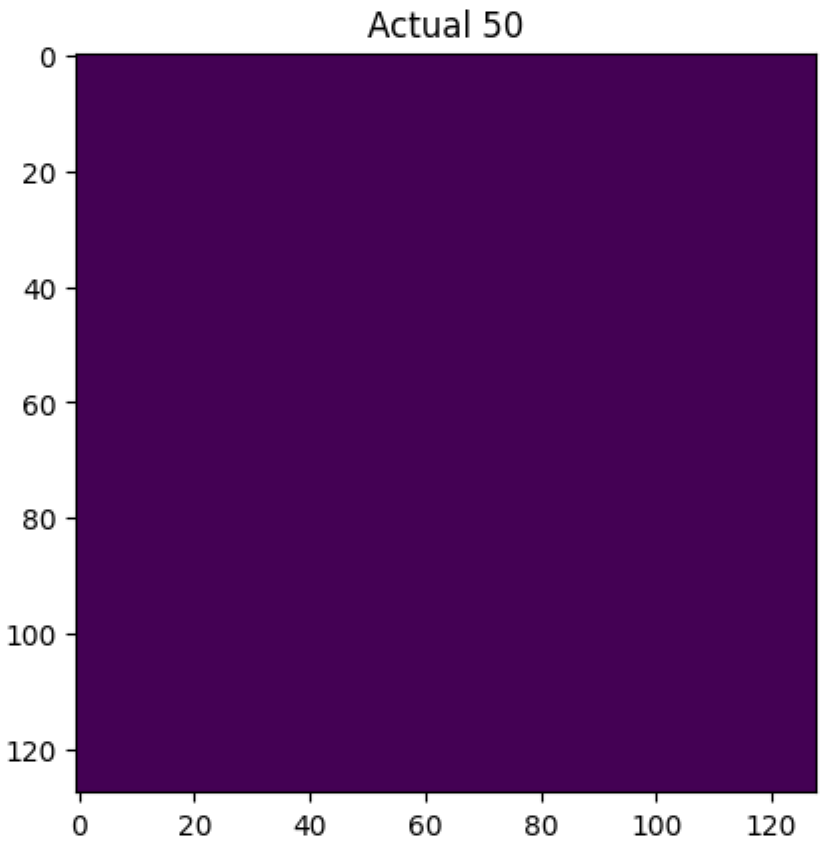
Actual 50
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80
100
120
0
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100
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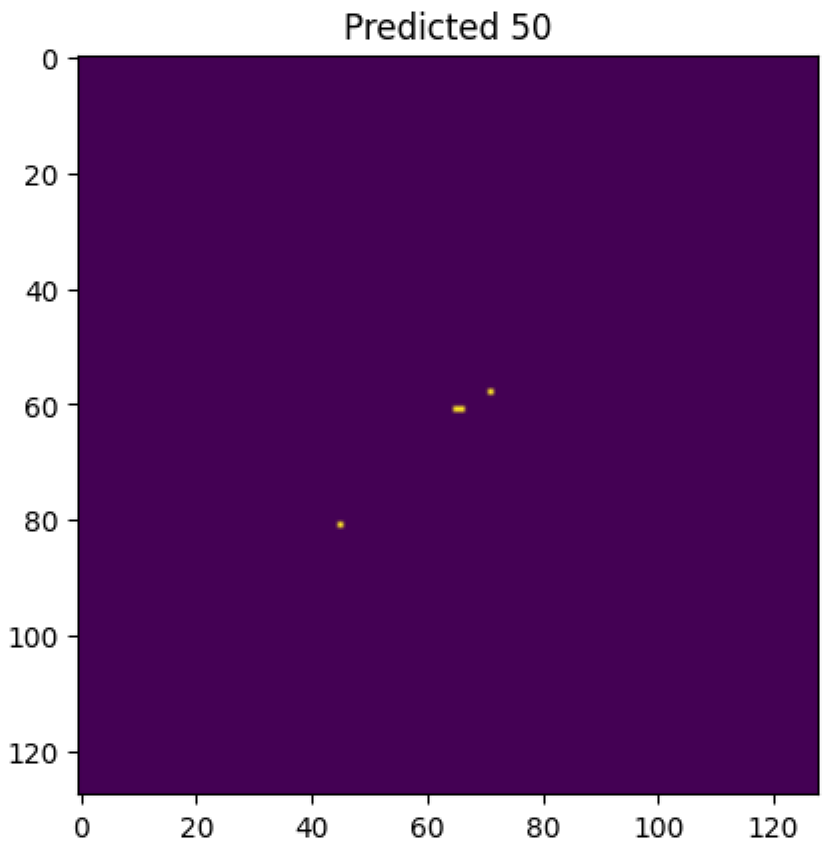
Predicted 50
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60
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100
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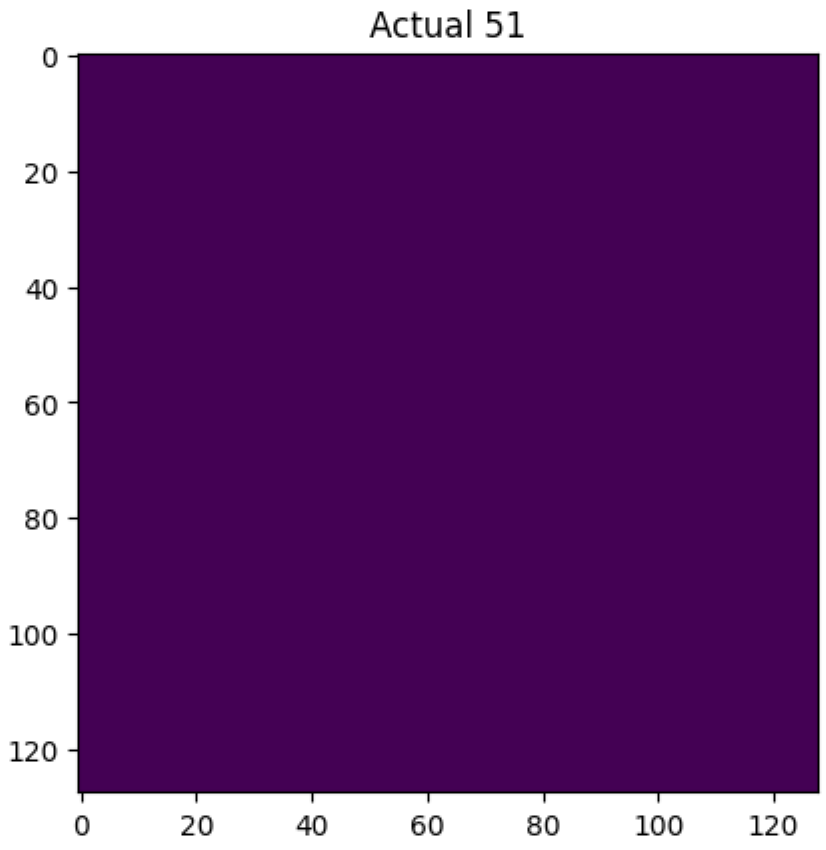
Actual 51
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60
80
100
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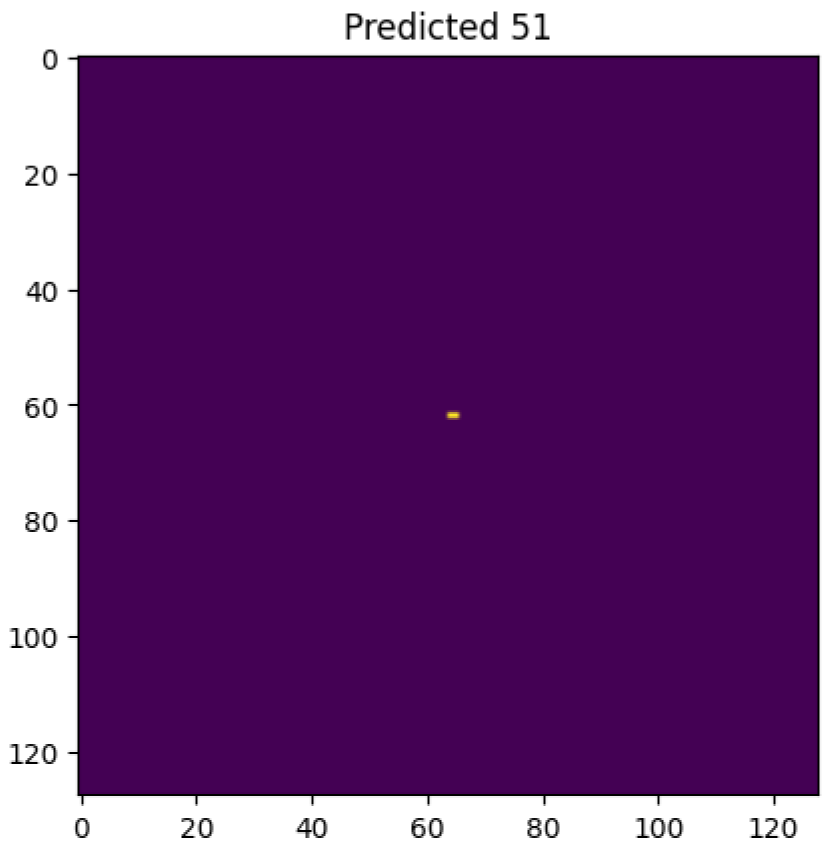
Predicted 51
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80
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0
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60
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100
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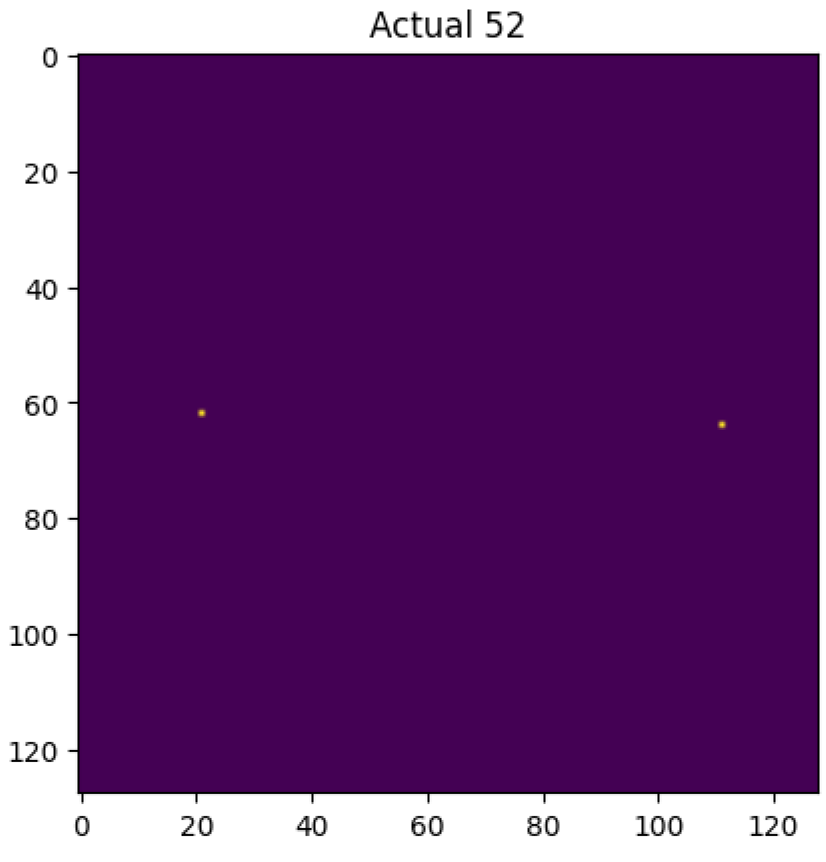
Actual 52
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80
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0
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60
80
100
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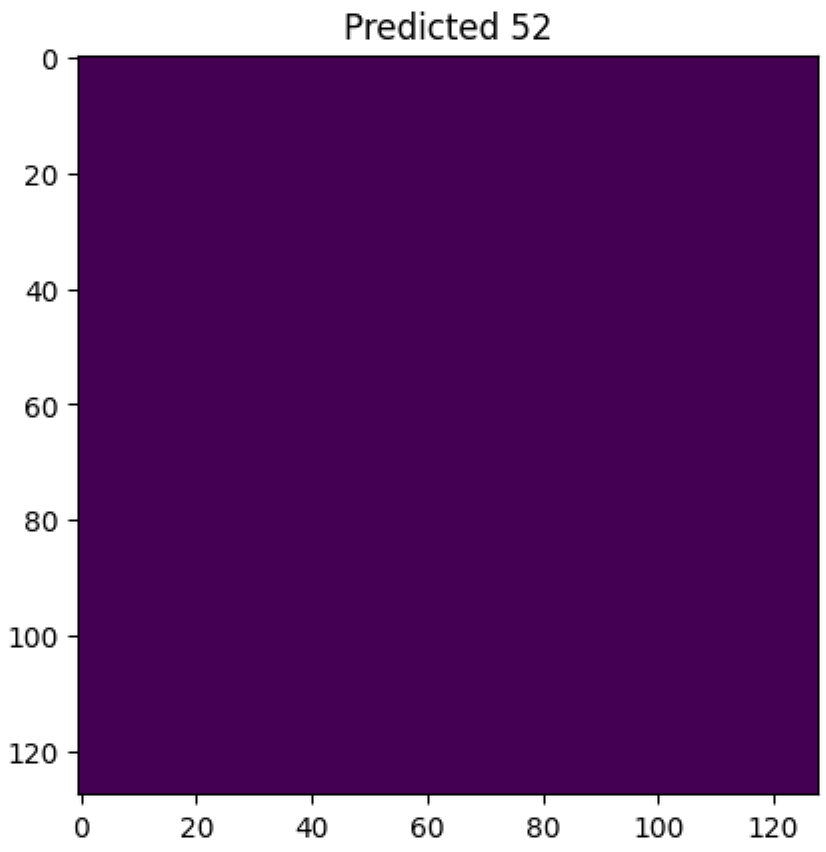
Predicted 52
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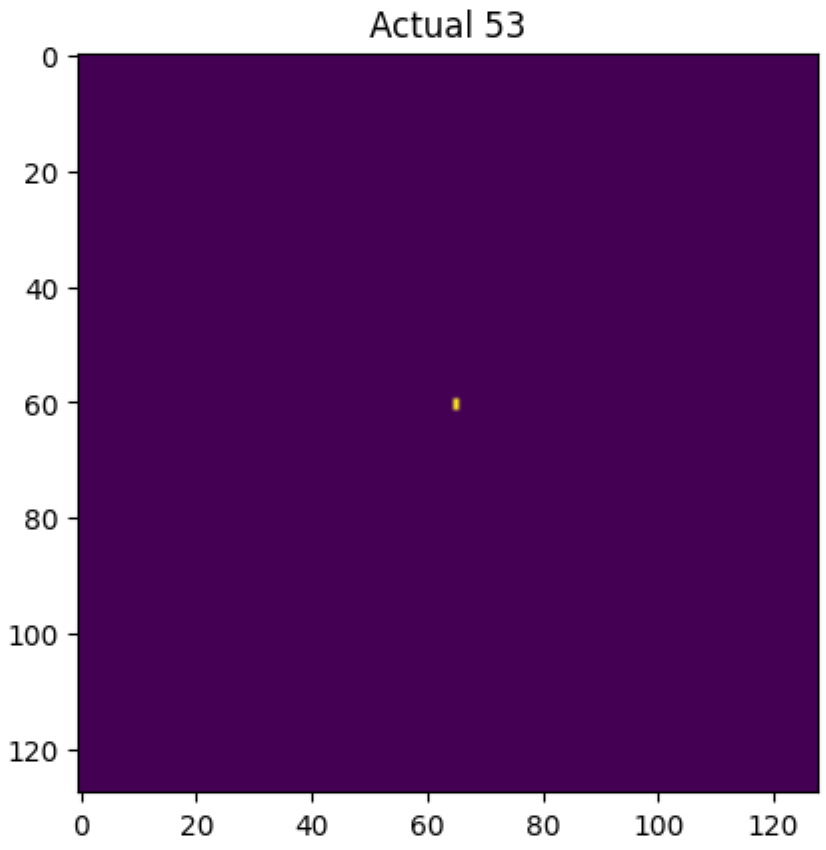
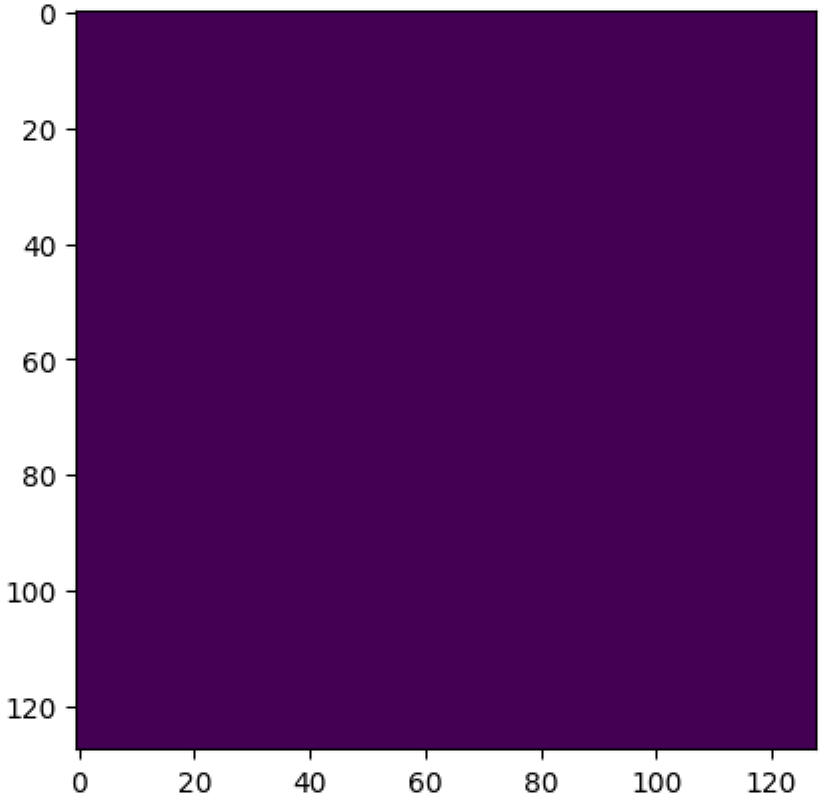
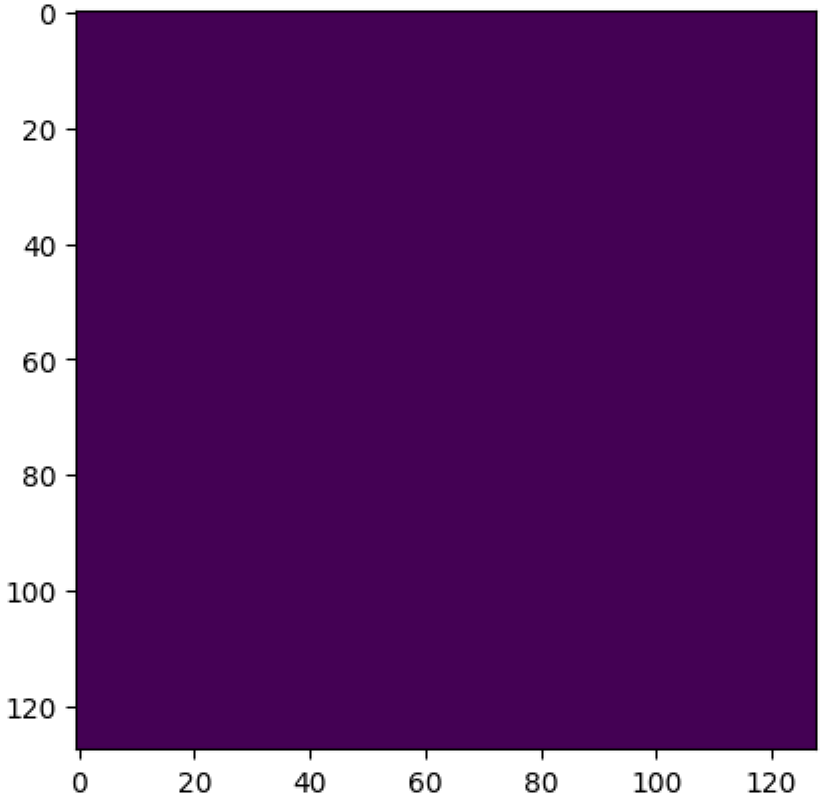
80
100
120

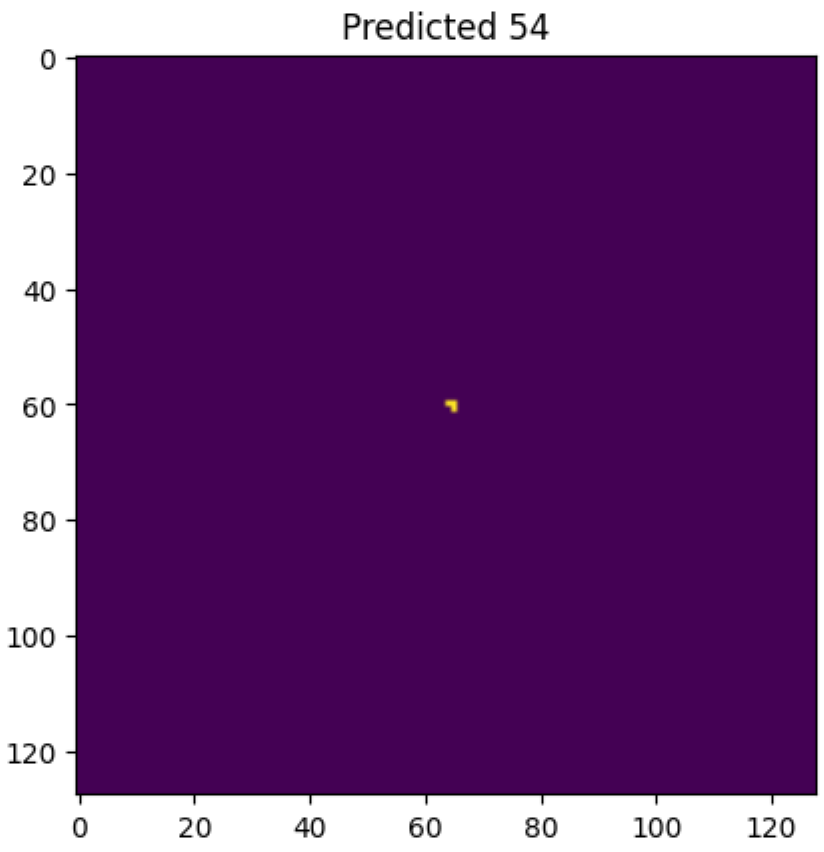

Actual 53
0
20
40
60
80
100
120

Predicted 53



Actual 54




Predicted 54
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60
80
100
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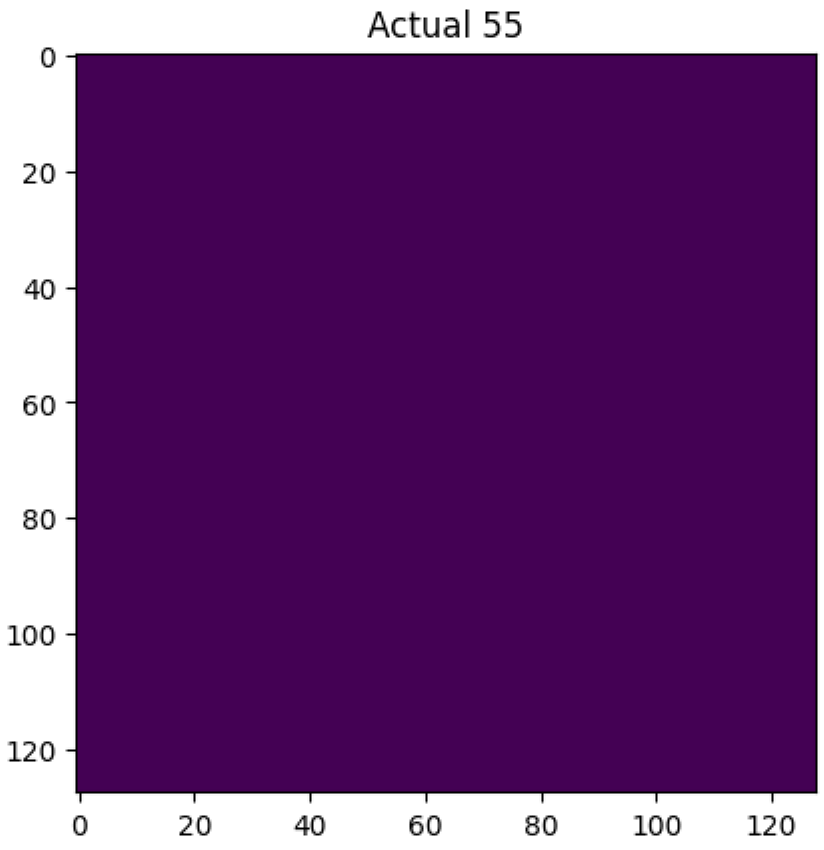
Actual 55
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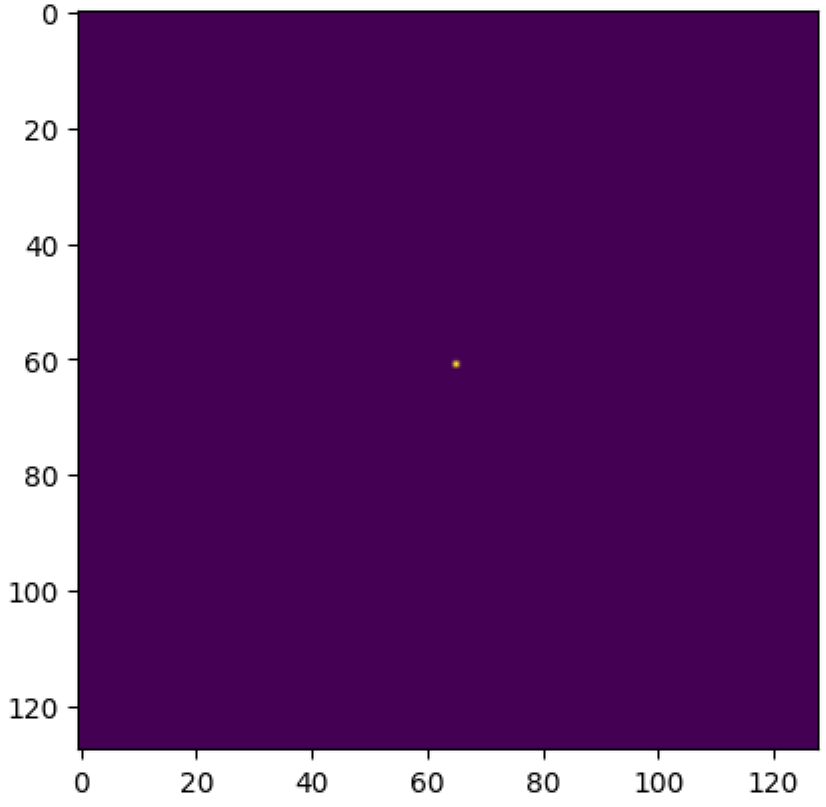
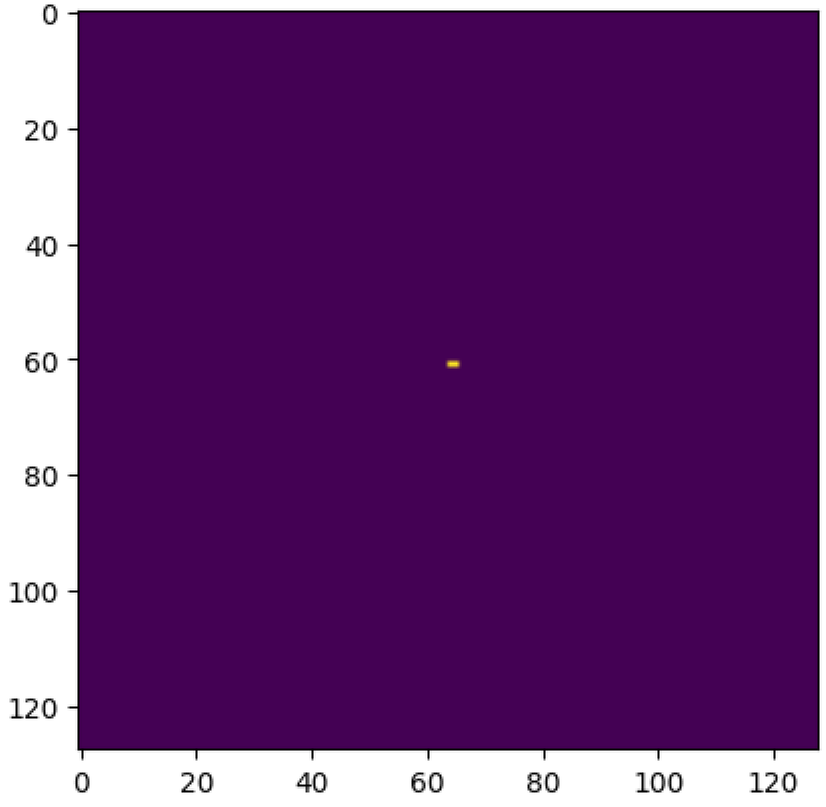
80
100
120
0
20
40
60
80
100
120

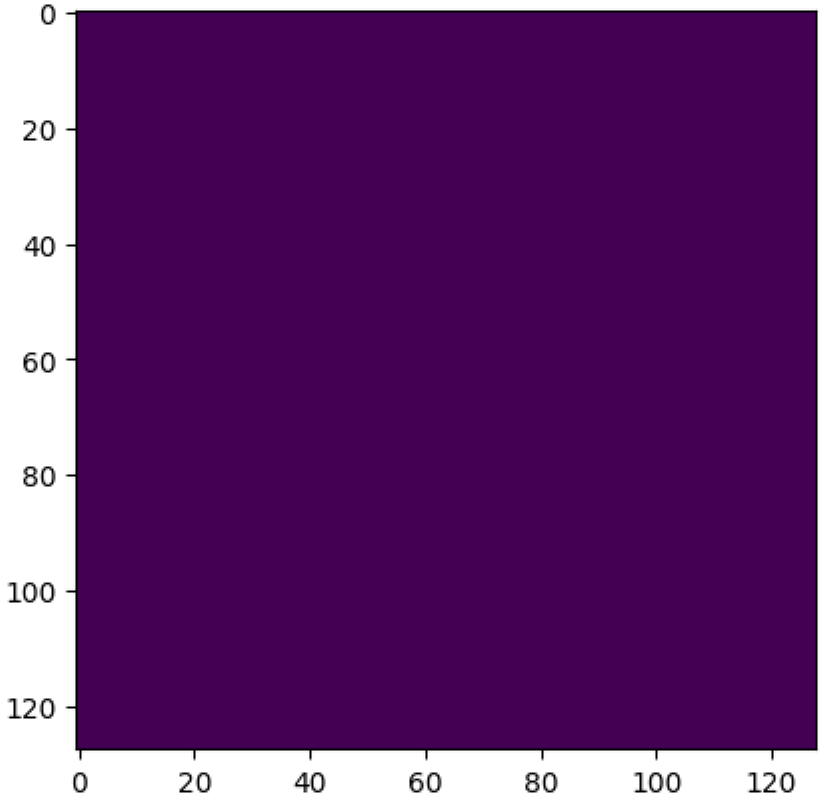
Predicted 55



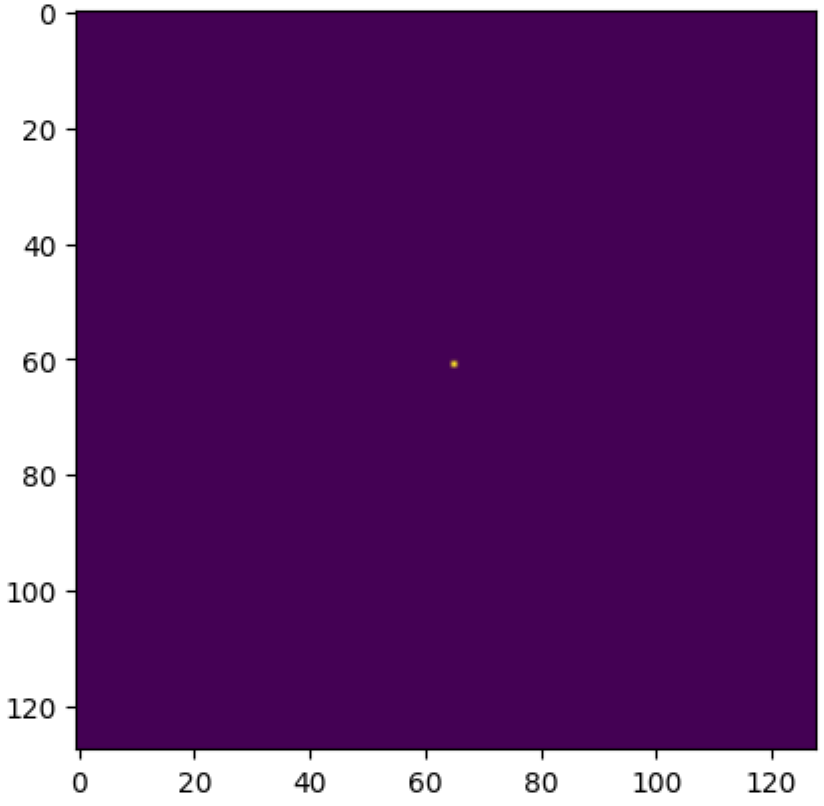
Actual 56

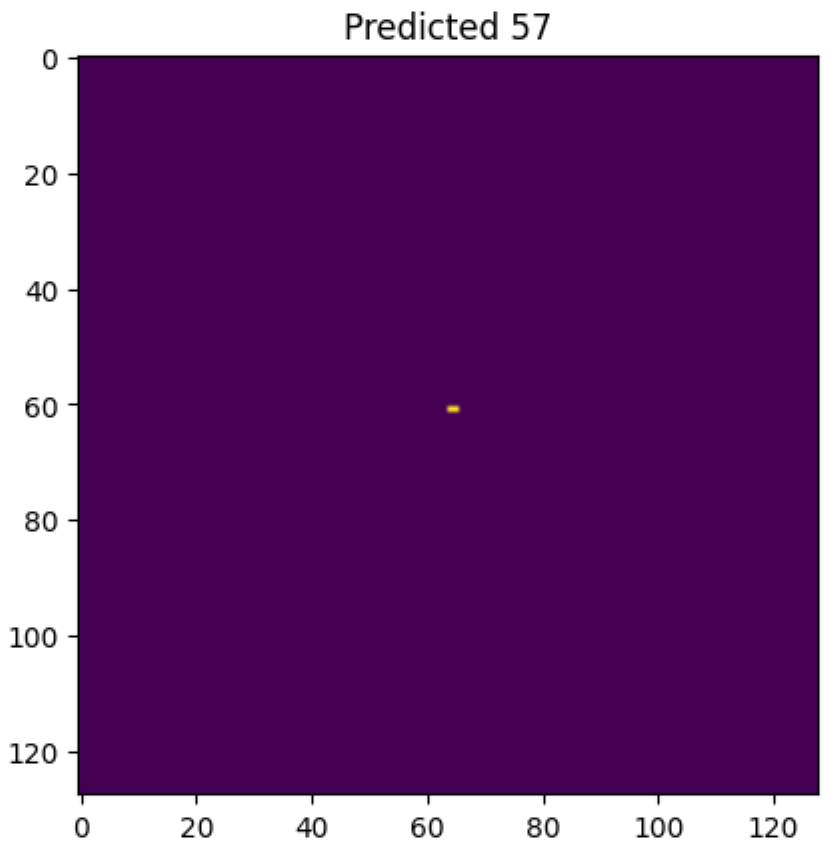


Predicted 56



Actual 57




Predicted 57
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100
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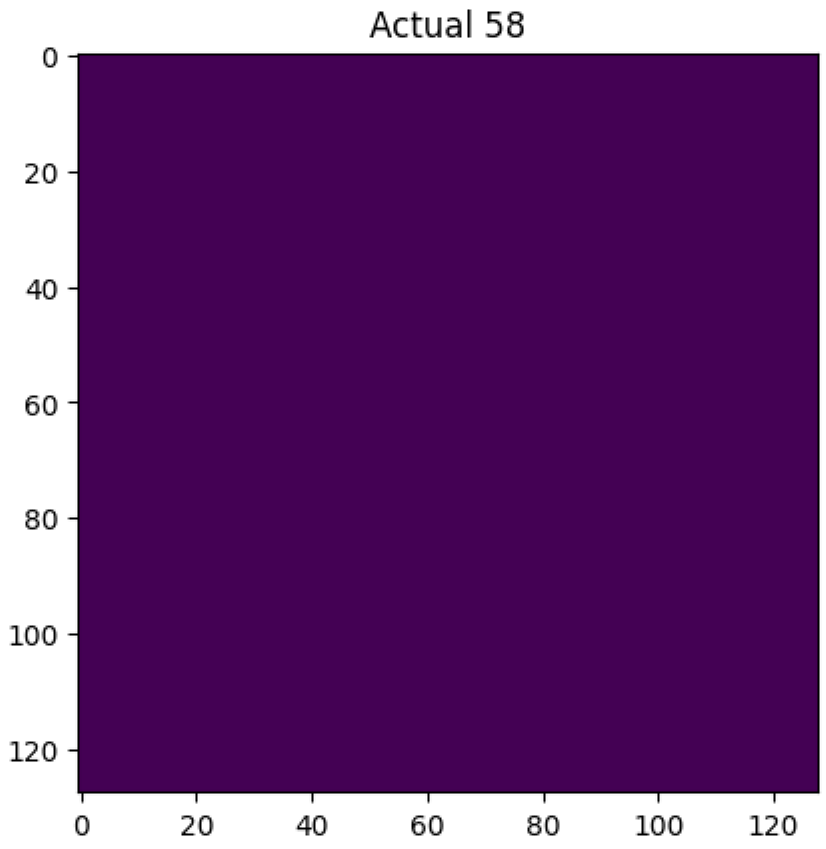
Actual 58
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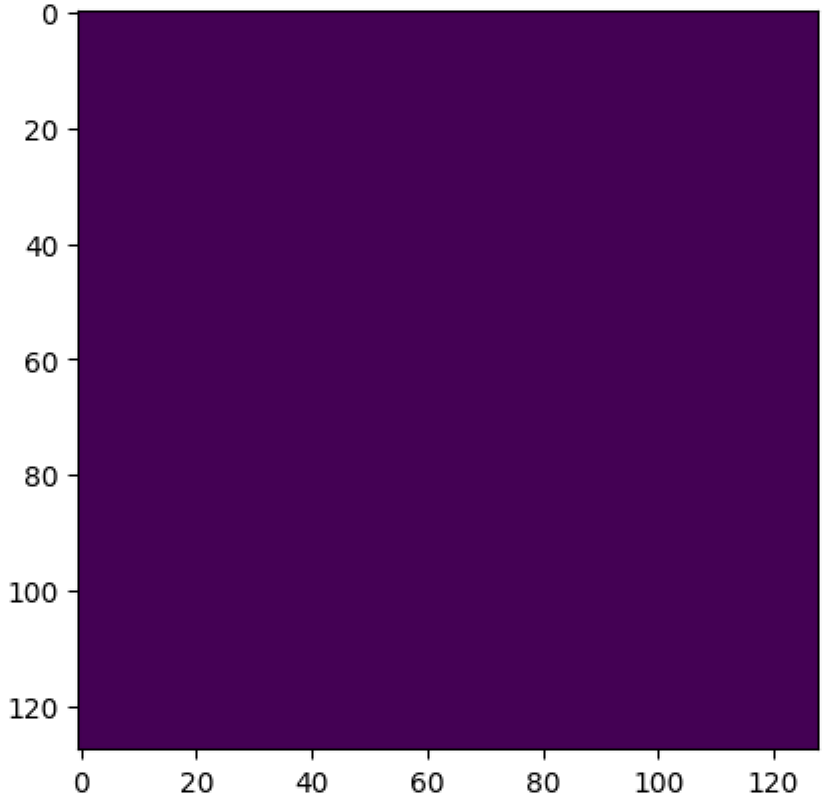
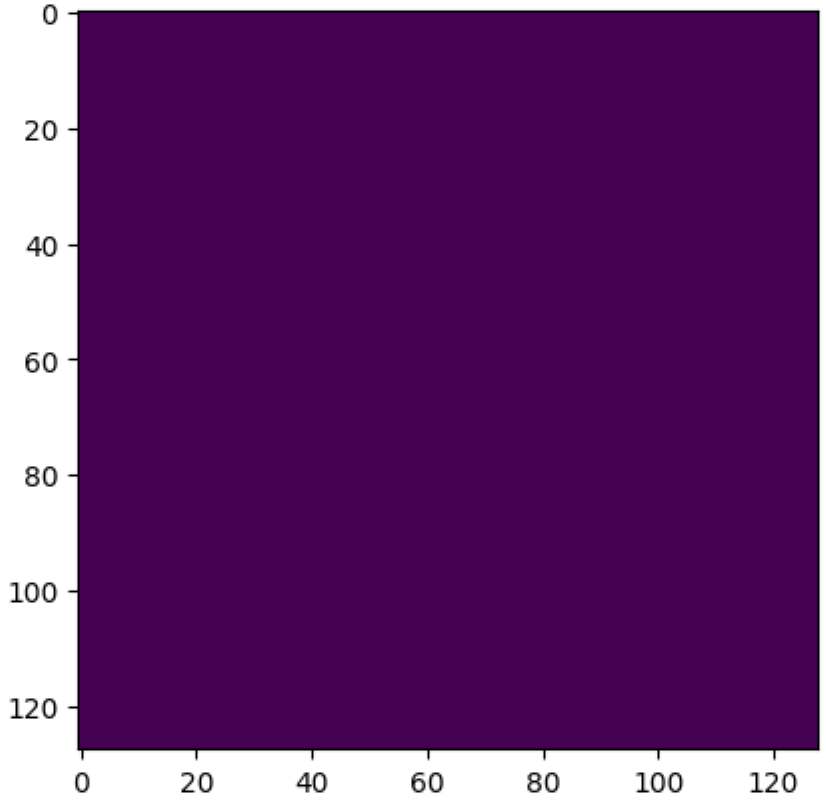
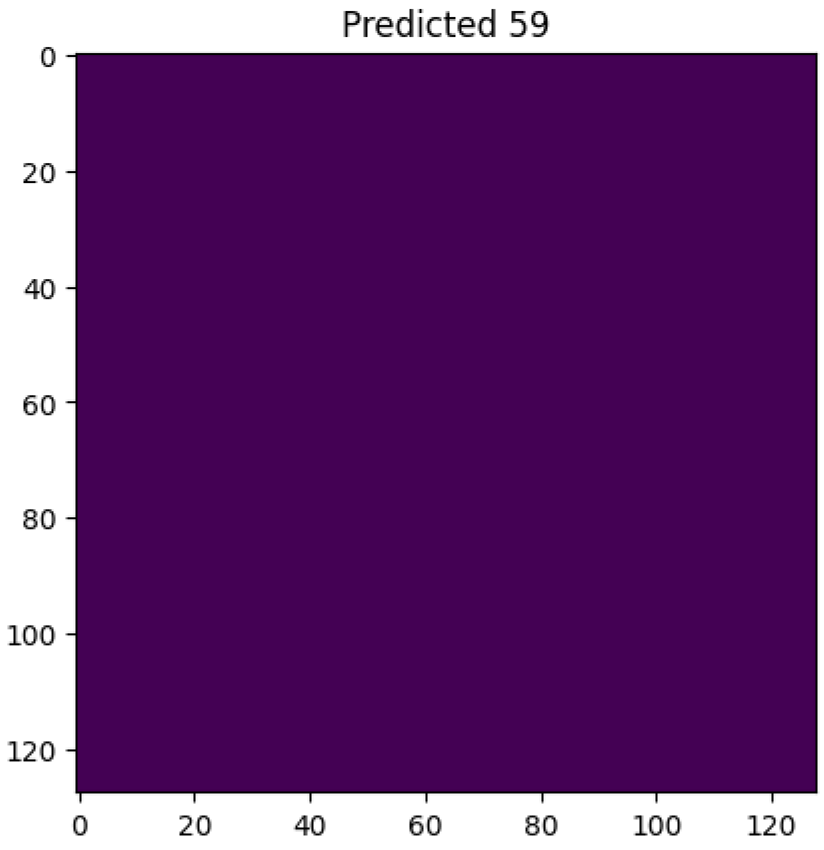
40
60
80
100
120

Predicted 58



Actual 59




Predicted 59
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60
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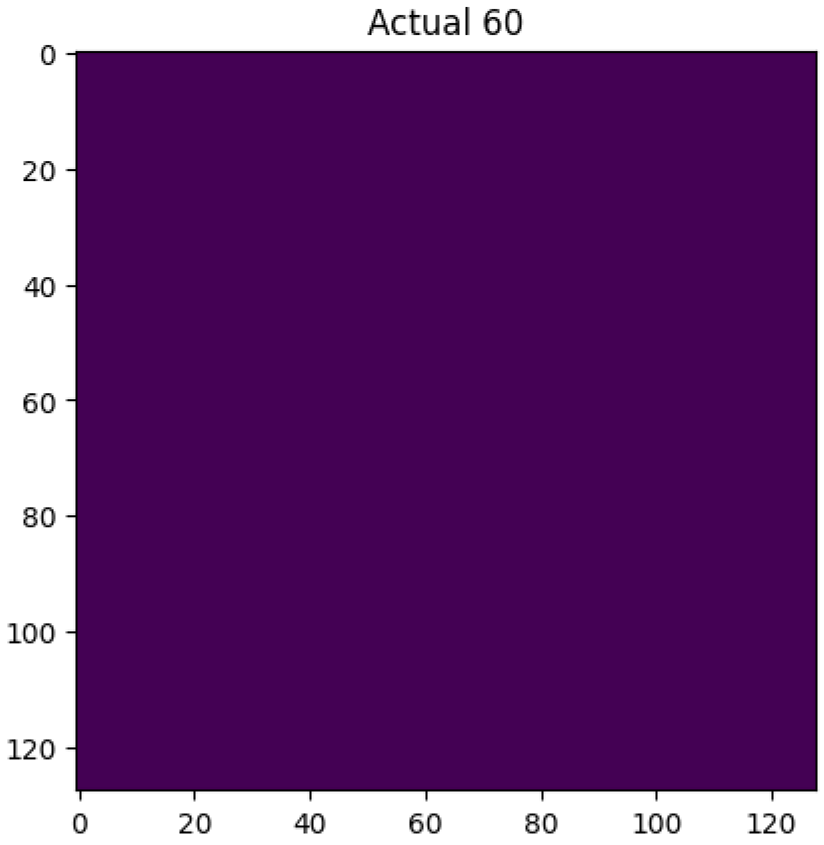
100
120


Actual 60
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100
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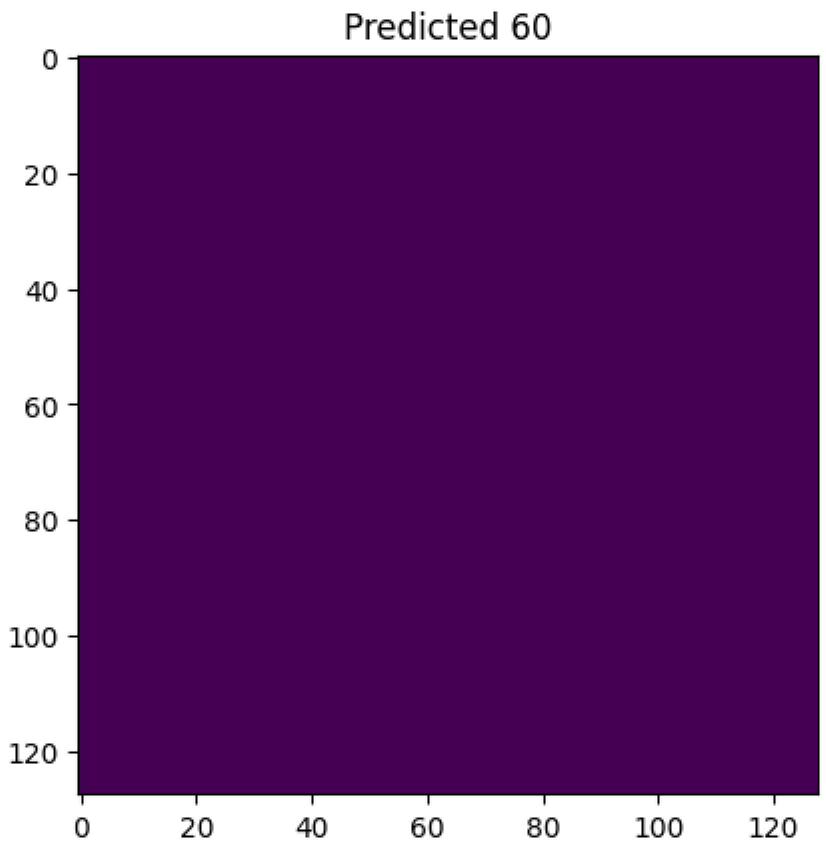
Predicted 60
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80
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0
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60
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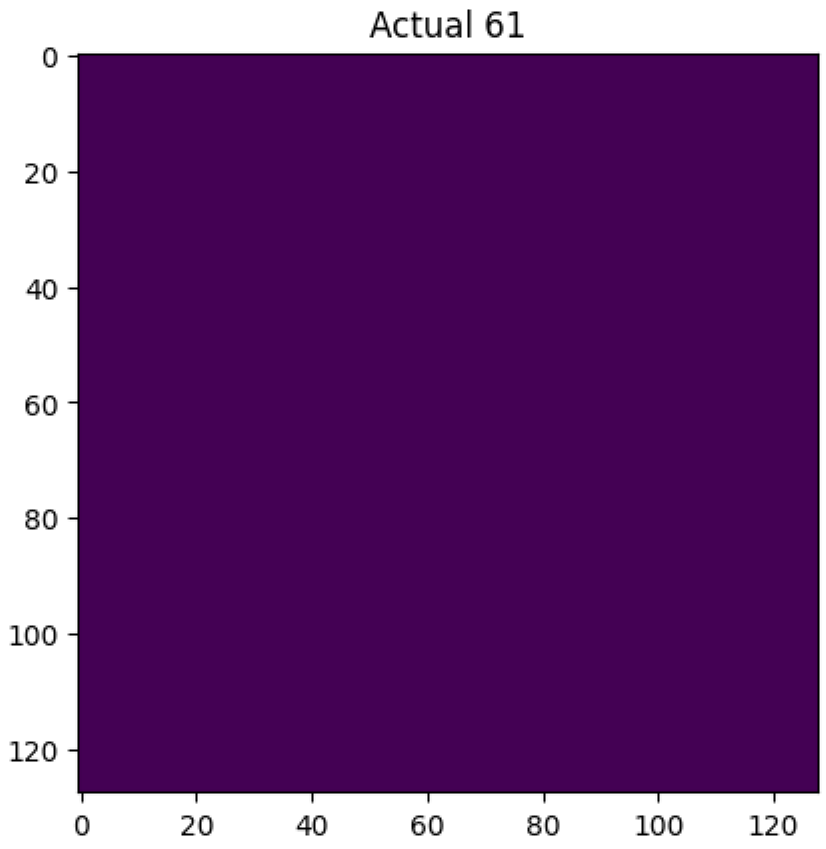
Actual 61
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0
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40
60
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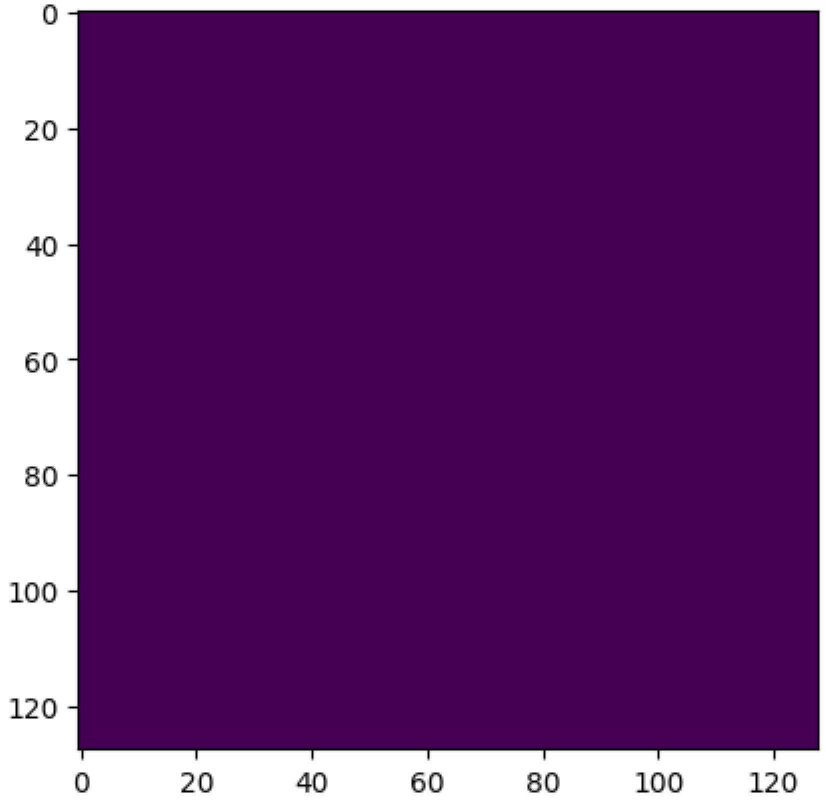
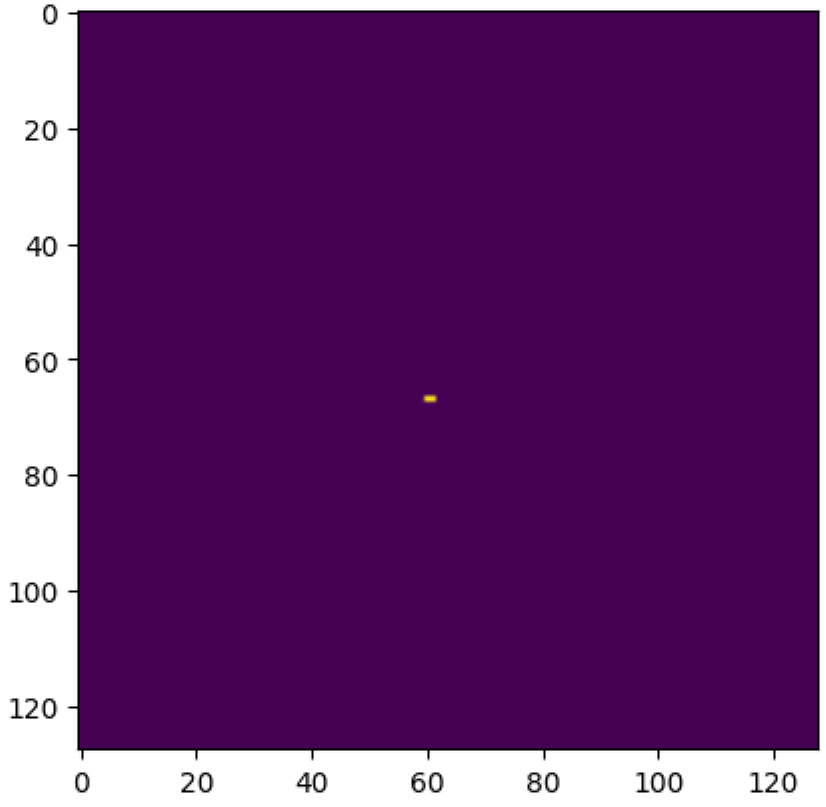
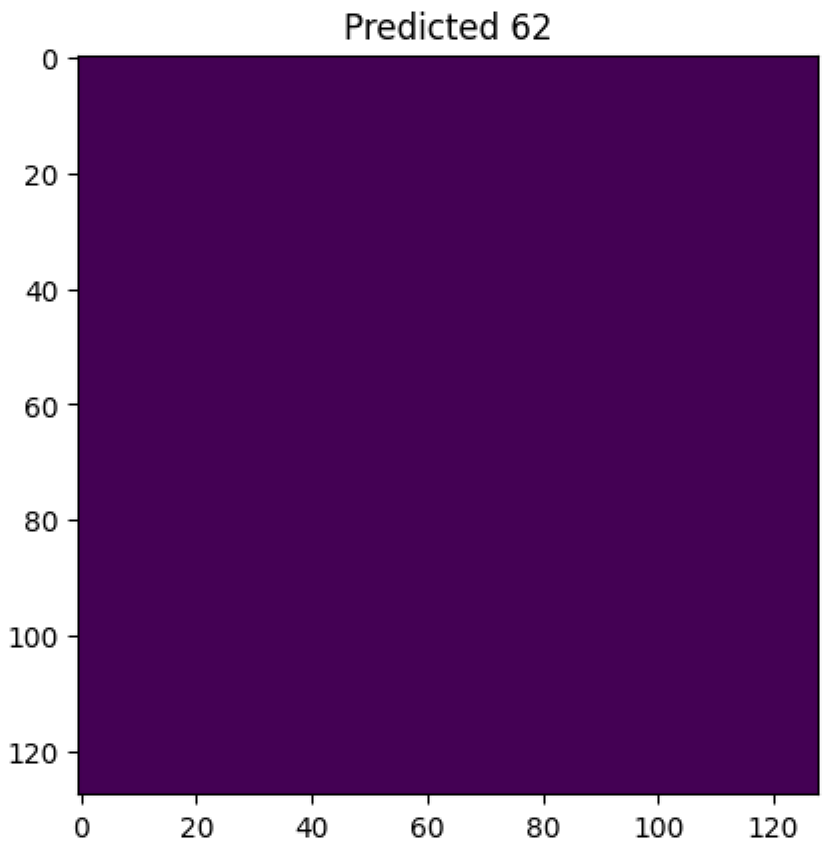
100
120

Predicted 61



Actual 62




Predicted 62
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60
80
100
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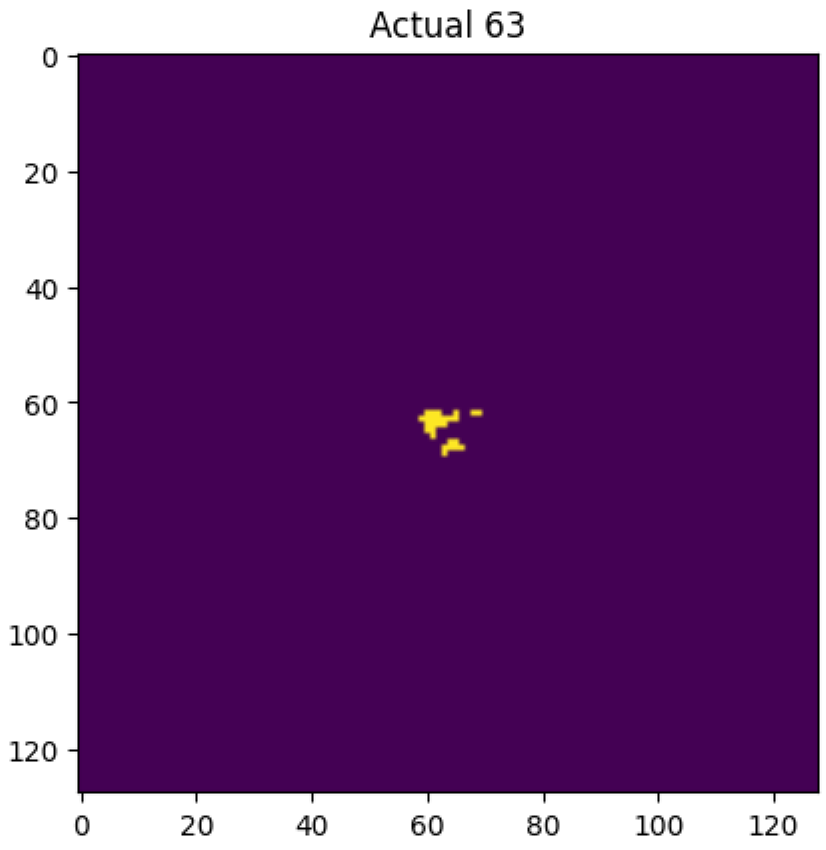
Actual 63
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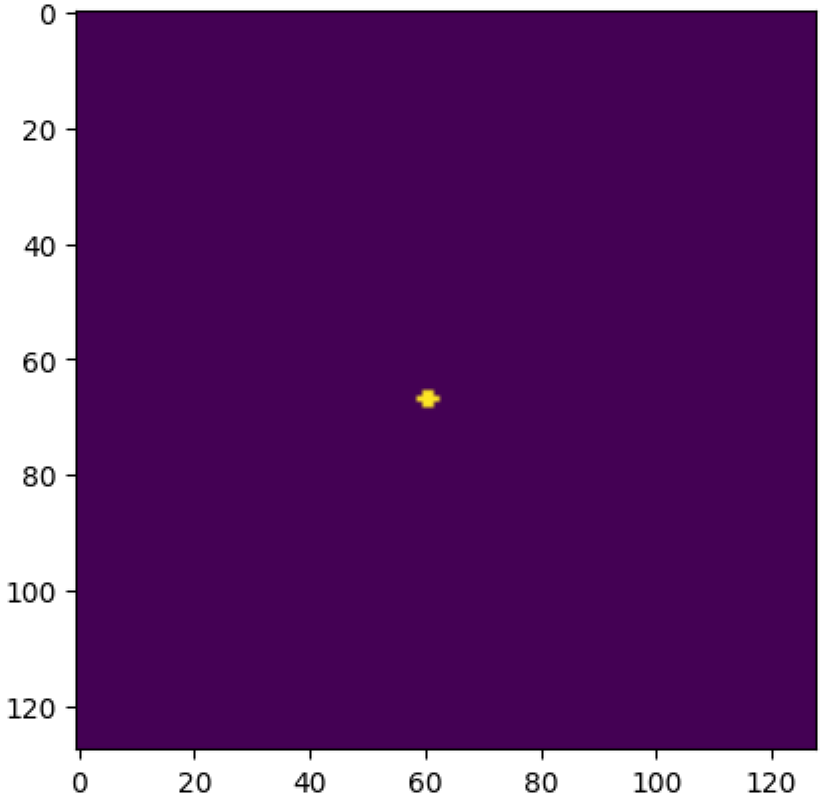
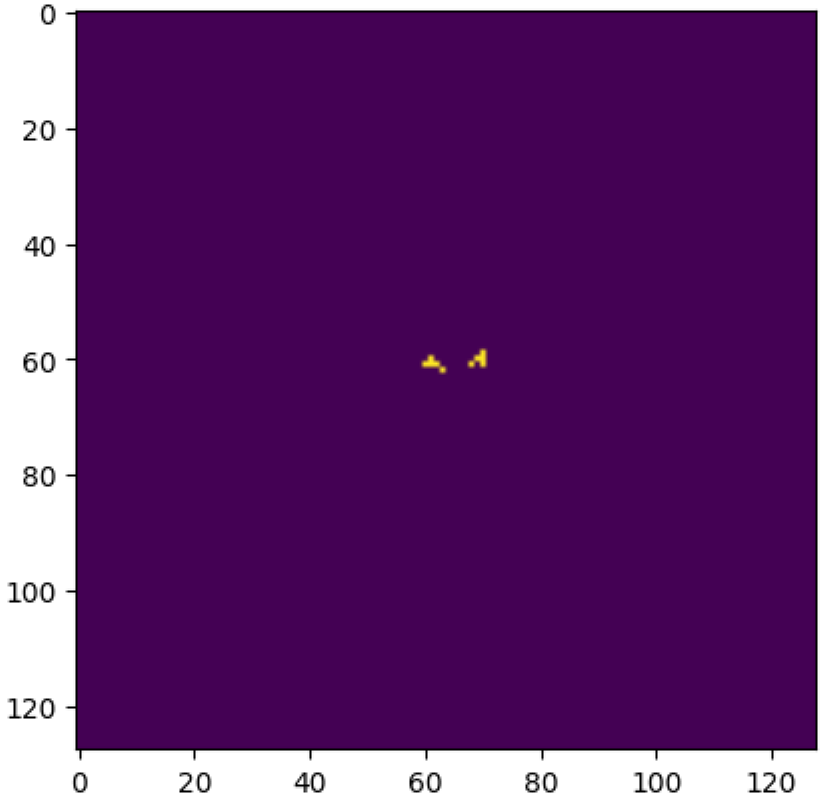
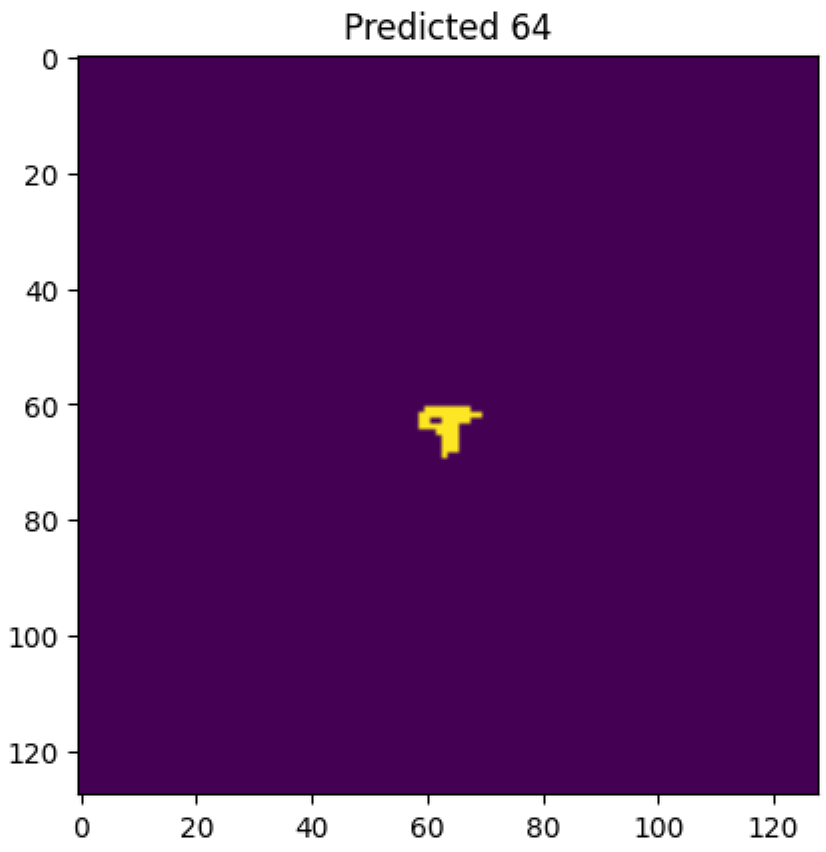
0
20
40
60
80
100
120

Predicted 63



Actual 64




Predicted 64
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100
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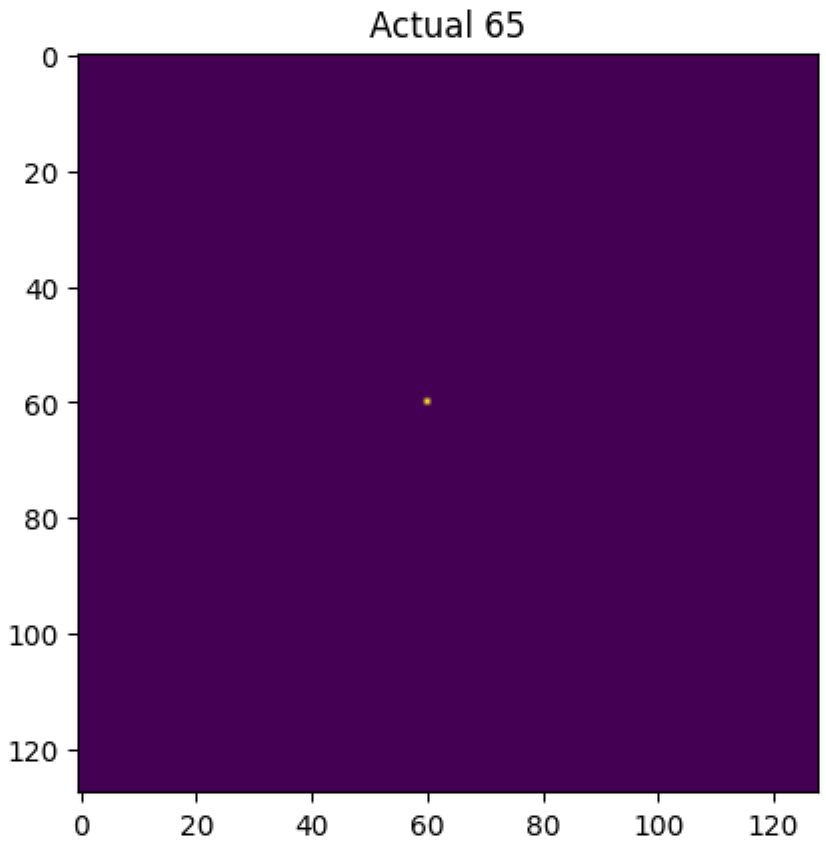
Actual 65
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100
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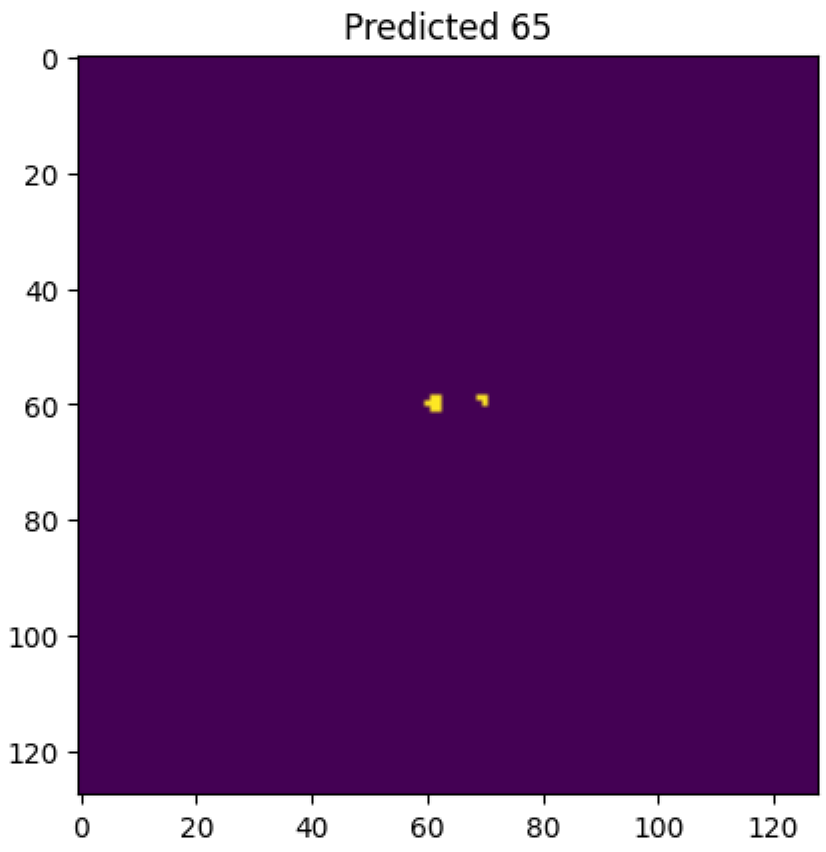
Predicted 65
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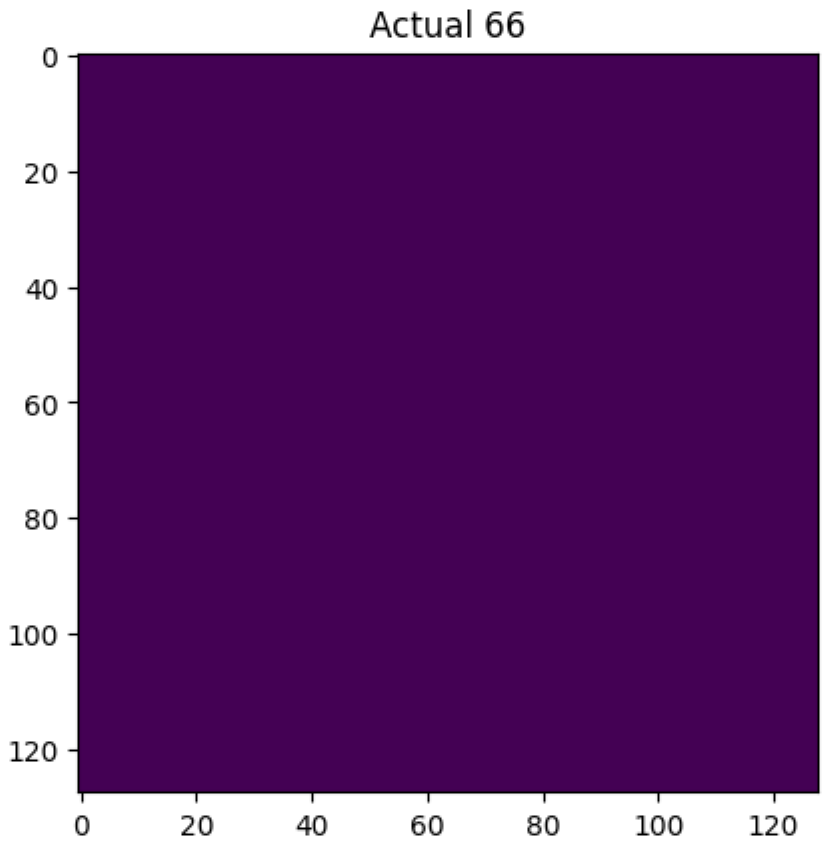
Actual 66
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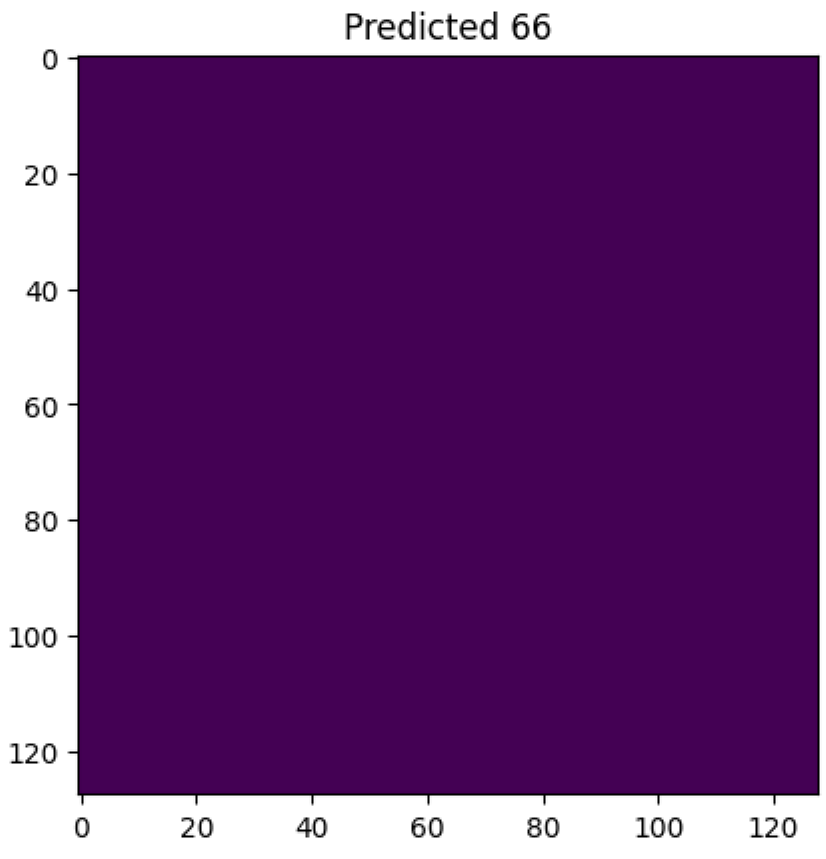
Predicted 66
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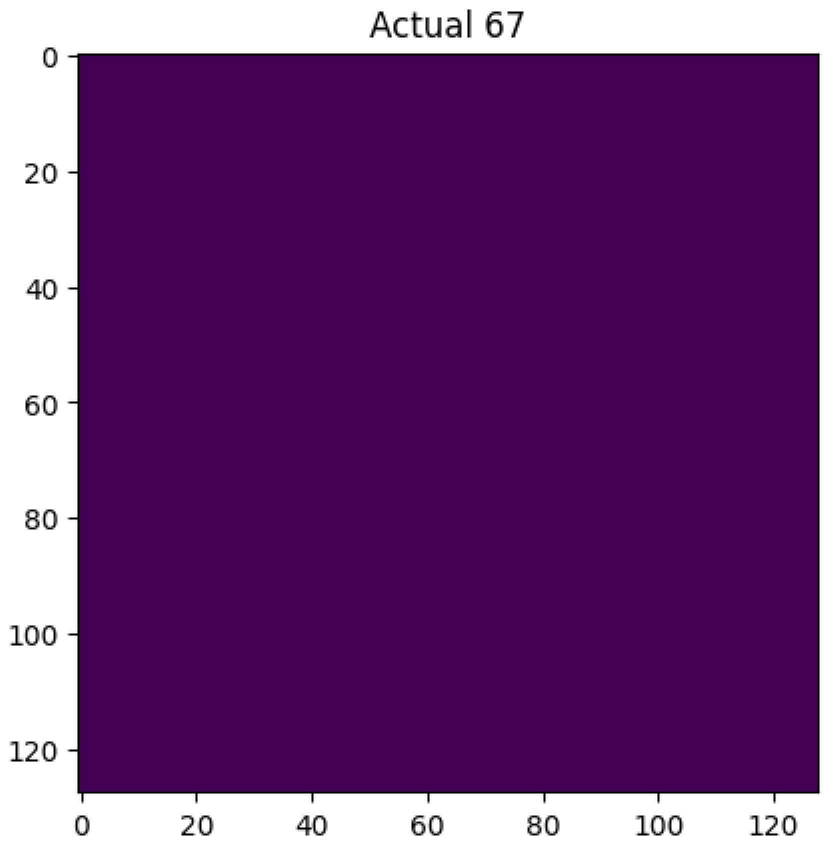
Actual 67
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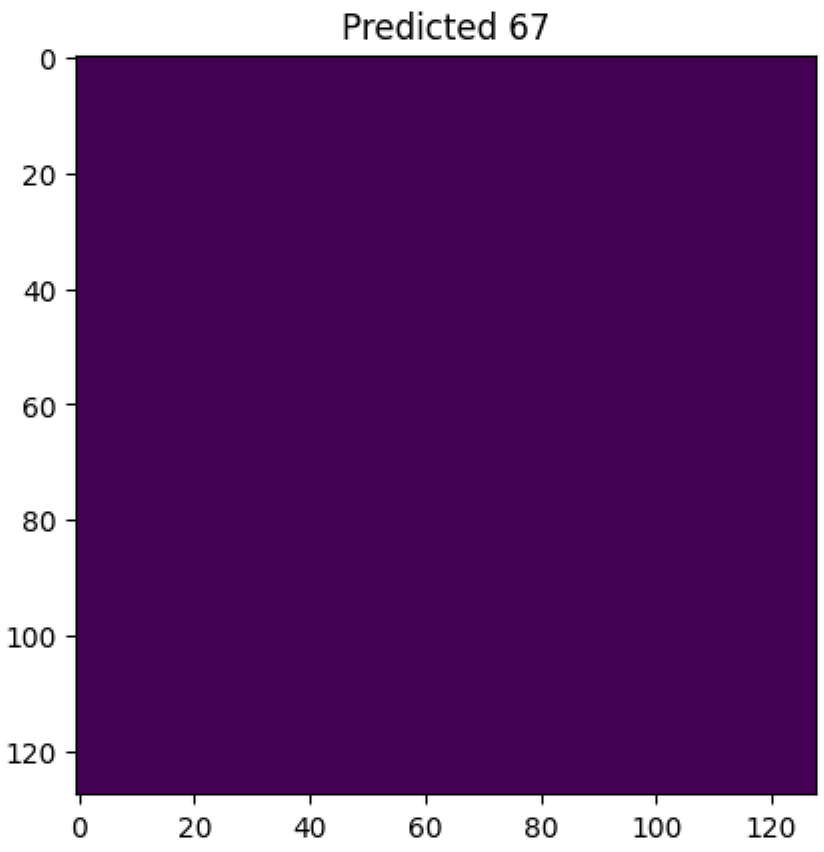
Predicted 67
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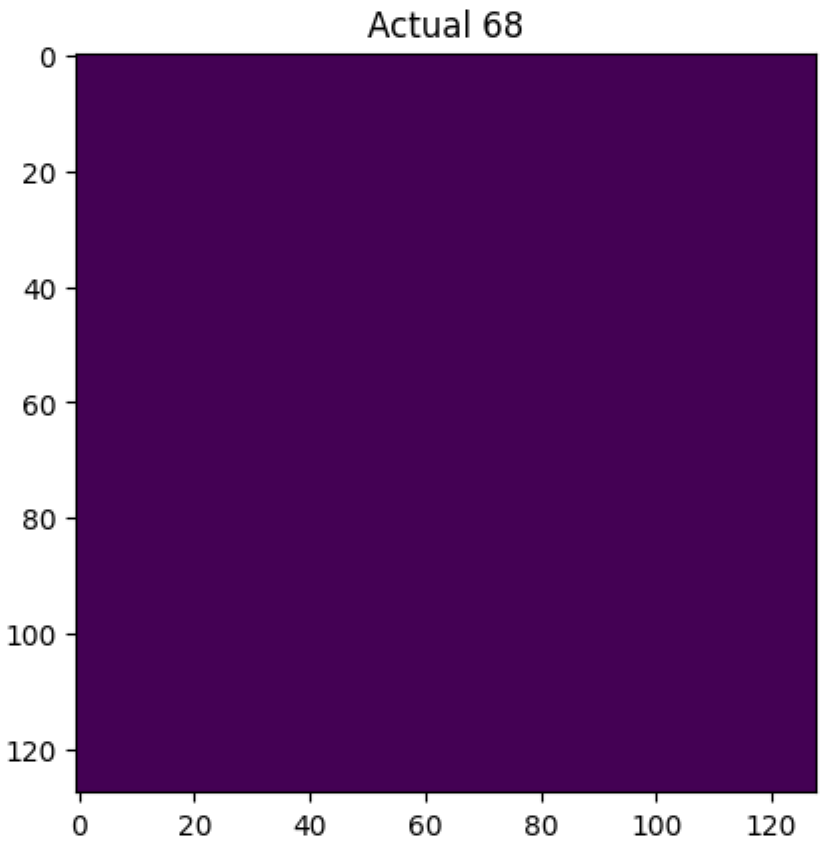
Actual 68
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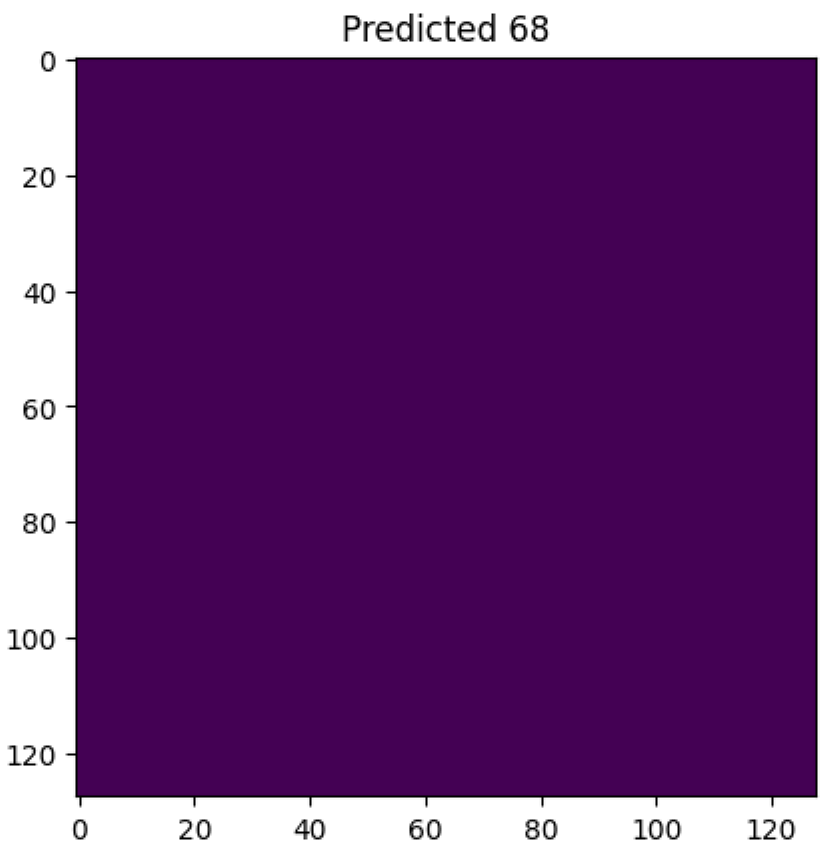
Predicted 68
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60
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100
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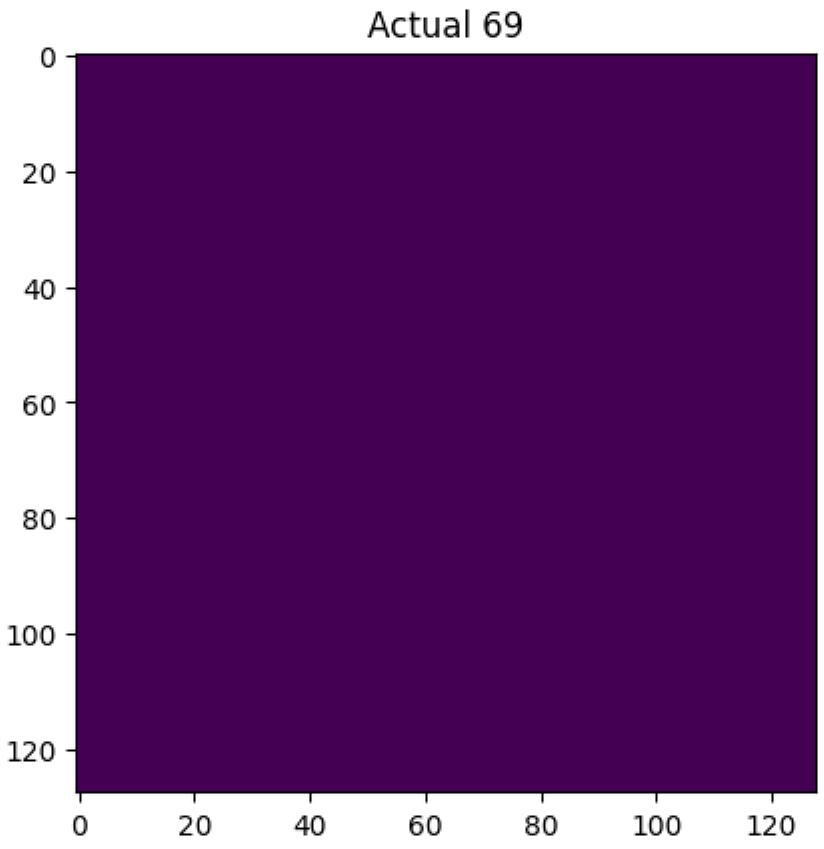
Actual 69
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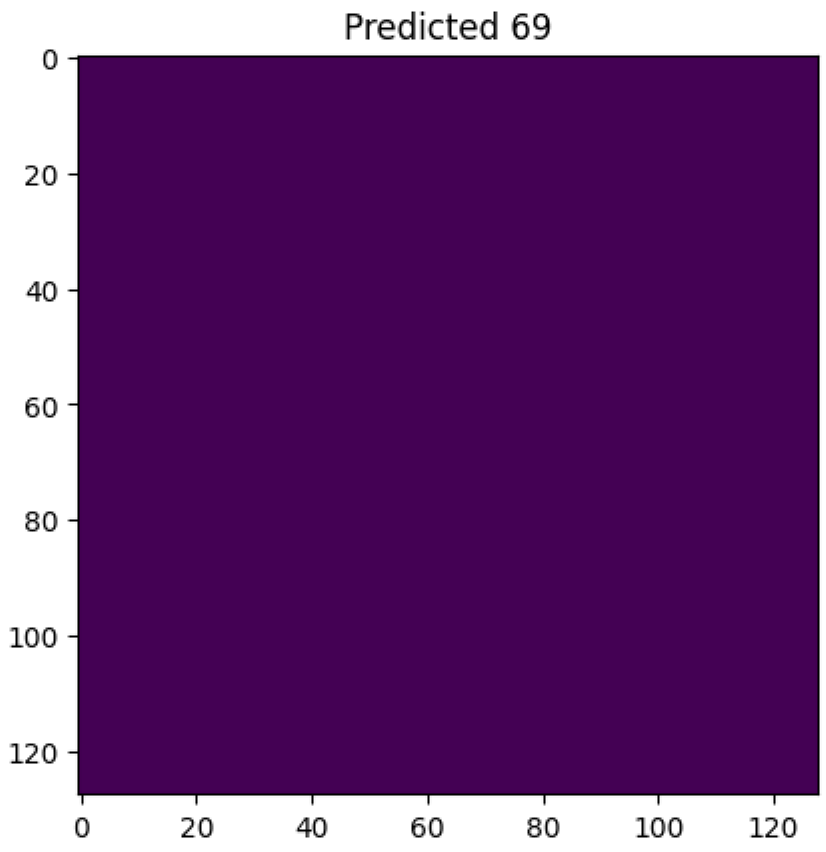
Predicted 69
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60
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100
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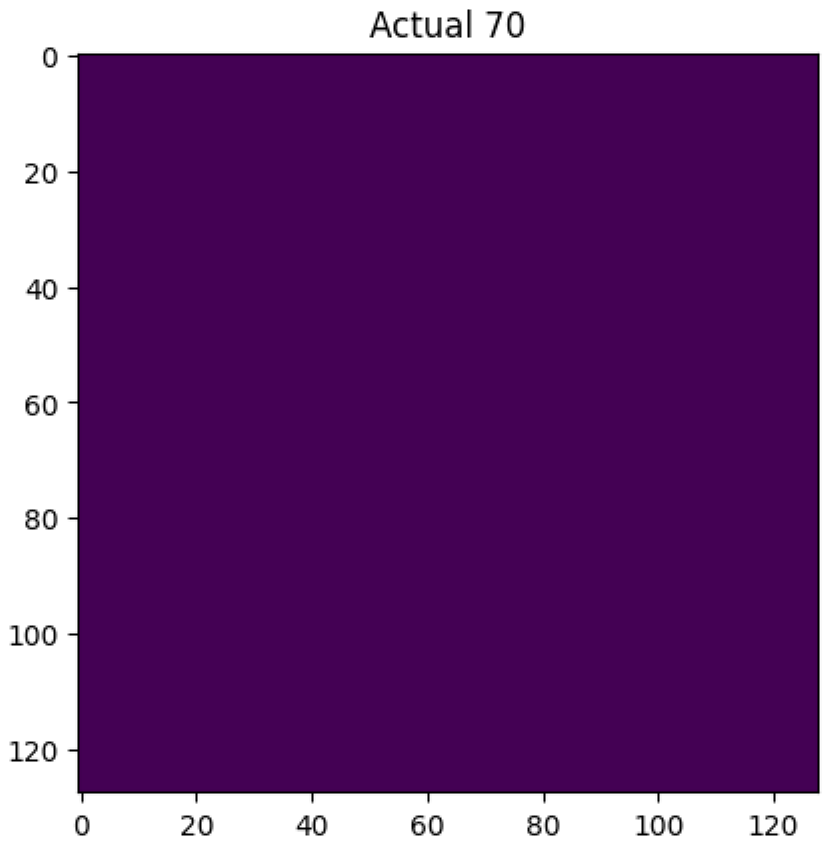
Actual 70
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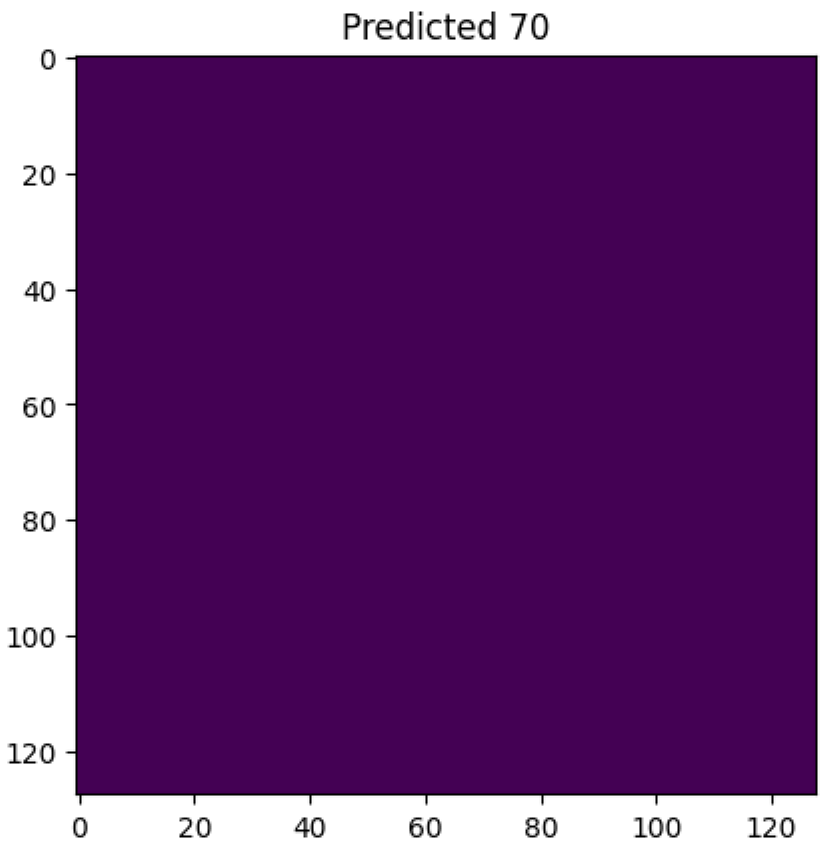
Predicted 70
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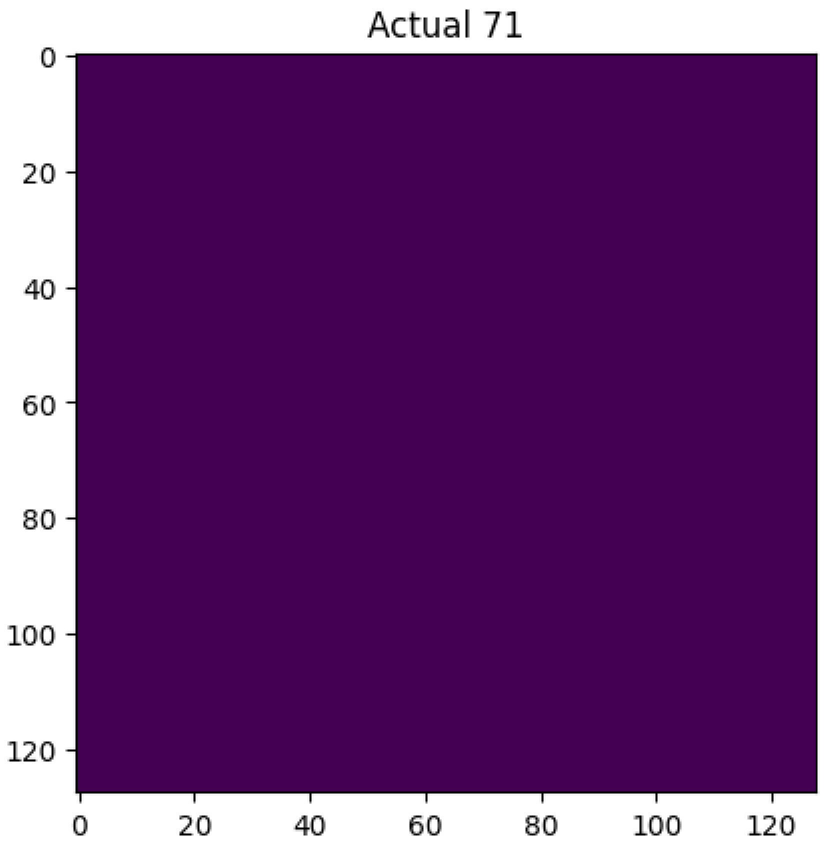
Actual 71
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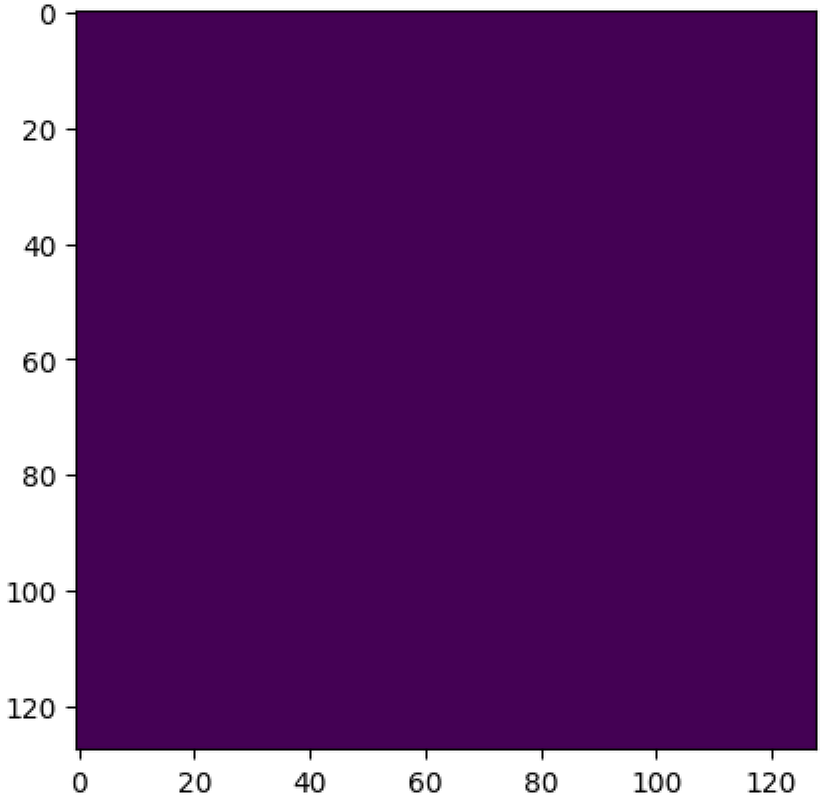
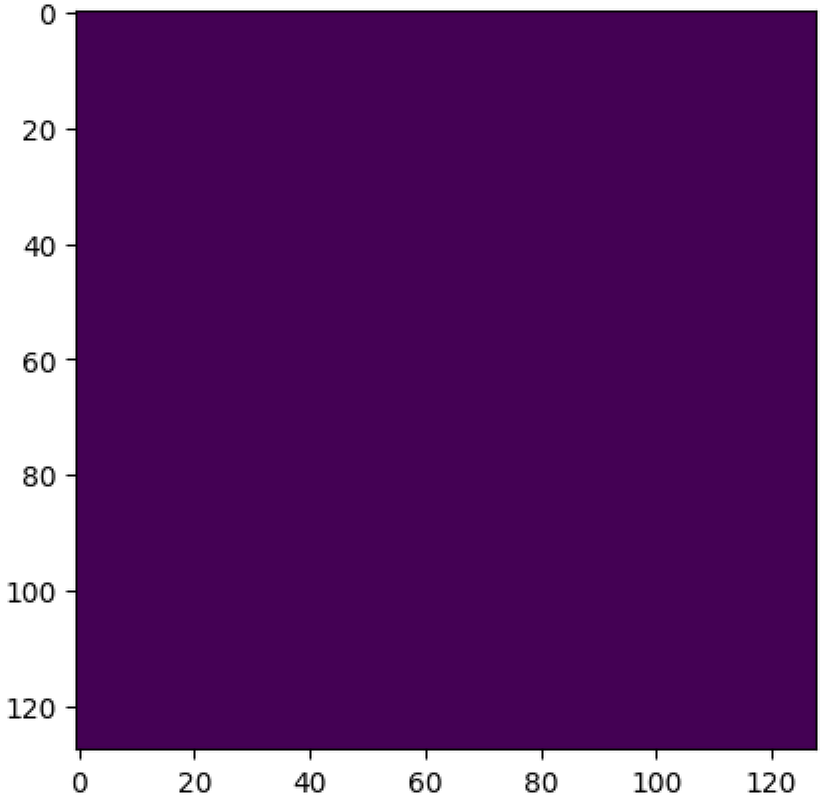
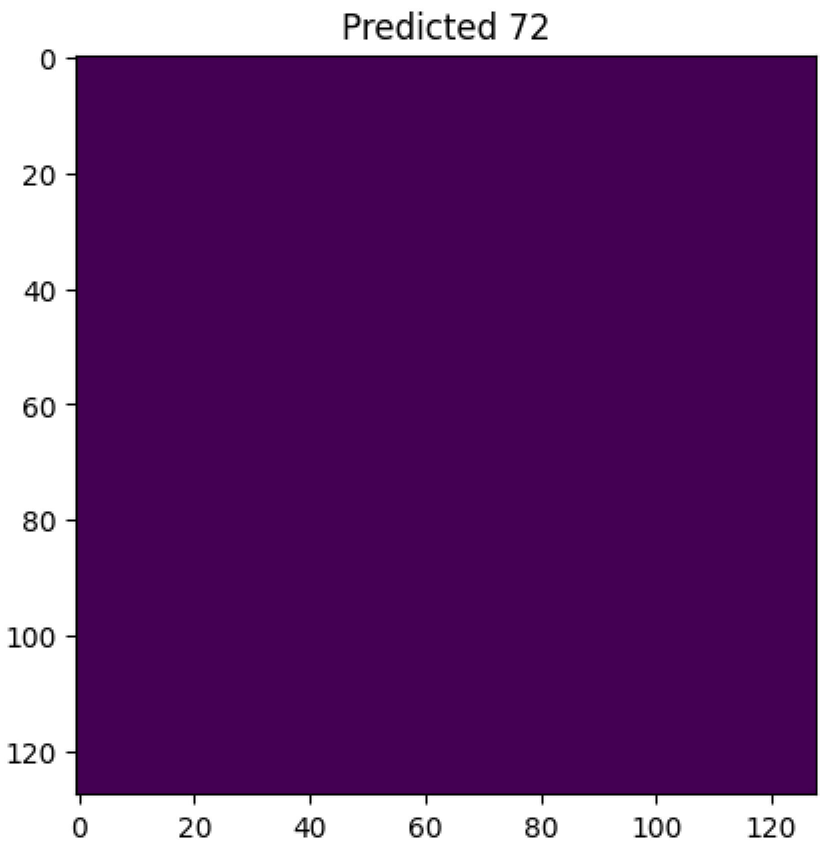
60
80
100
120

Predicted 71



Actual 72




Predicted 72
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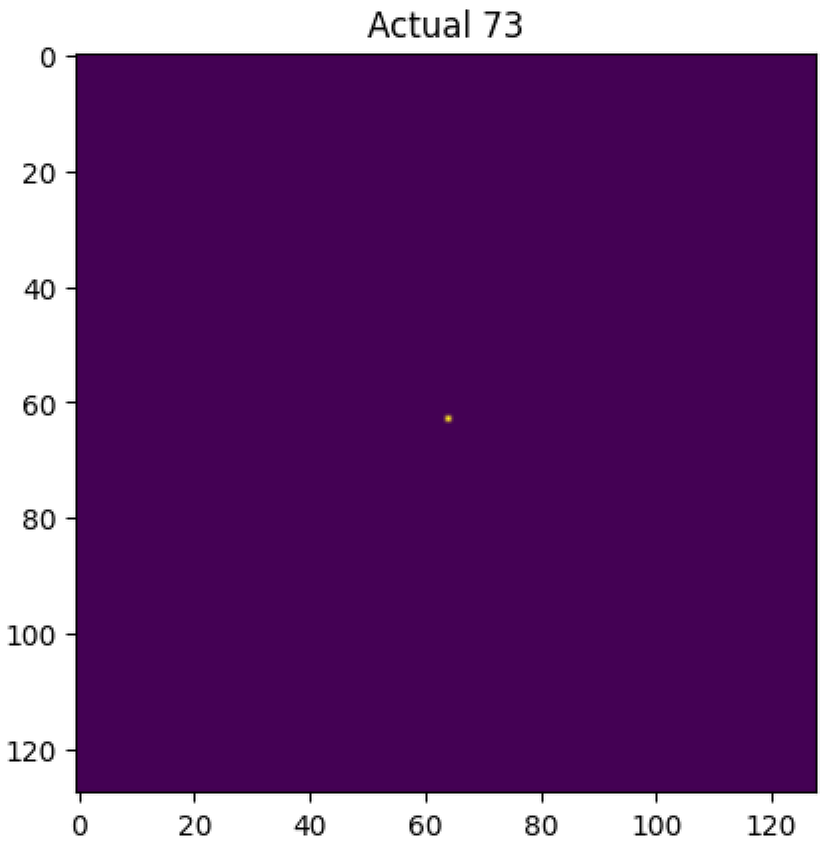
Actual 73
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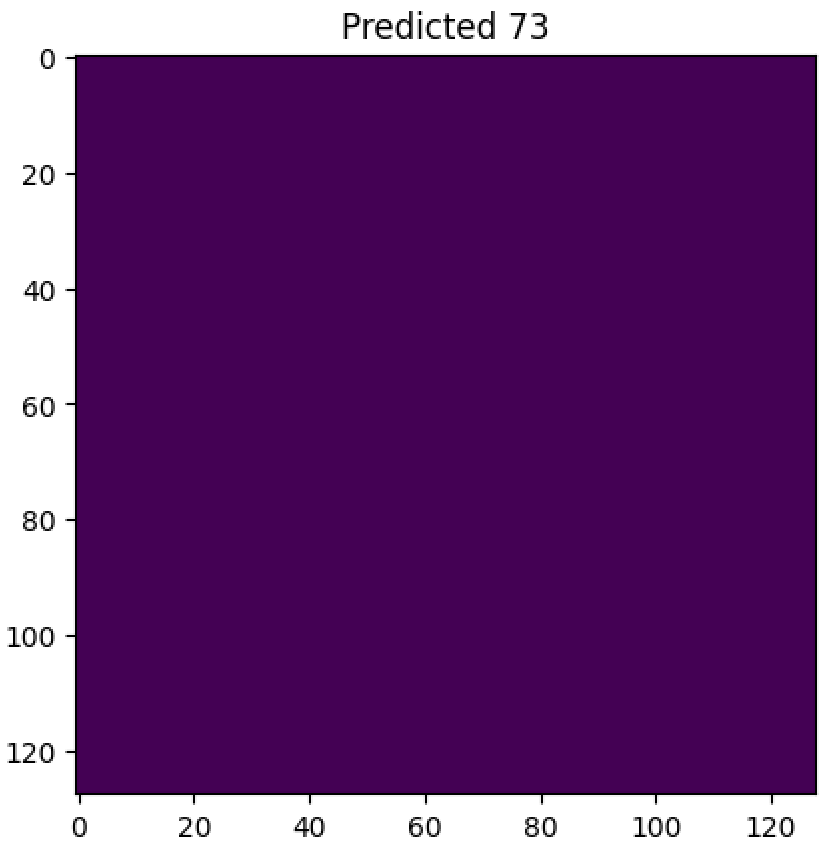
Predicted 73
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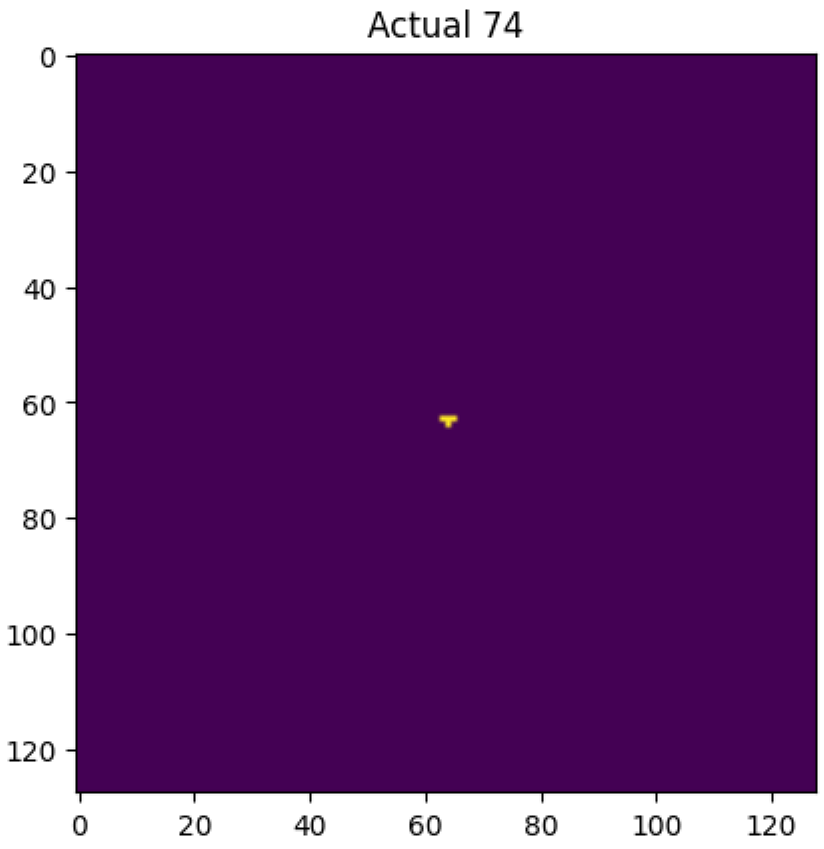
Actual 74
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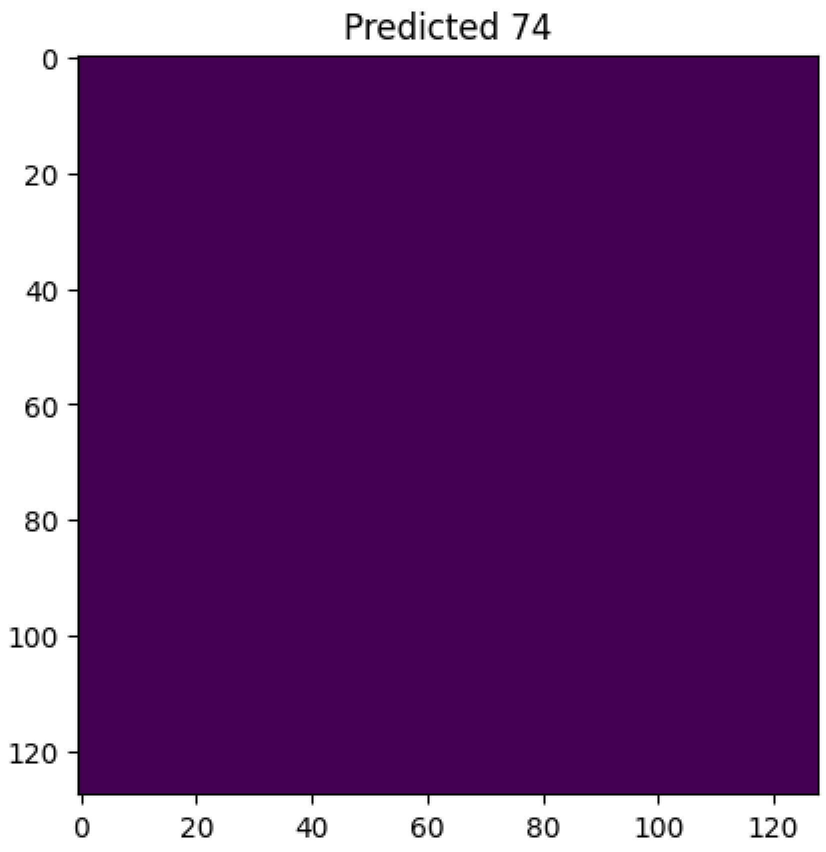
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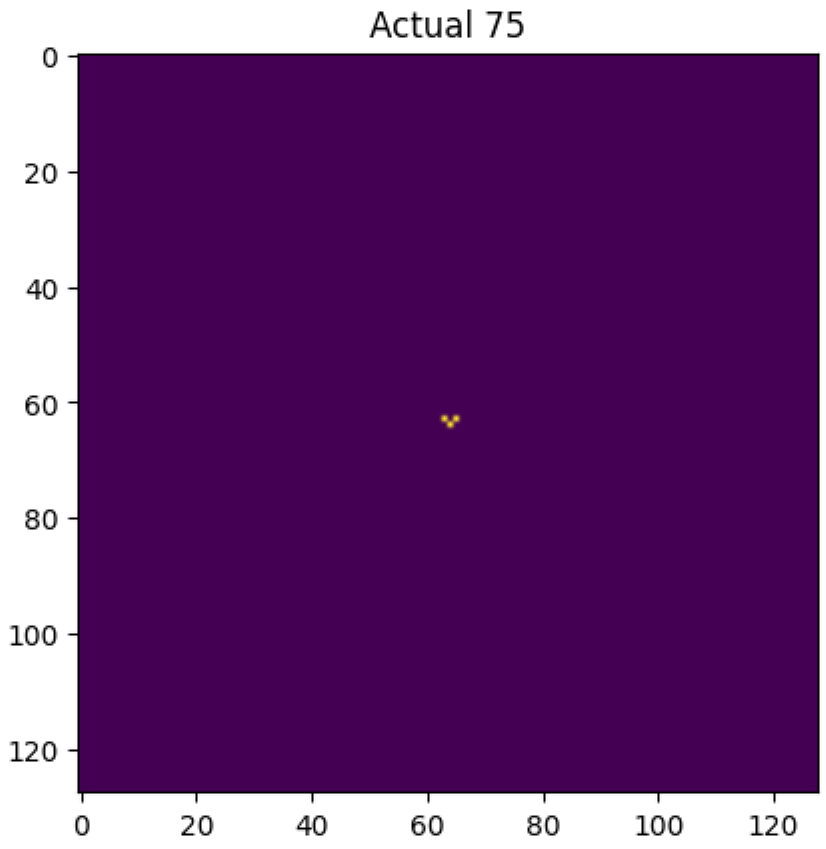
Actual 75
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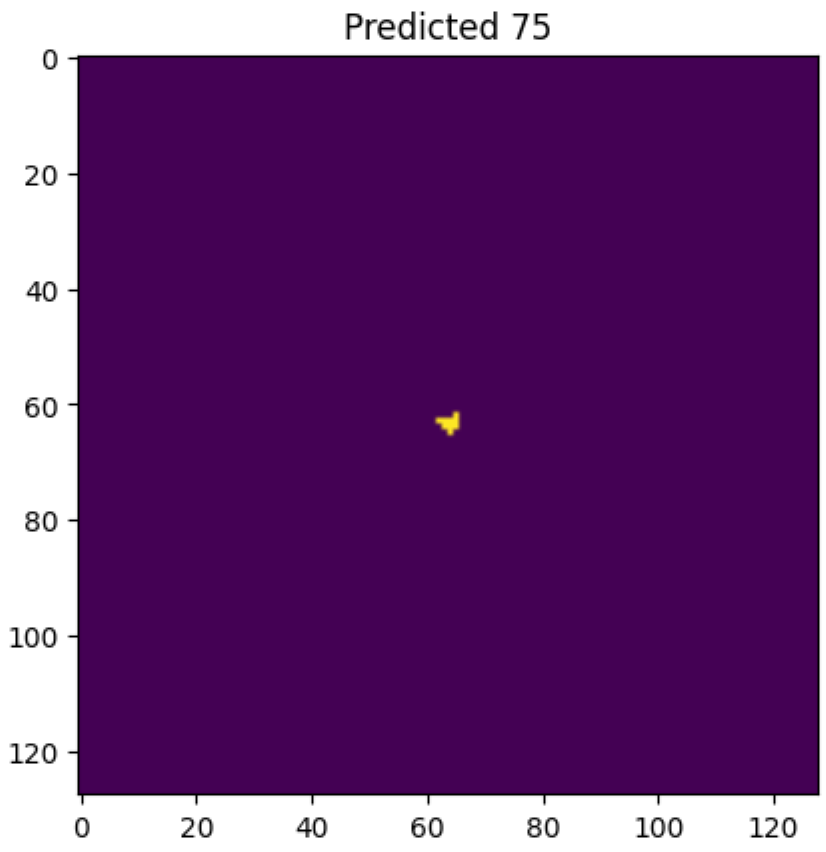
Predicted 75
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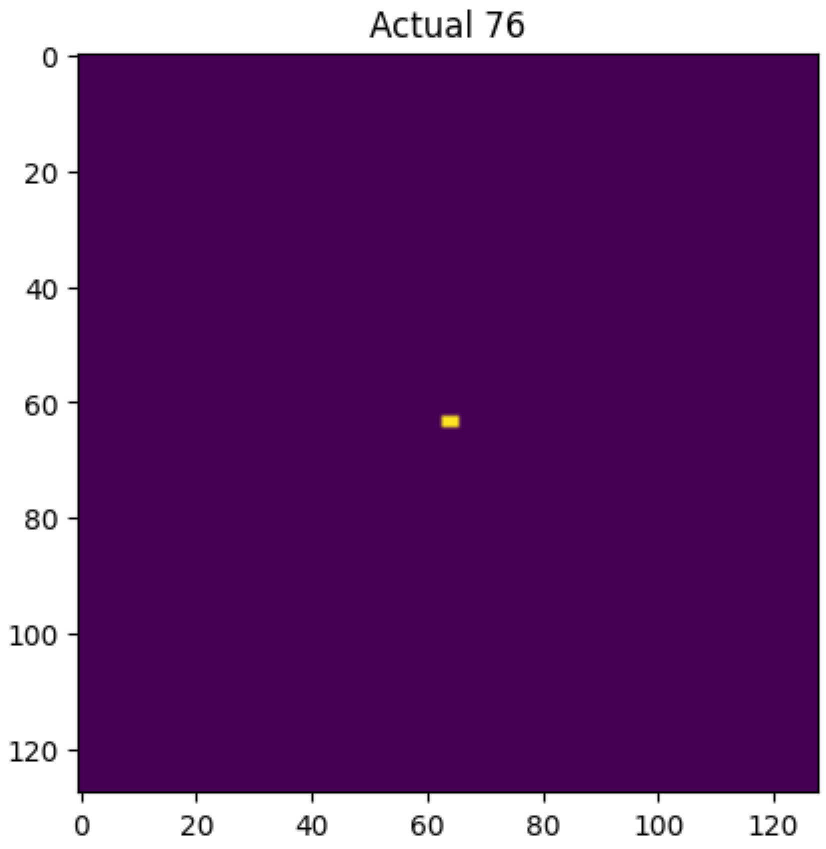
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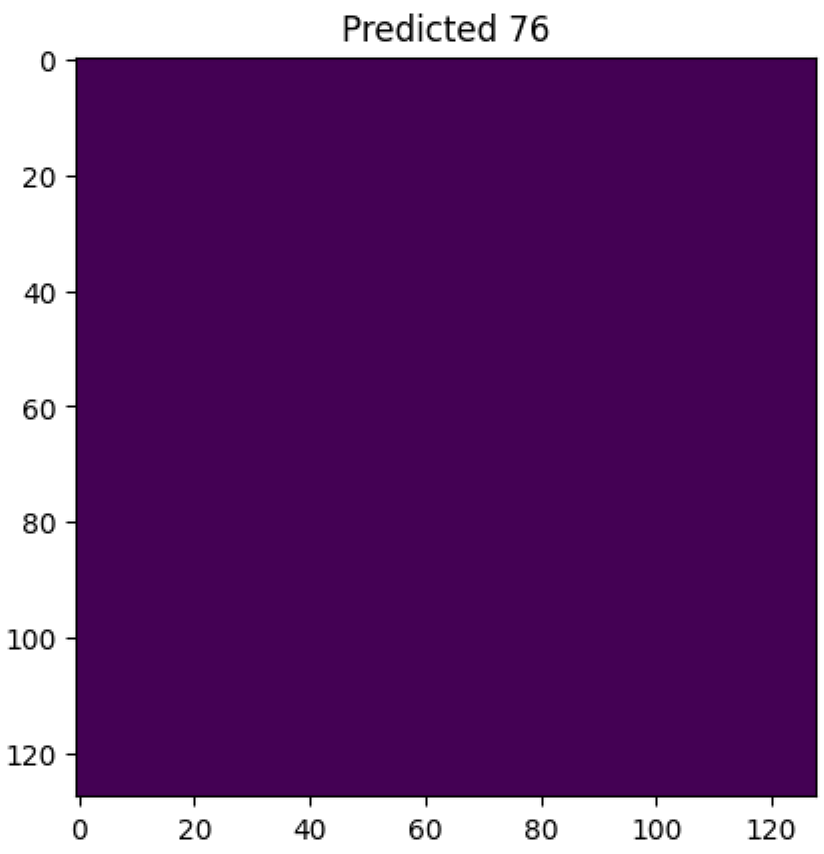
Predicted 76
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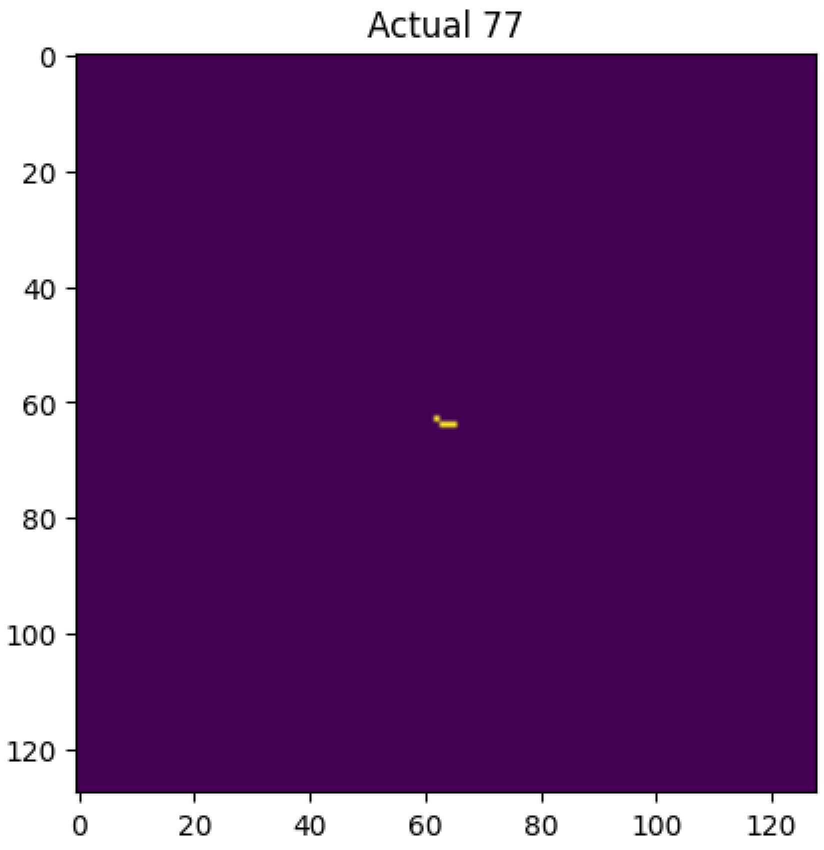
Actual 77
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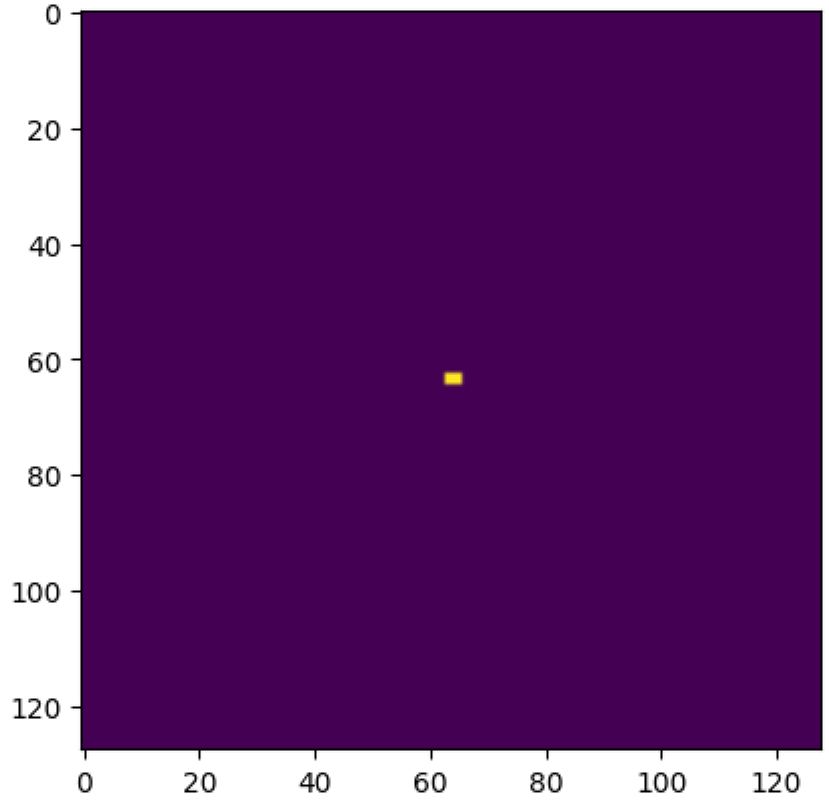
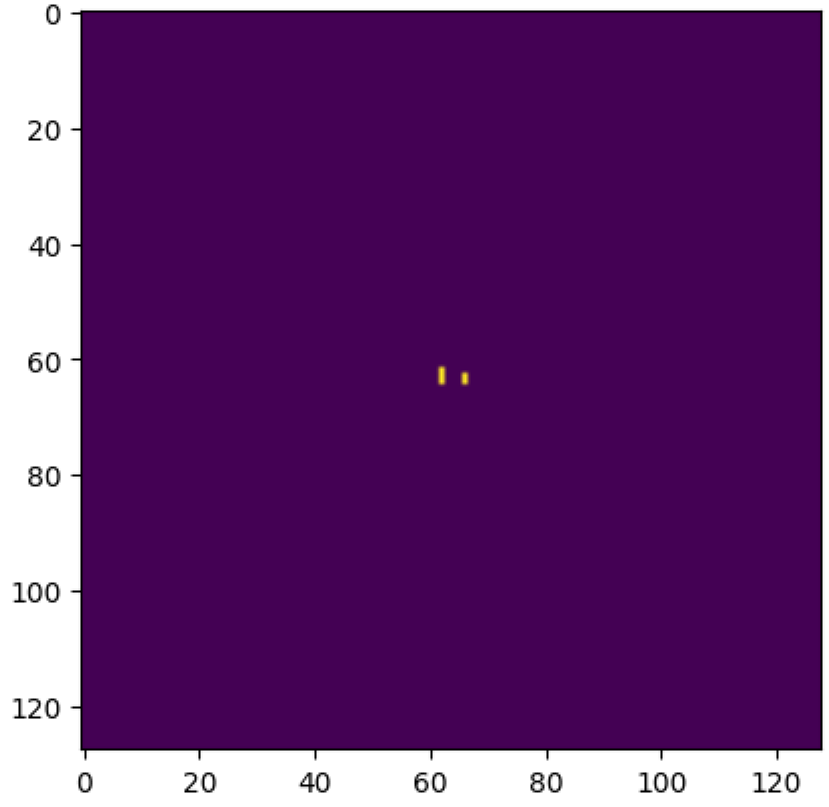
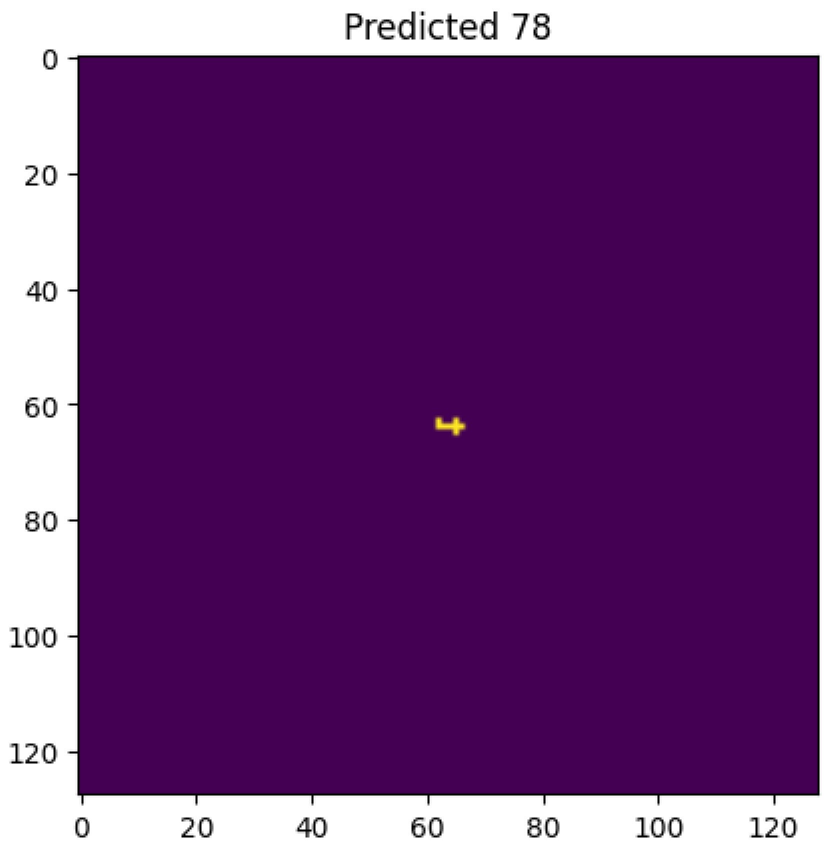
Predicted 77



Actual 78




Predicted 78
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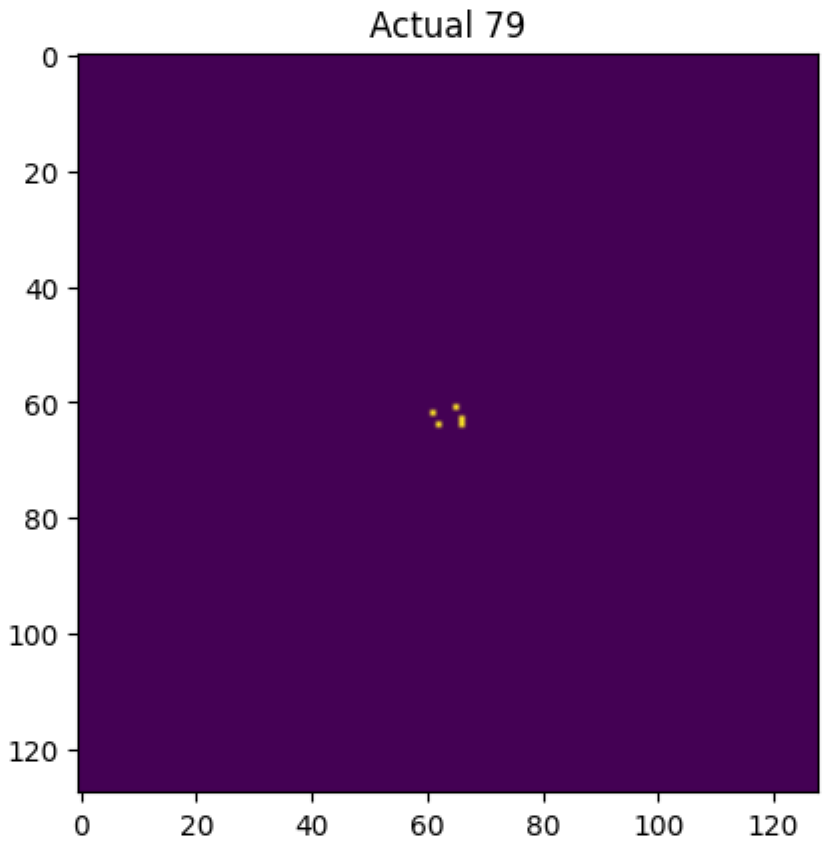
Actual 79
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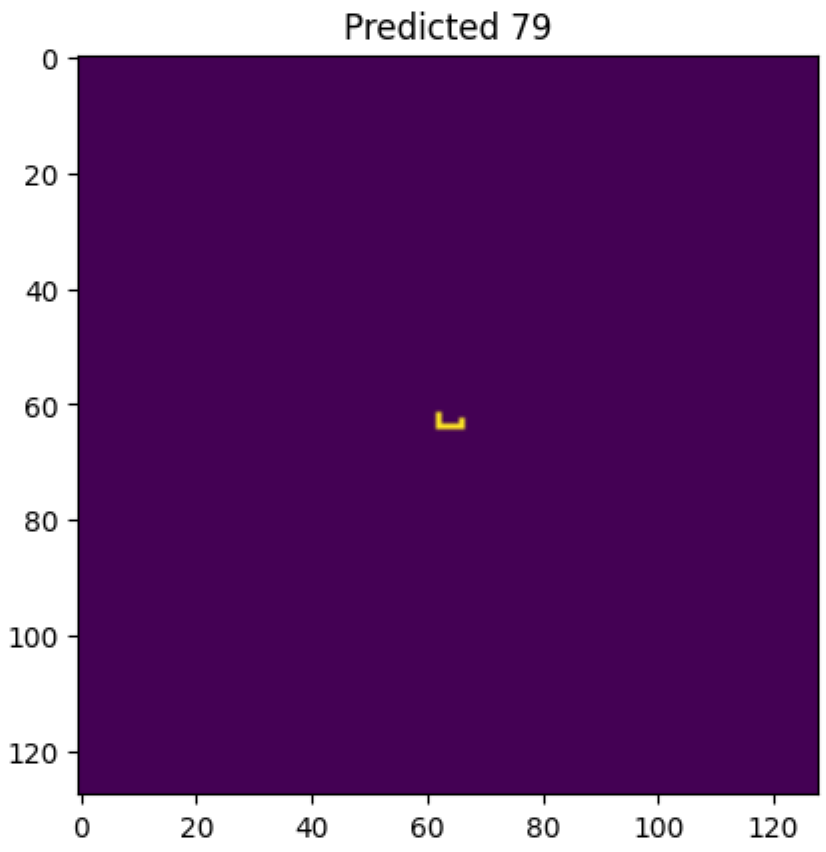
Predicted 79
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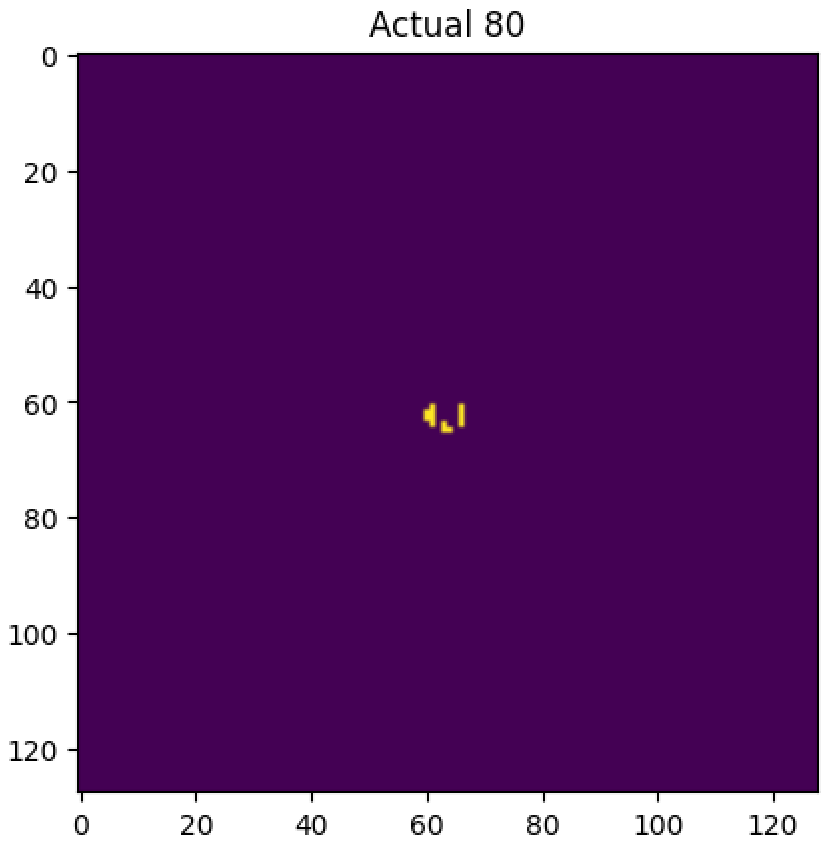
Actual 80
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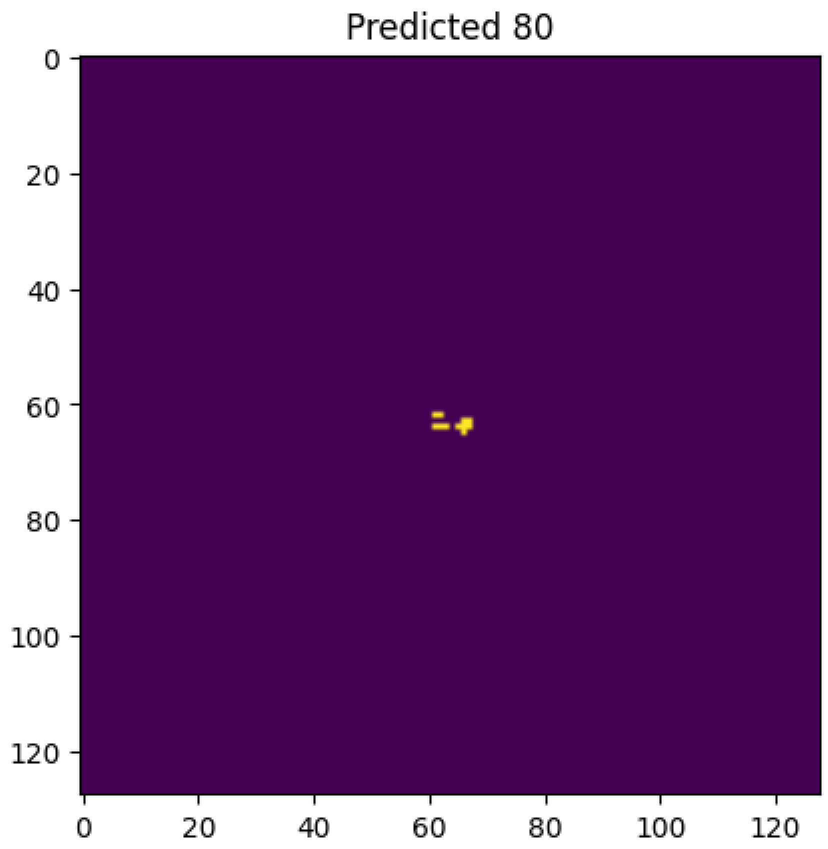
Predicted 80
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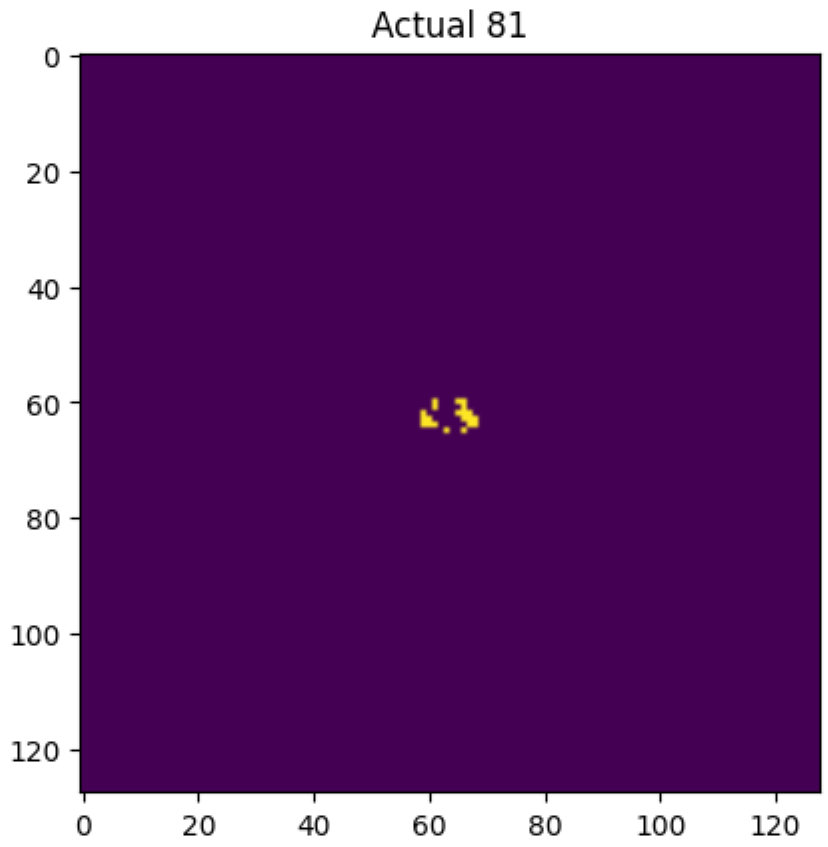
Actual 81
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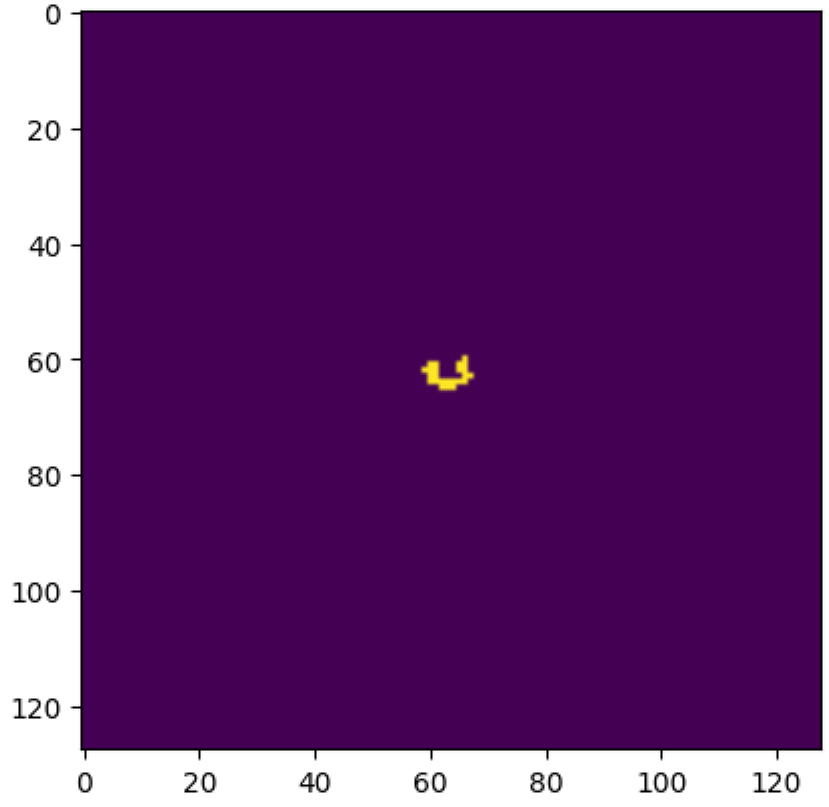
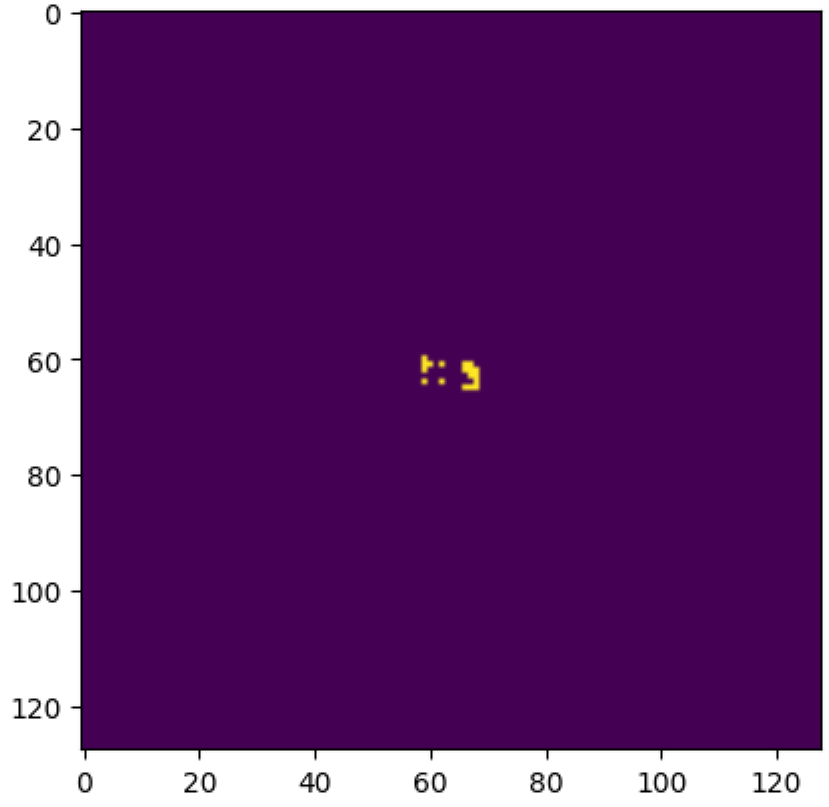
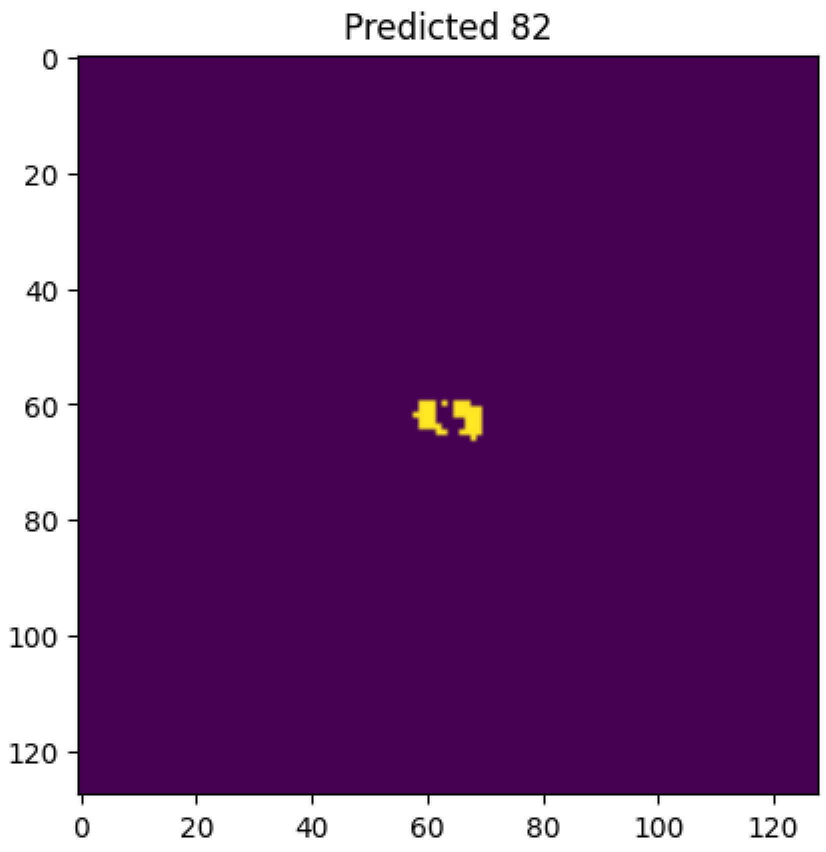
Predicted 81



Actual 82




Predicted 82
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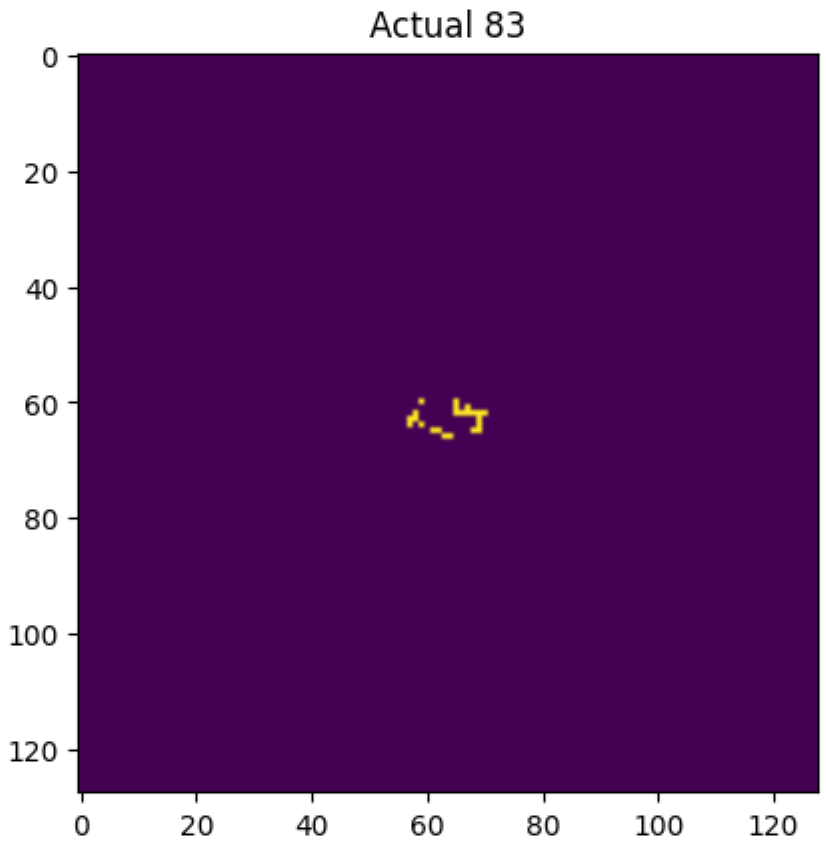
Actual 83
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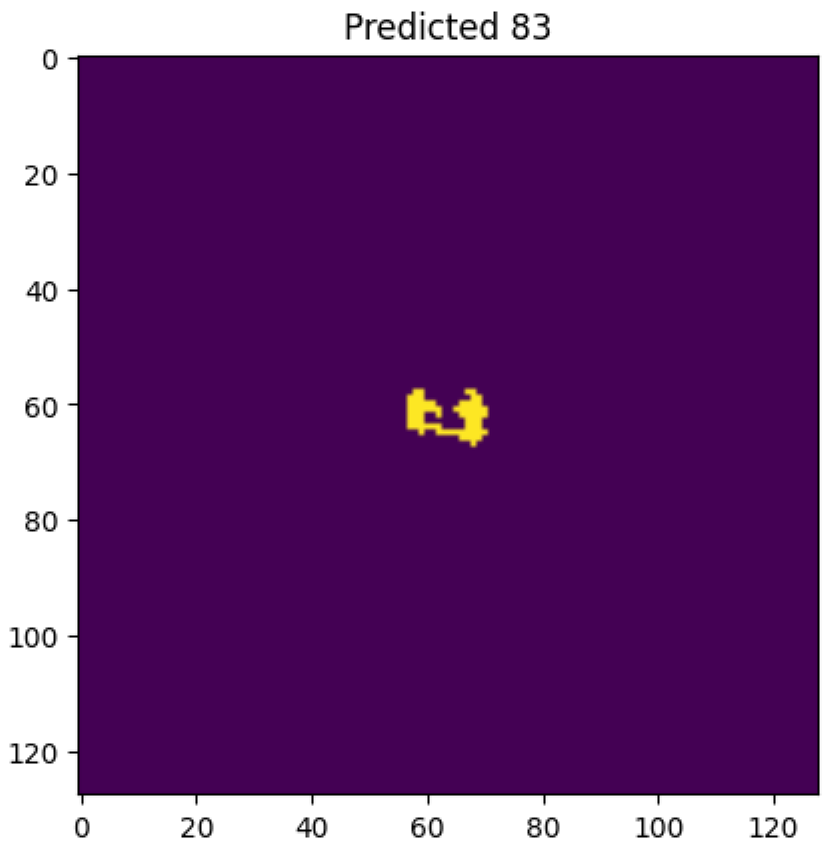
Predicted 83
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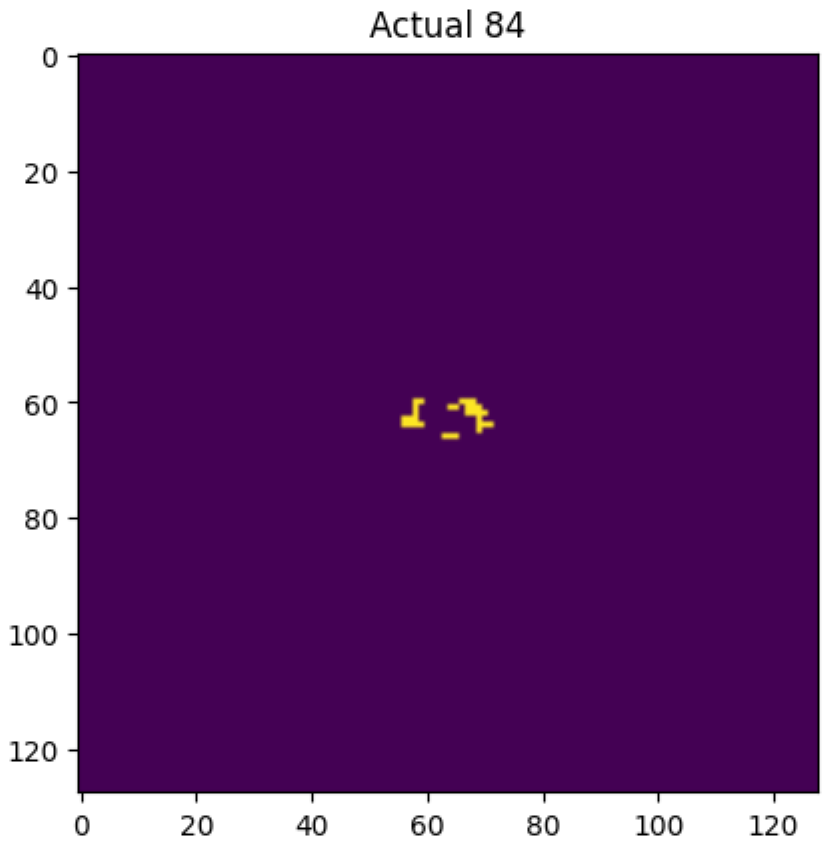
Actual 84
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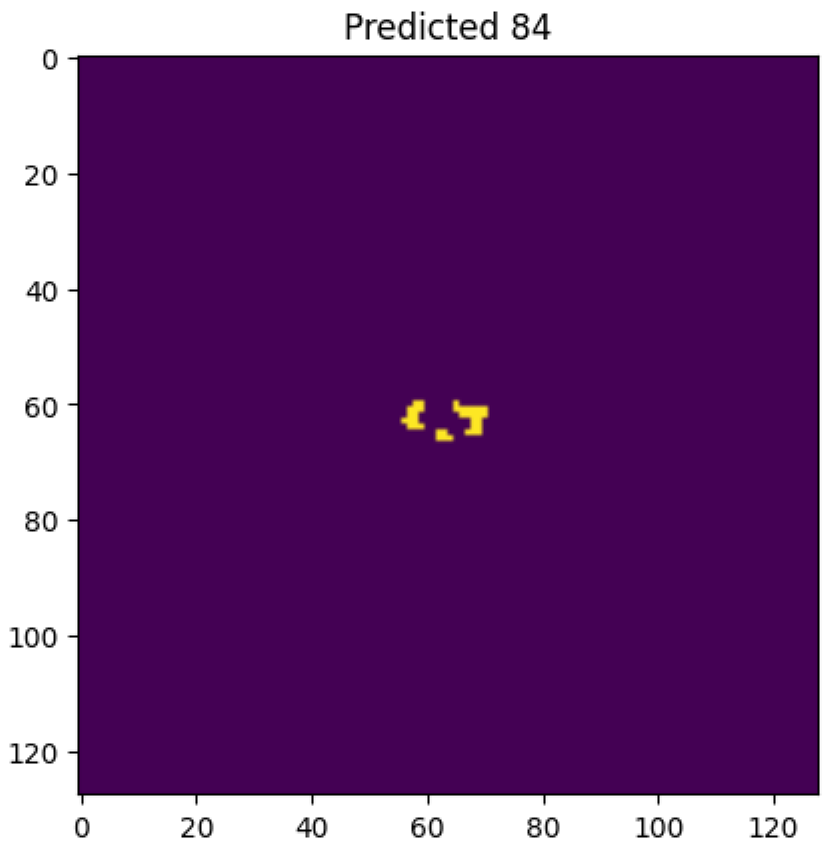
Predicted 84
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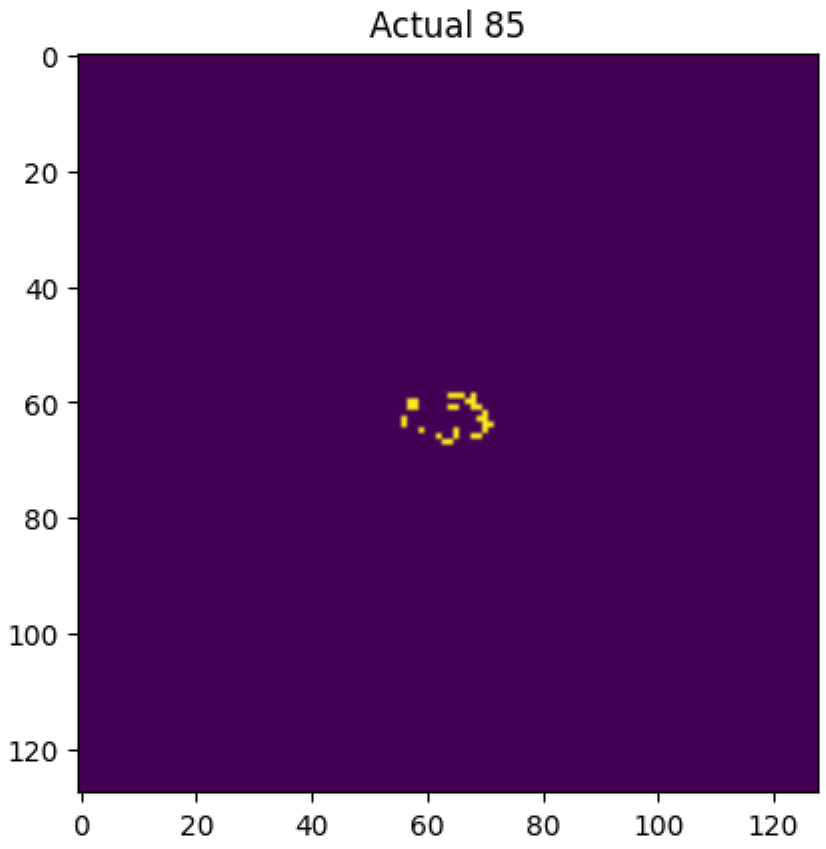
Actual 85
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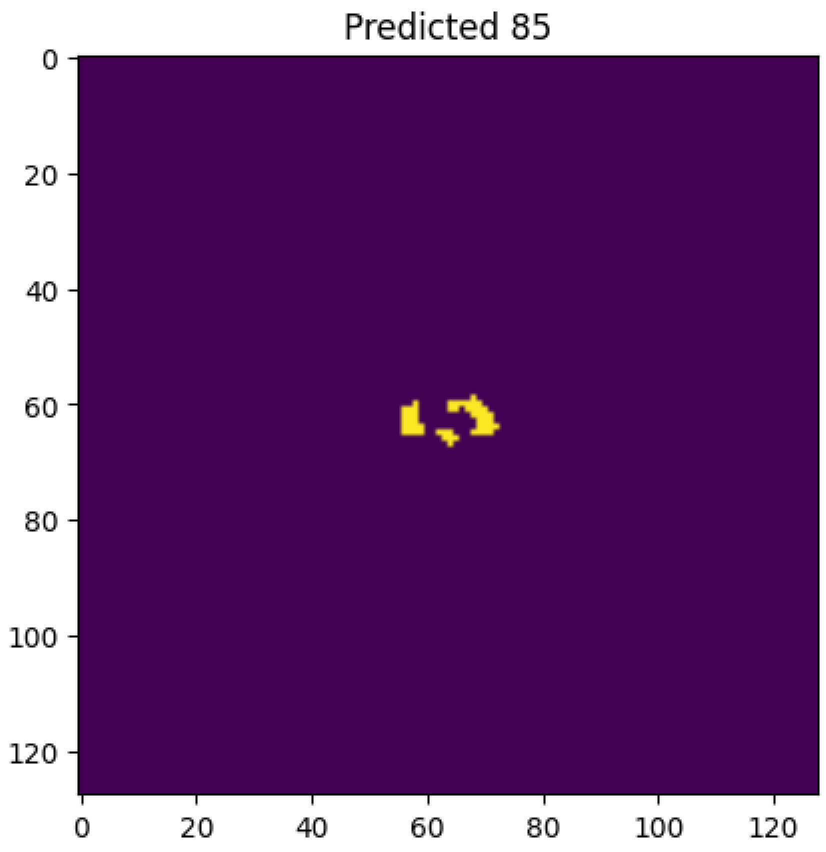
Predicted 85
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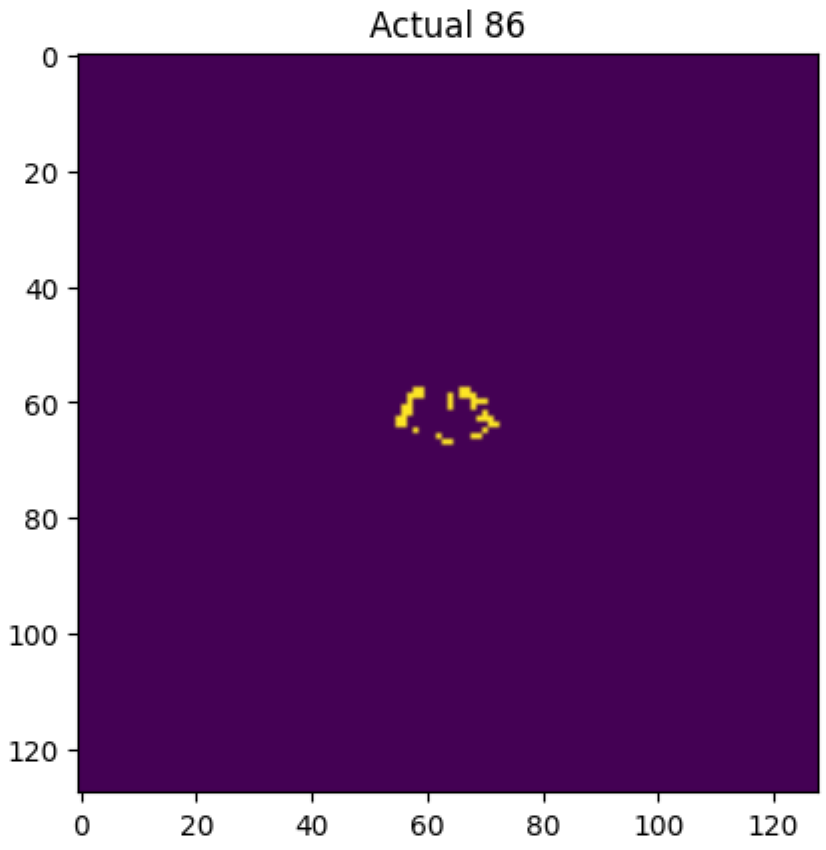
Actual 86
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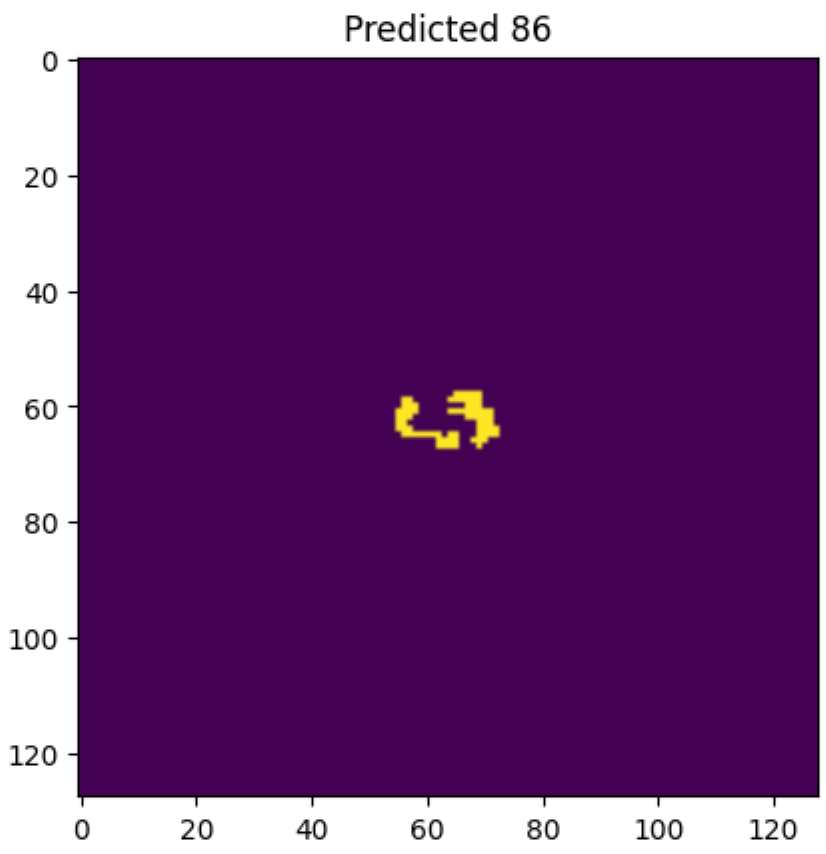
Predicted 86
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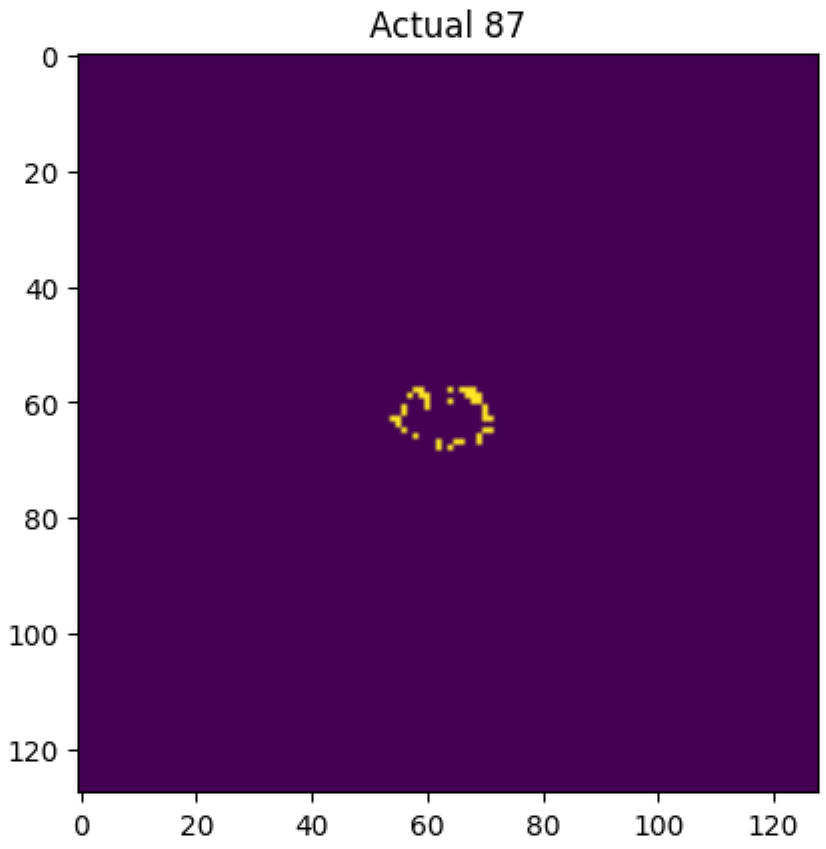
Actual 87
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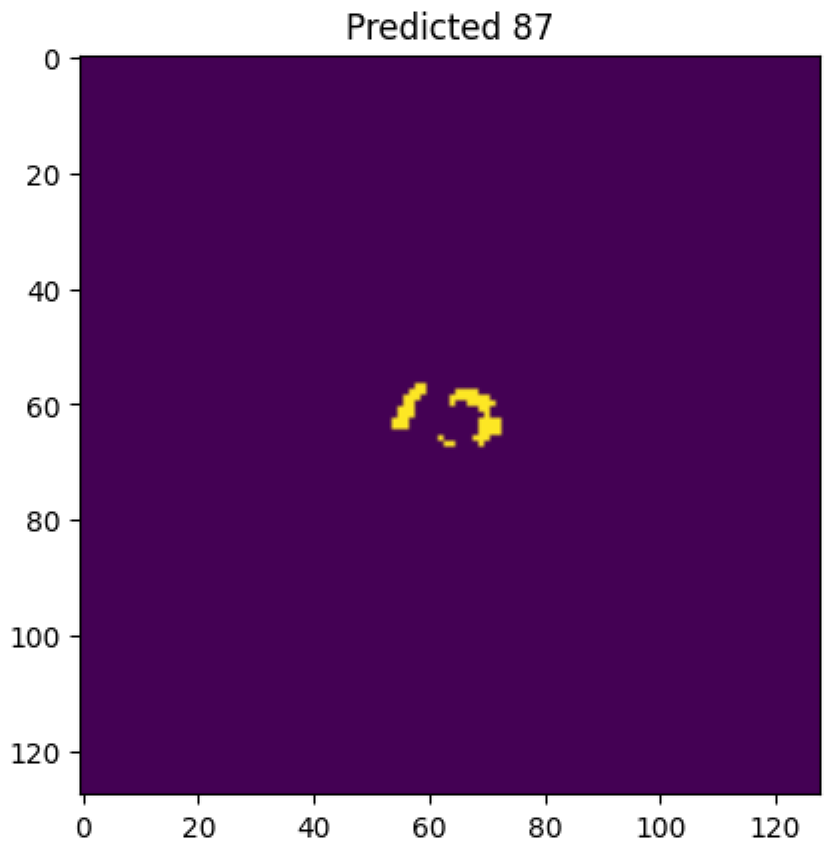
Predicted 87
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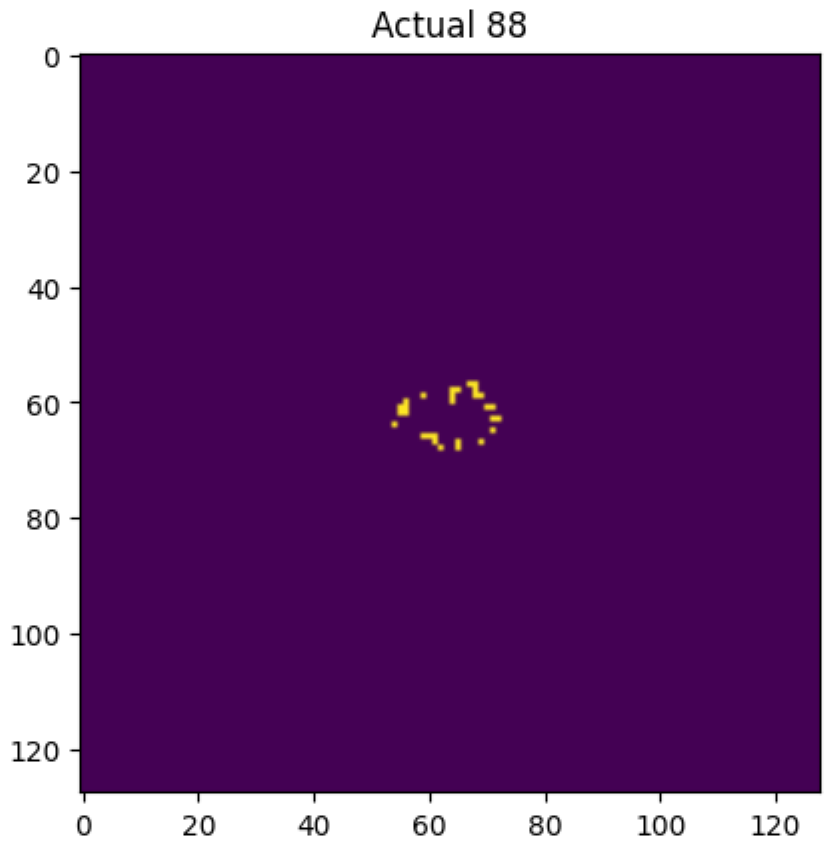
Actual 88
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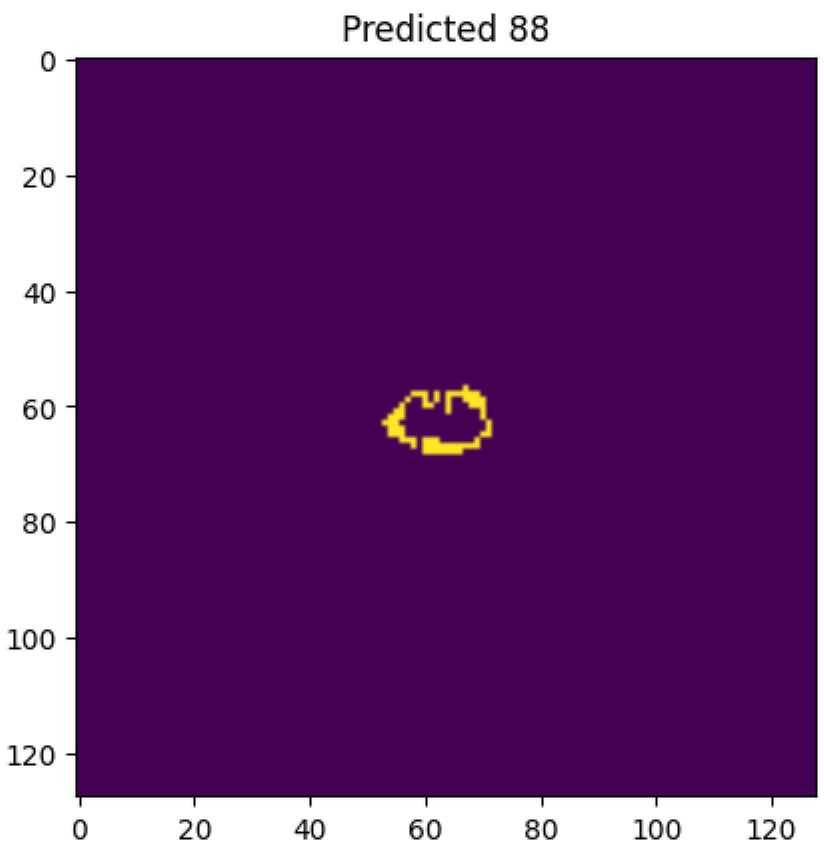
Predicted 88
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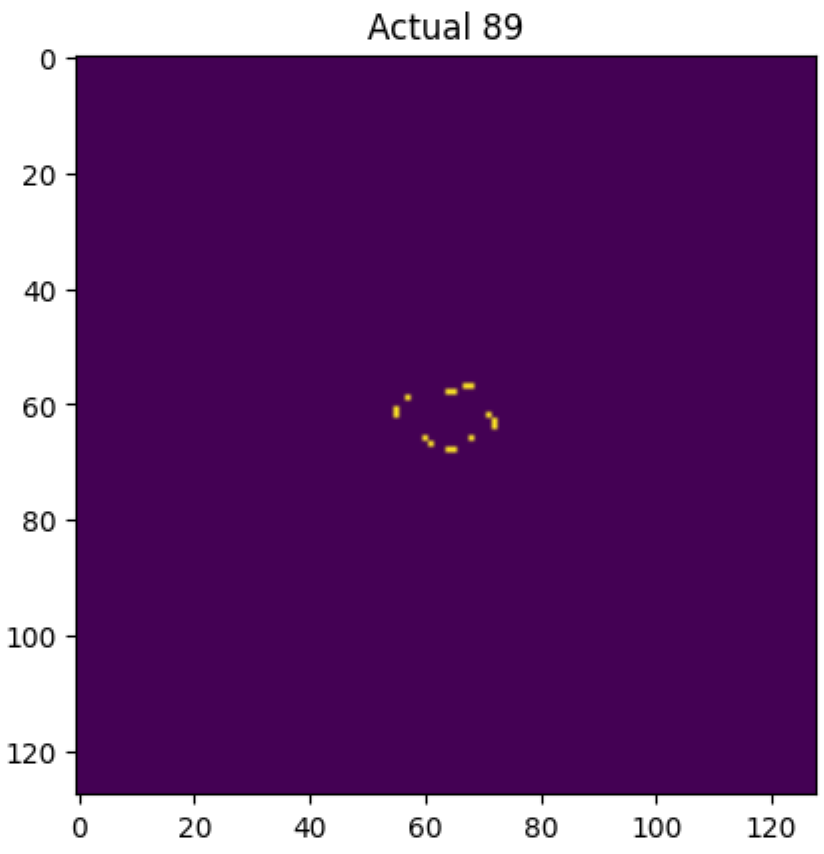
Actual 89
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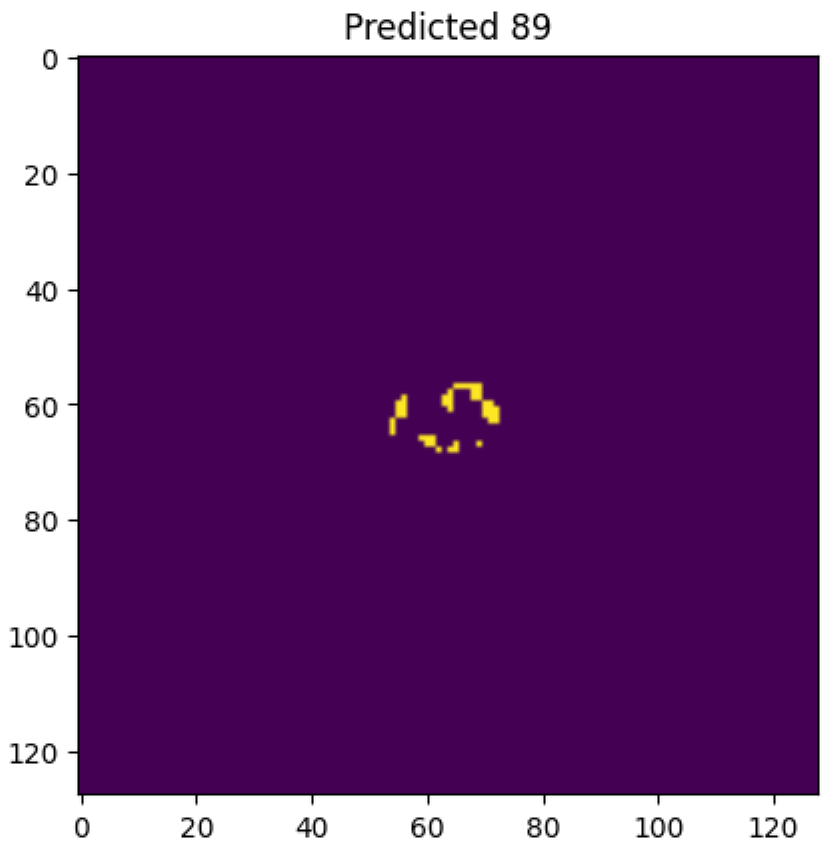
Predicted 89
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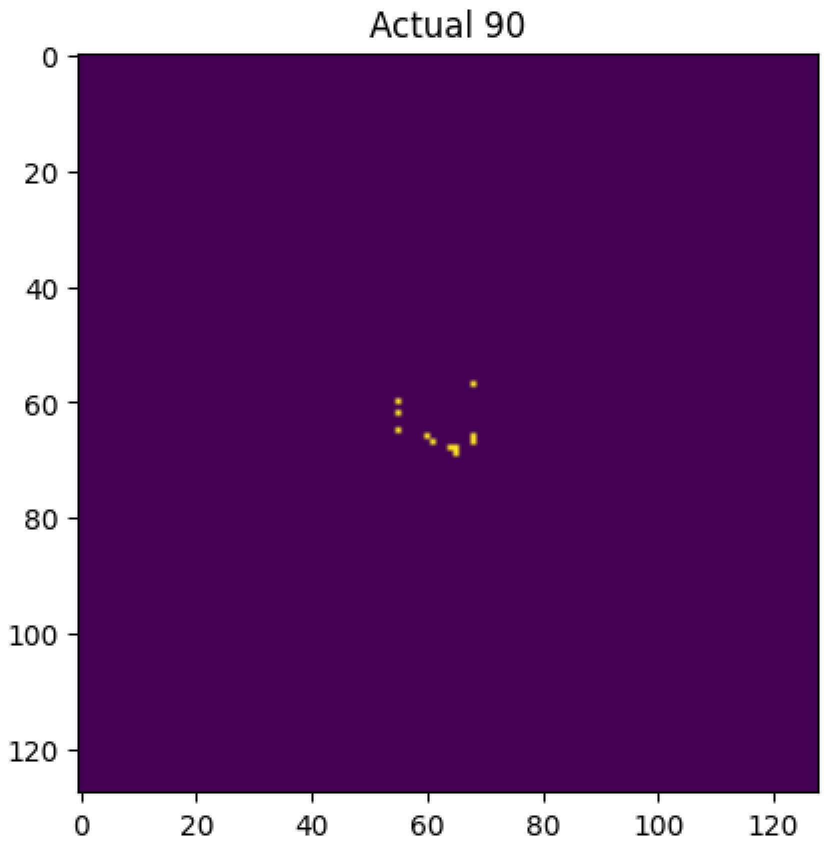
Actual 90
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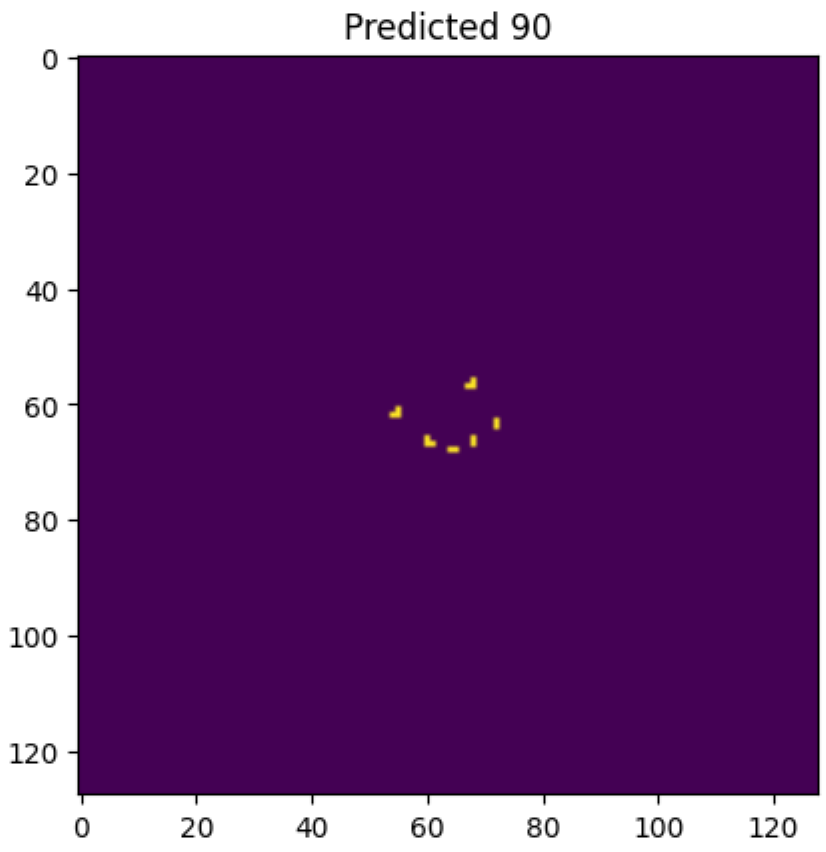
Predicted 90
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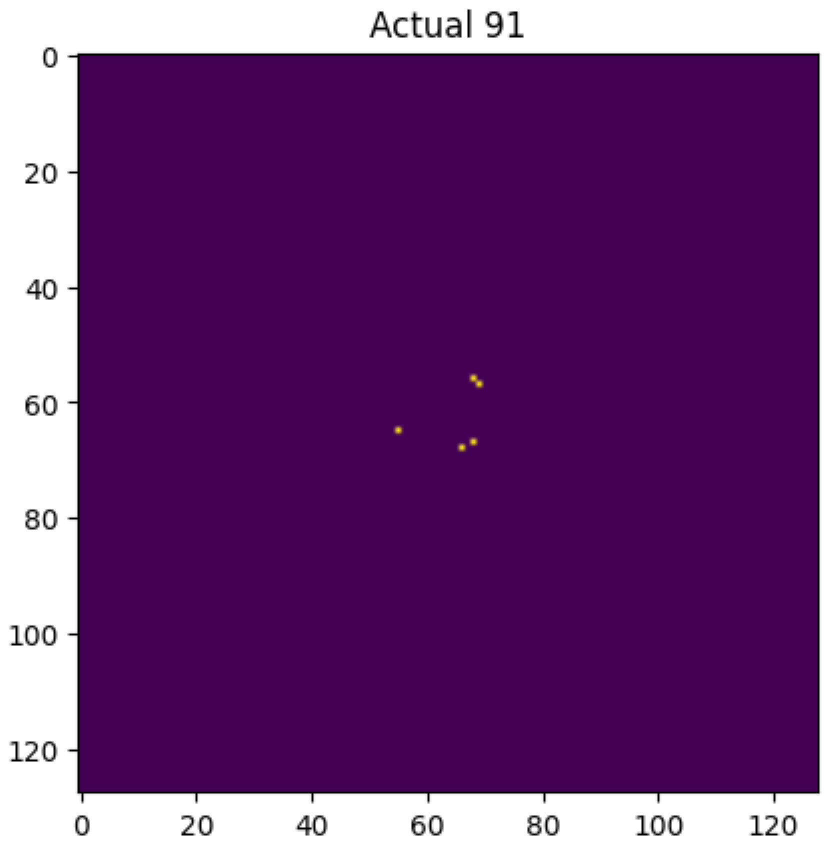
Actual 91
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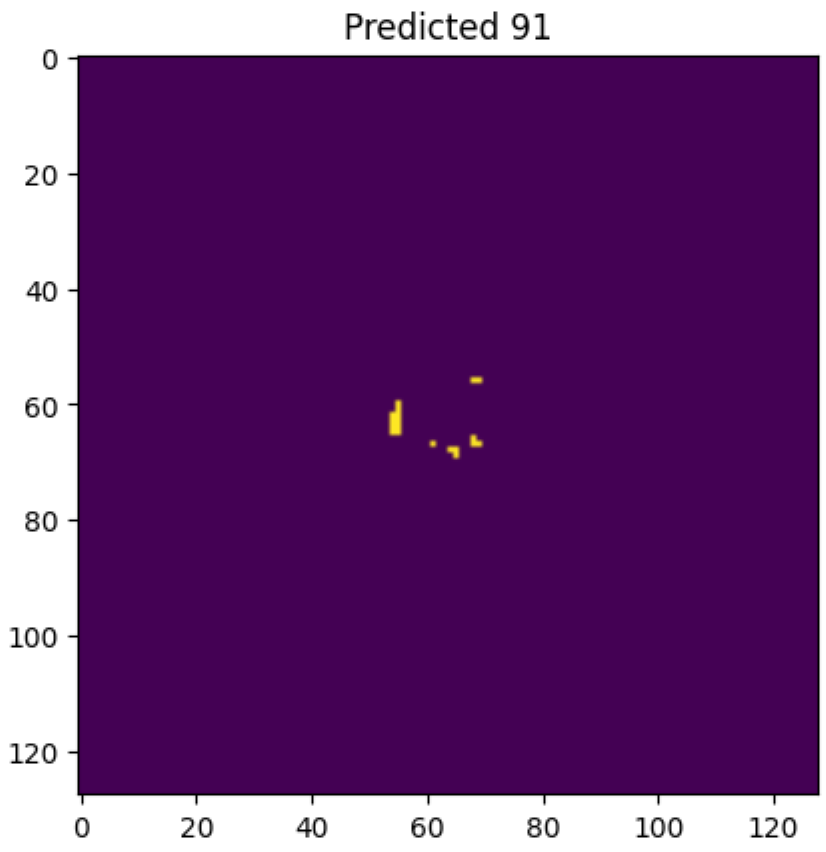

Predicted 91
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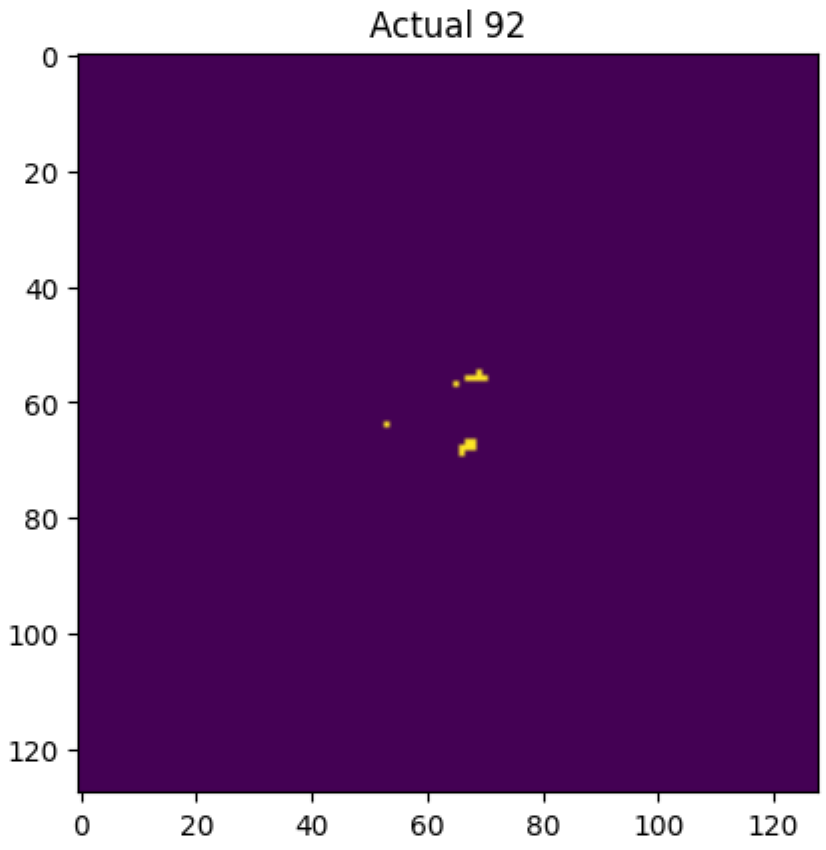

Actual 92
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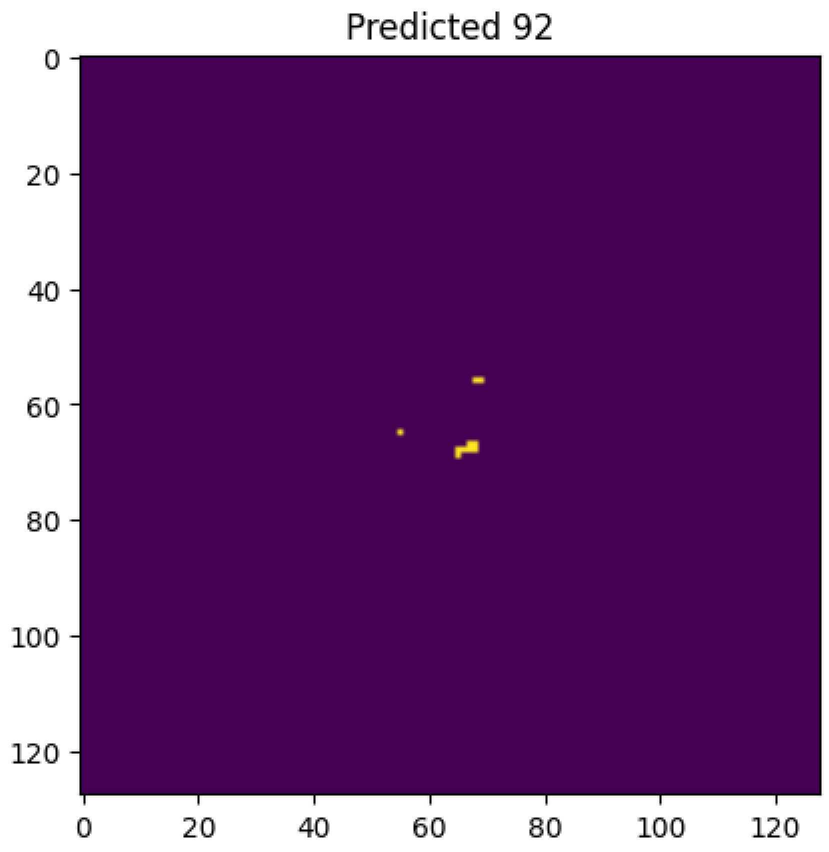
Predicted 92
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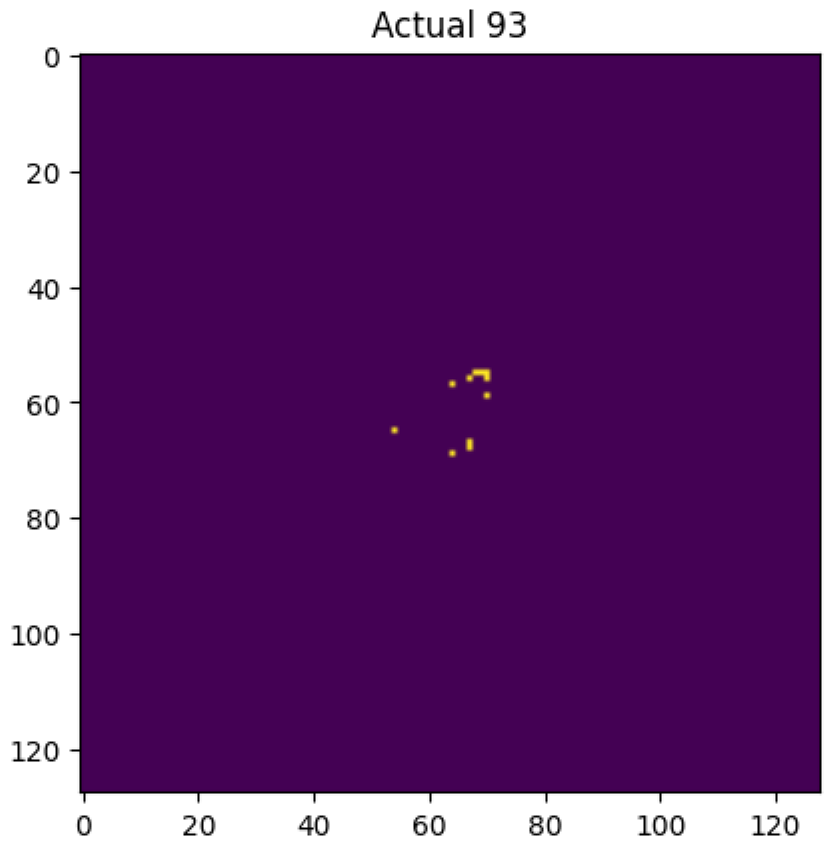
Actual 93
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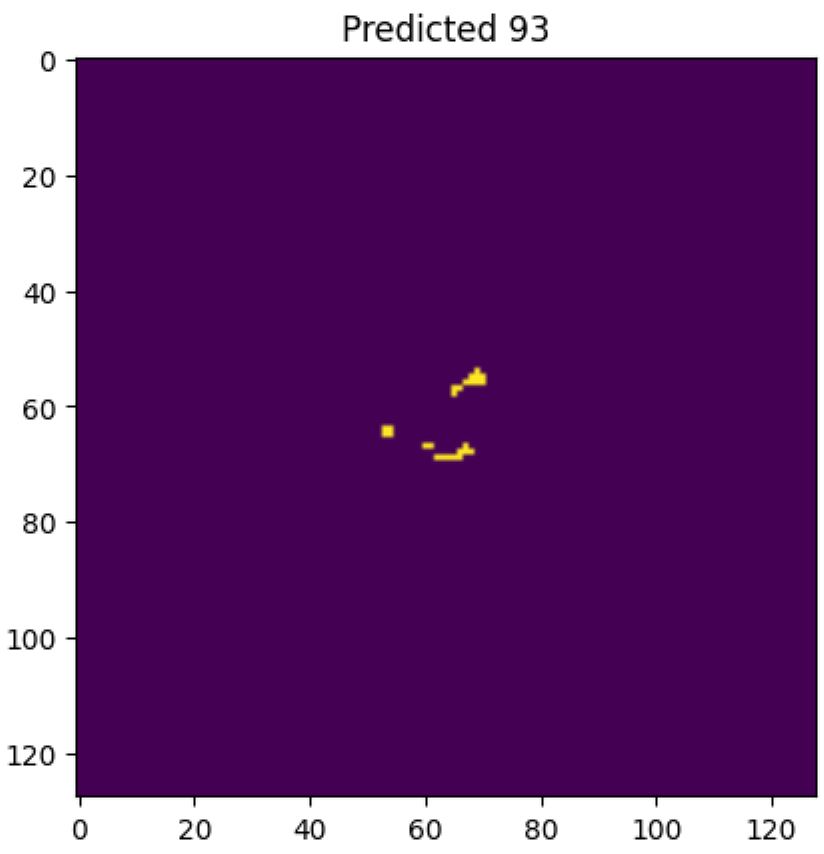
Predicted 93
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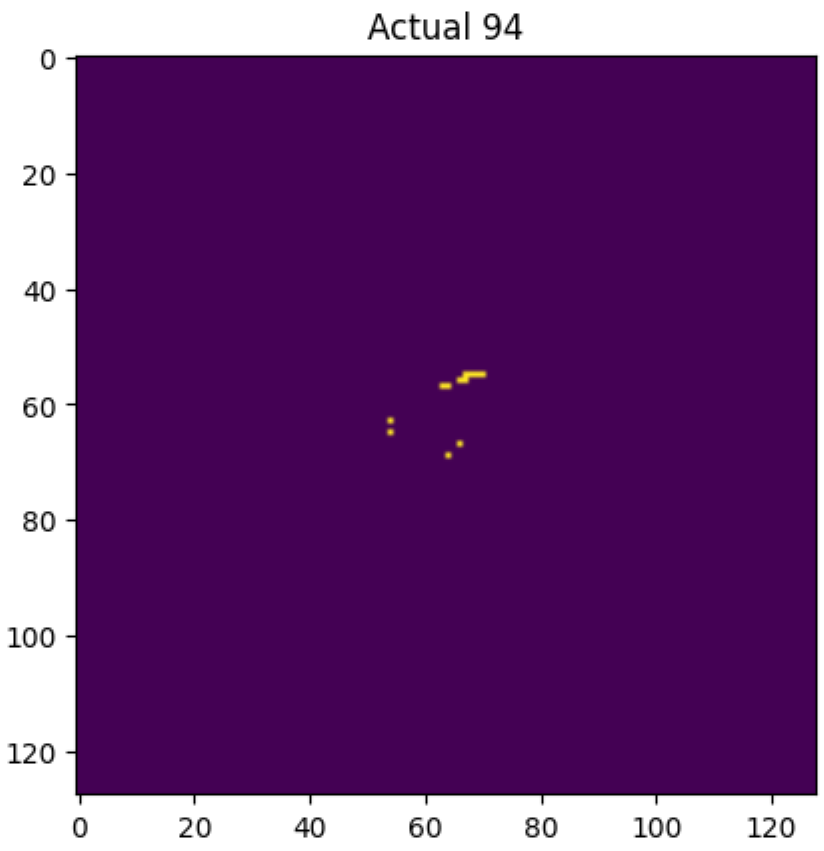
Actual 94
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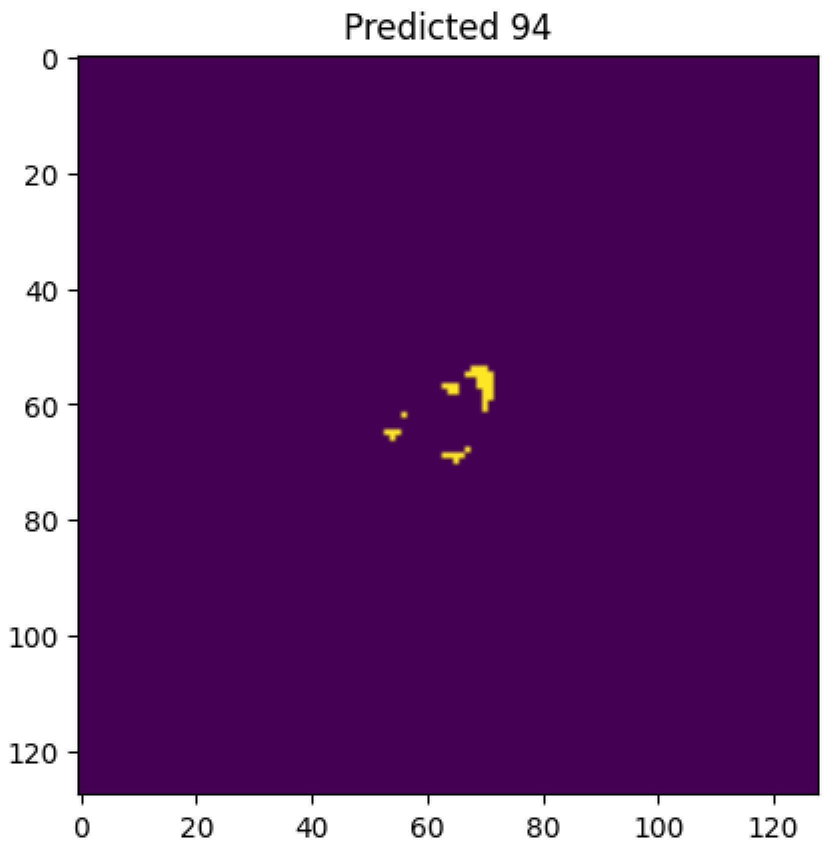

Predicted 94
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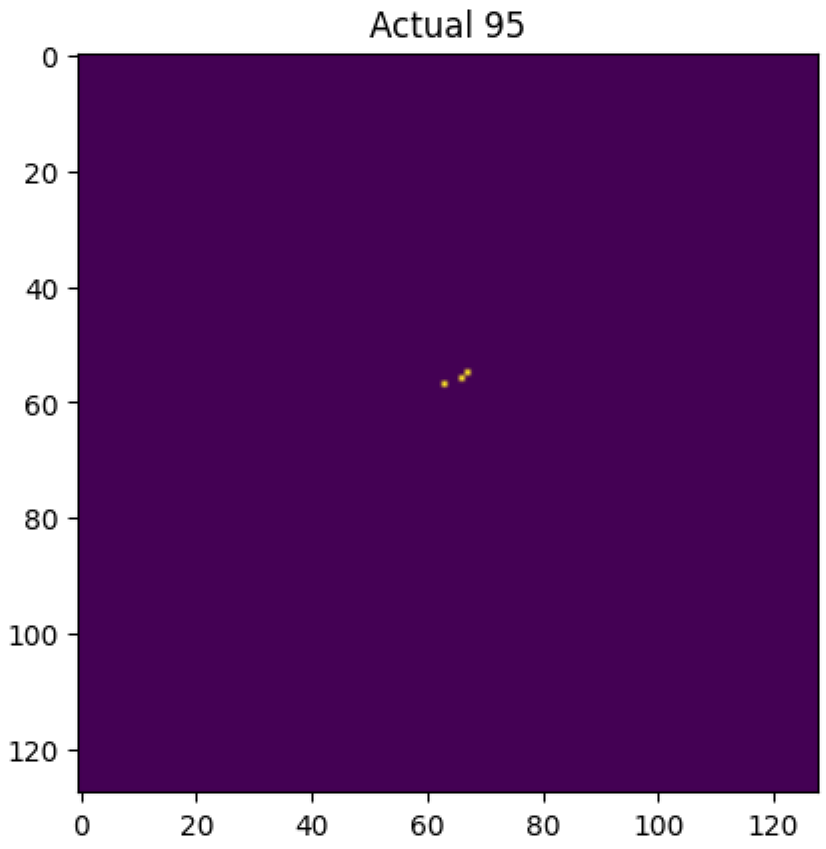

Actual 95
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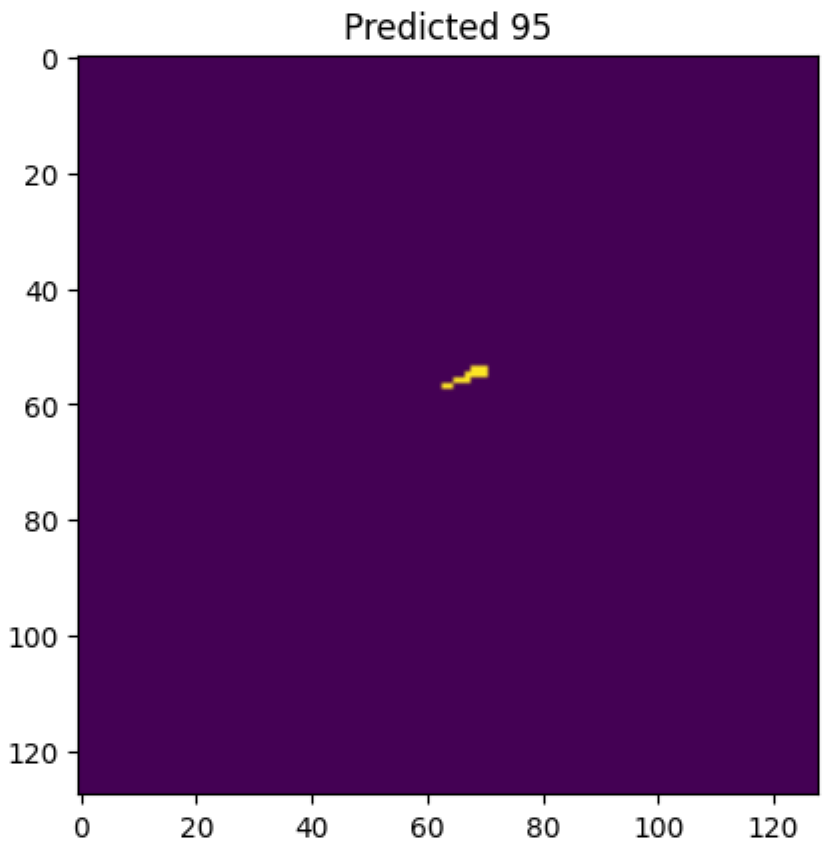
Predicted 95
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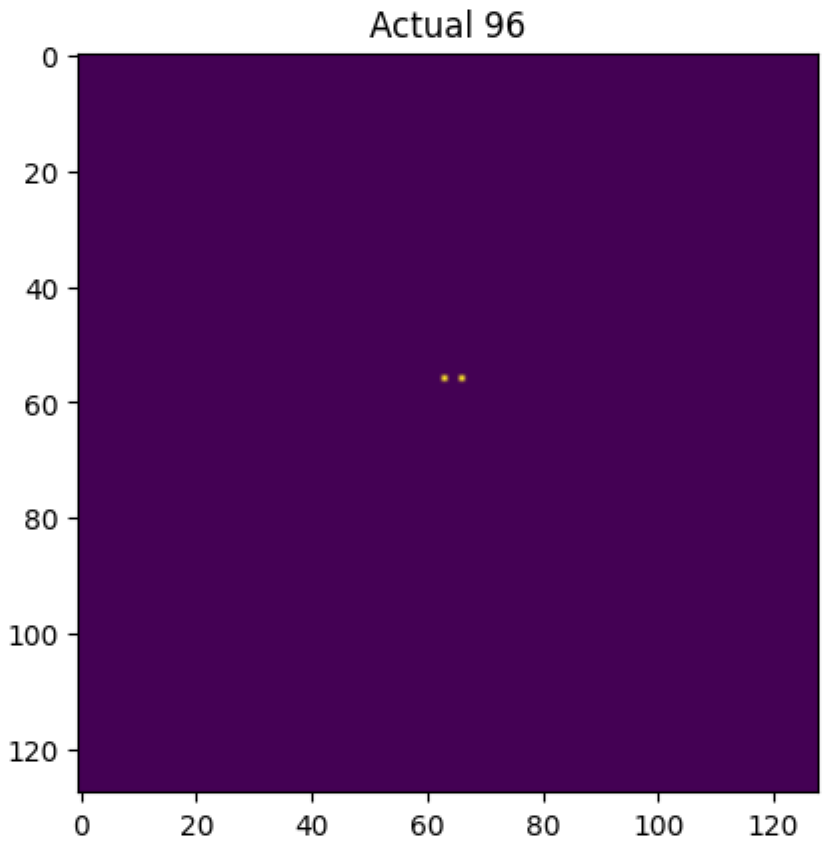
Actual 96
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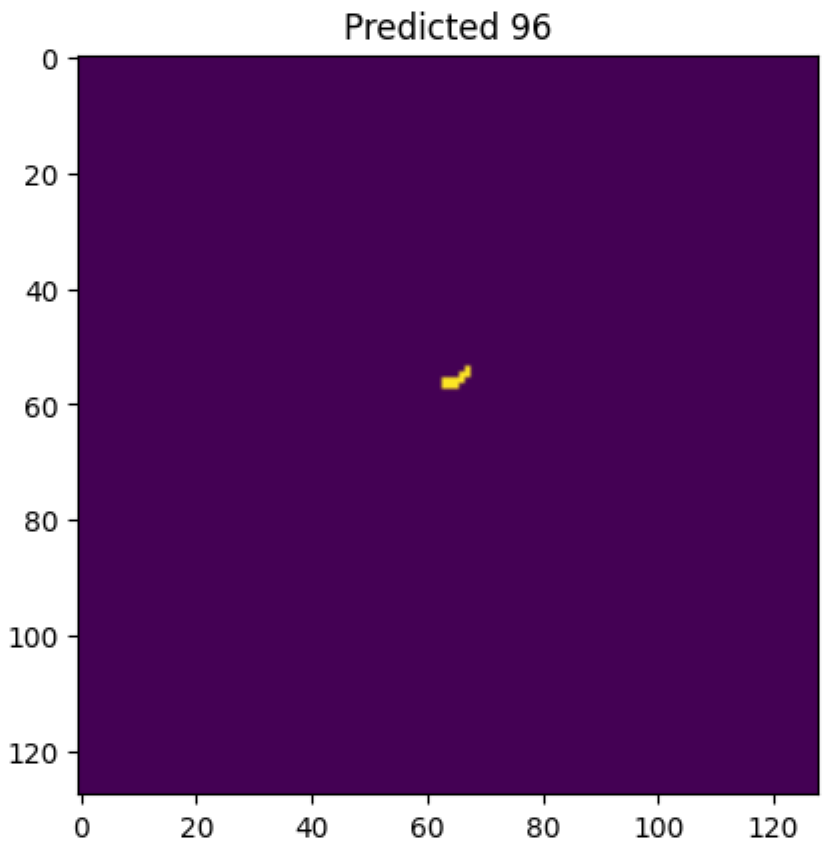
Predicted 96
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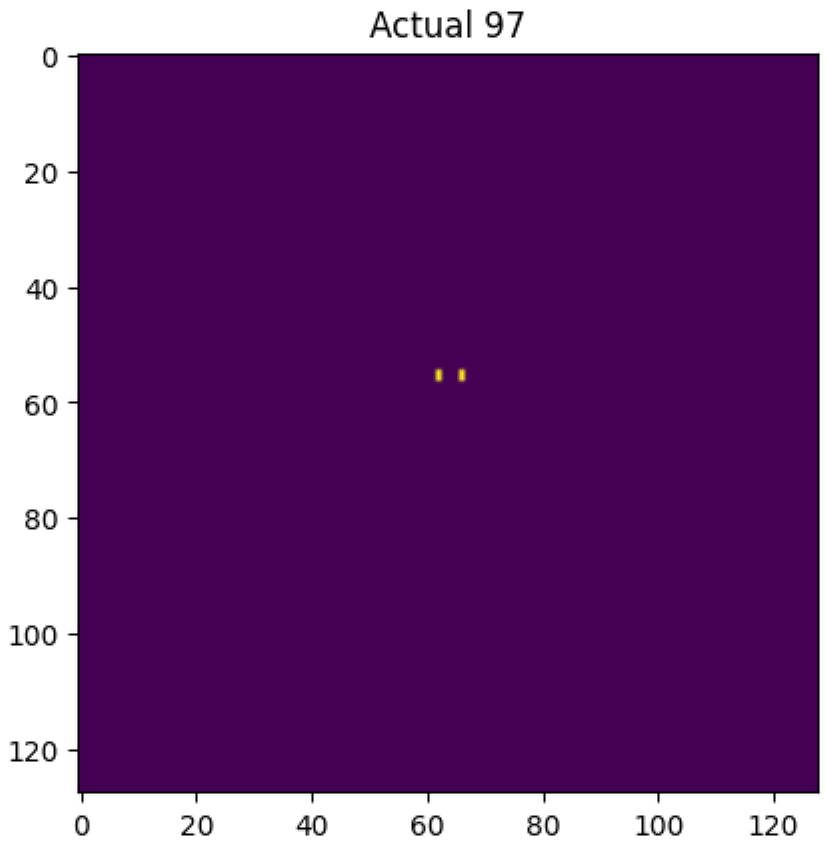
Actual 97
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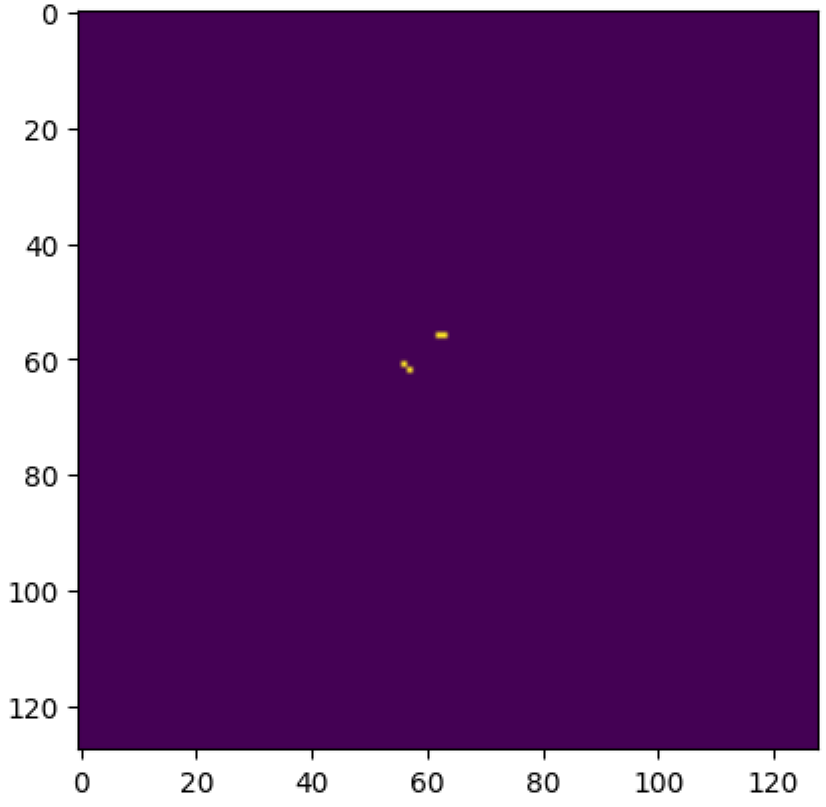
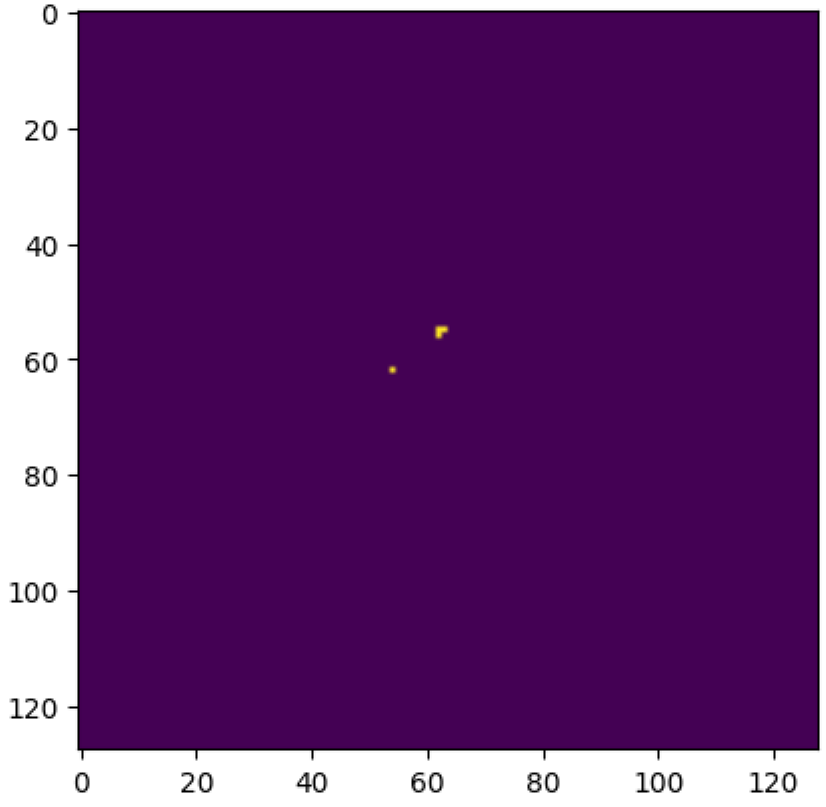
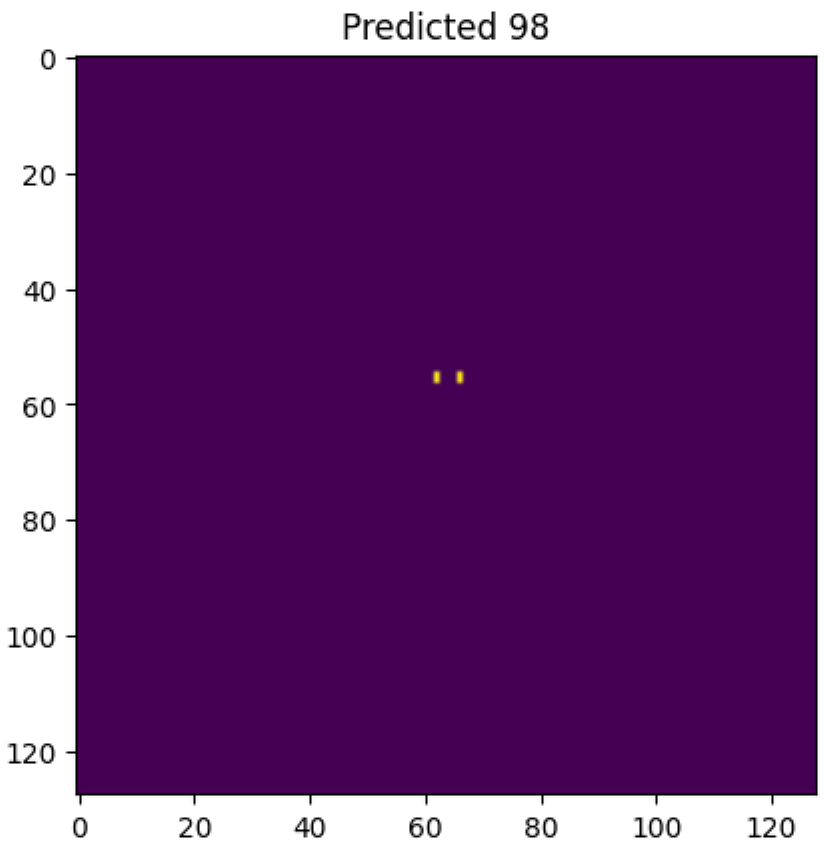
Predicted 97



Actual 98




Predicted 98
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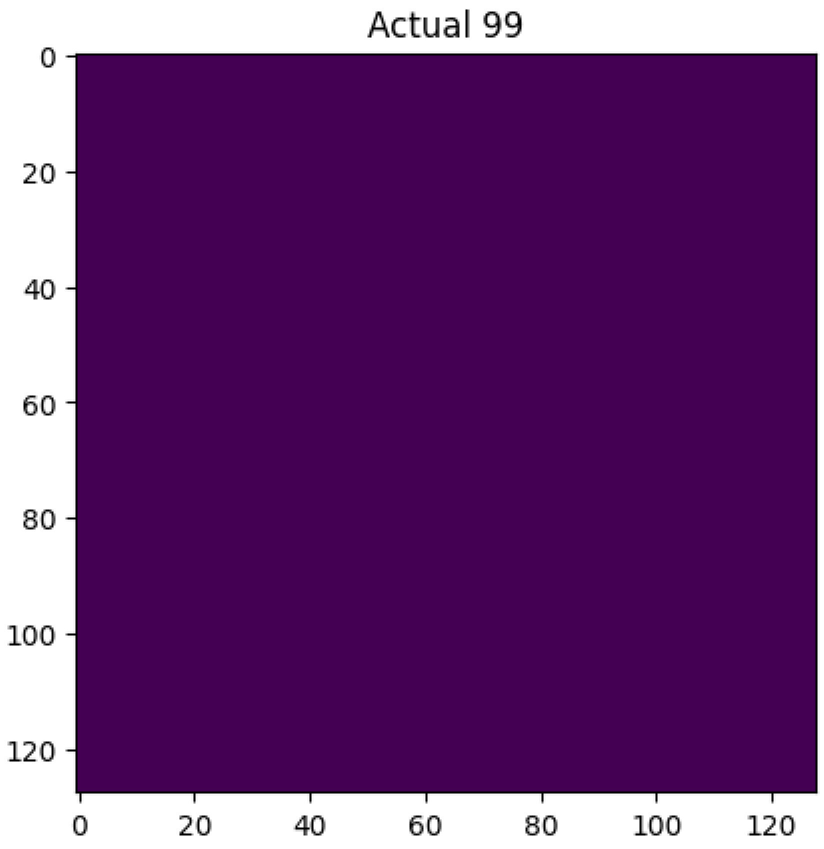
Actual 99
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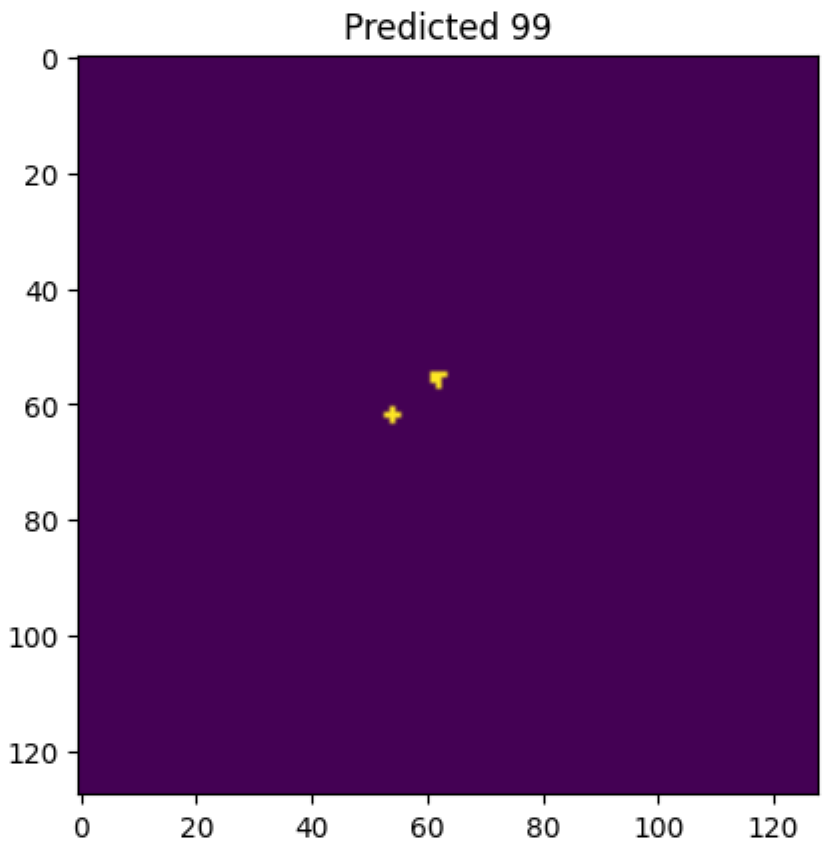
Predicted 99
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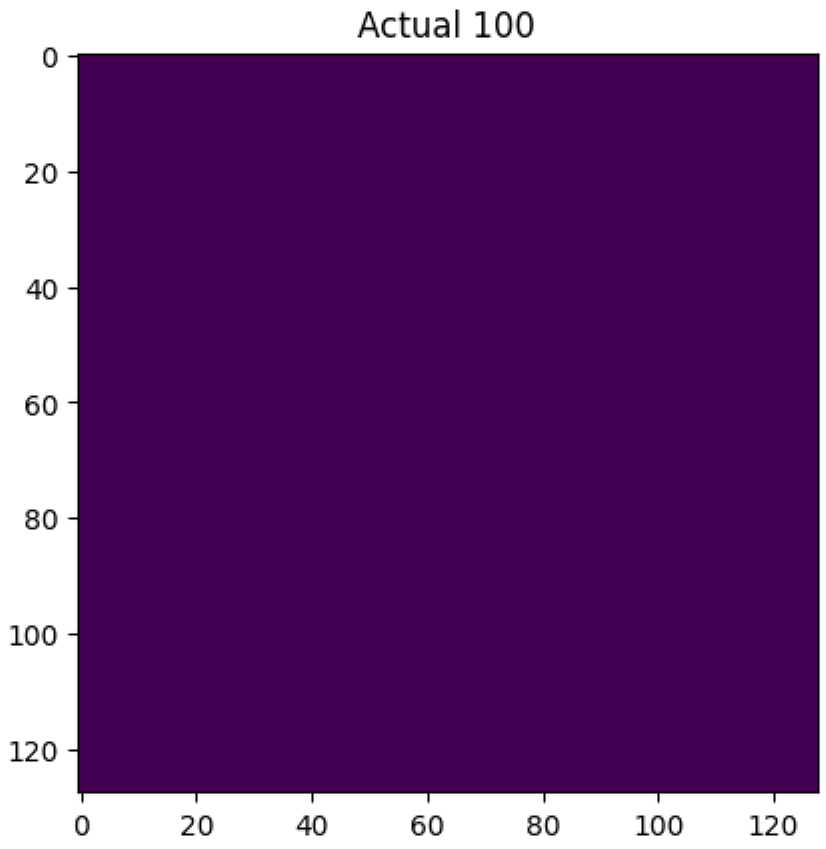
60
80
100
120


Actual 100
0
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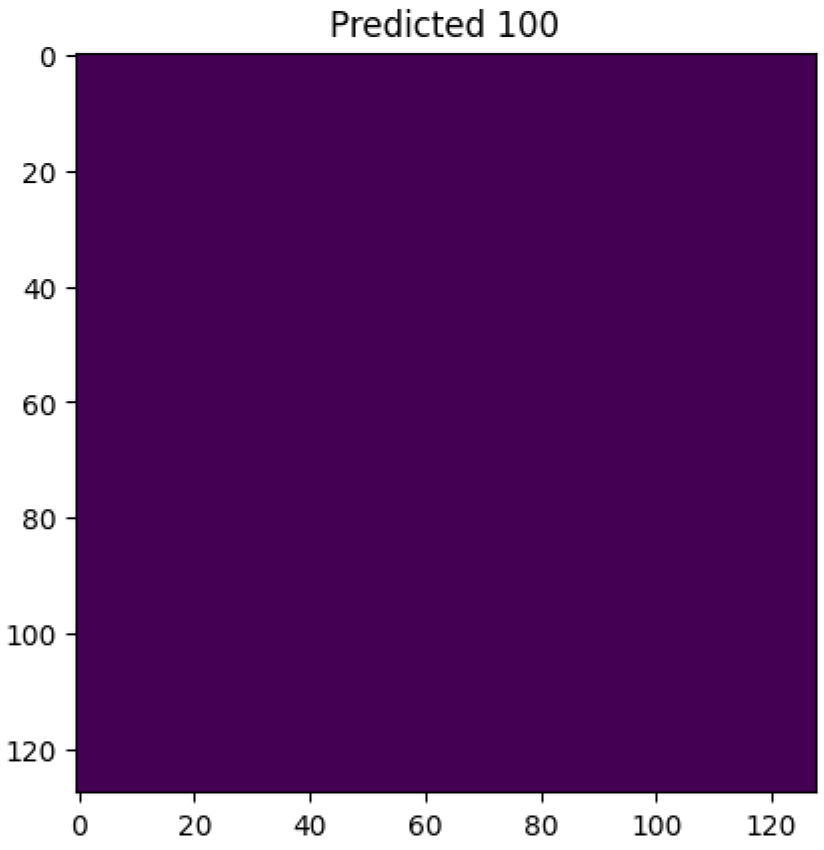
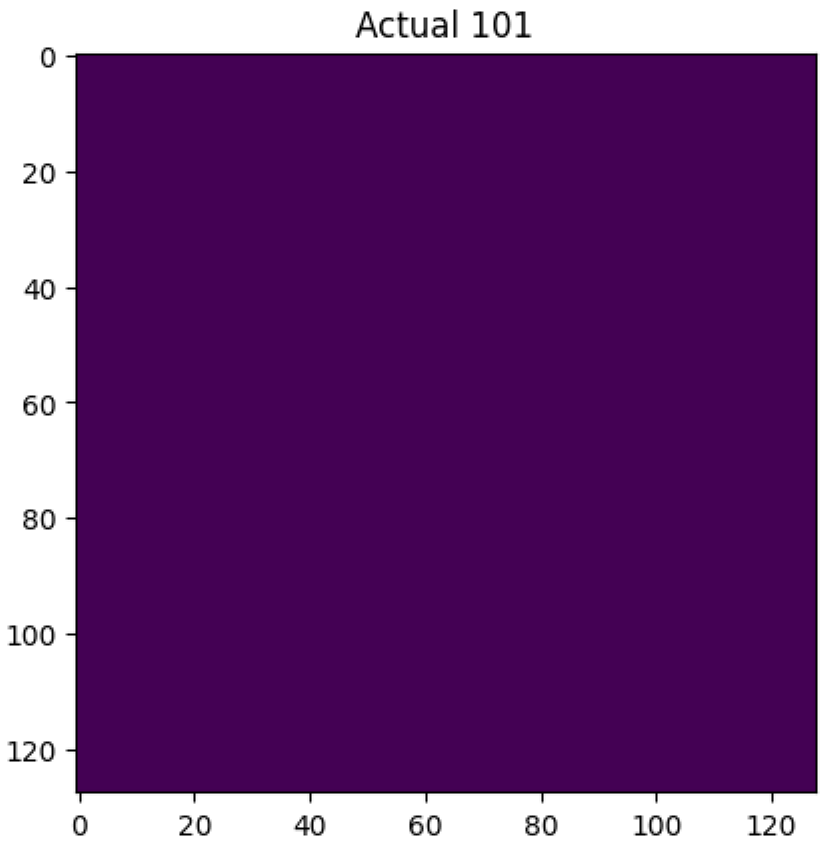
80
100
120


Predicted 100
0
20
40
60
80
100
120


Actual 101
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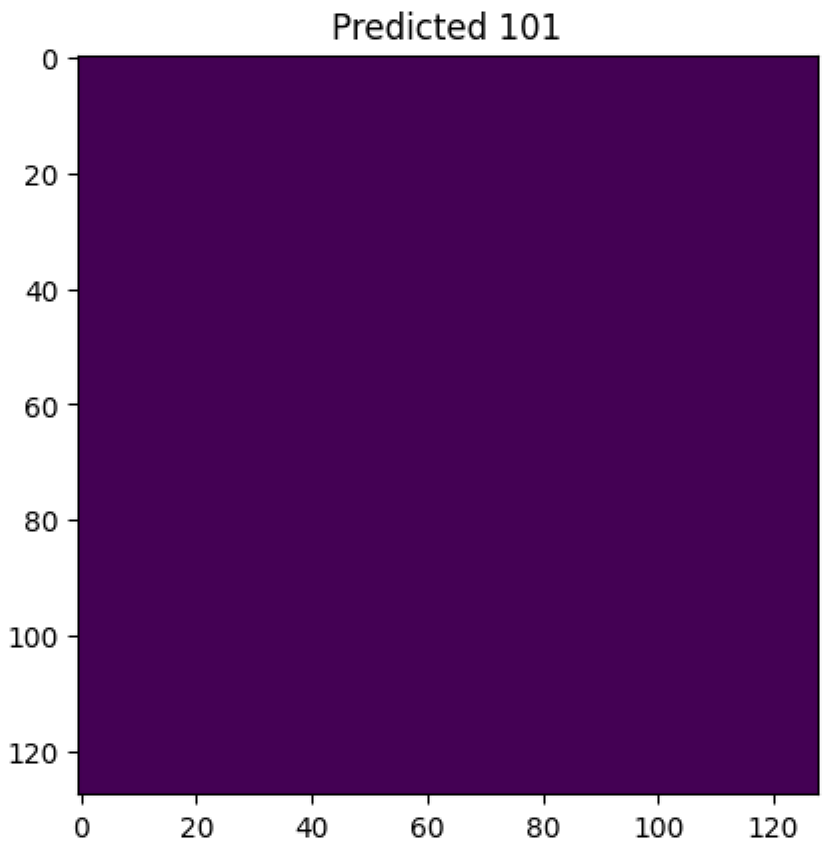
60
80
100
120


Predicted 101
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80
100
120
0
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60
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100
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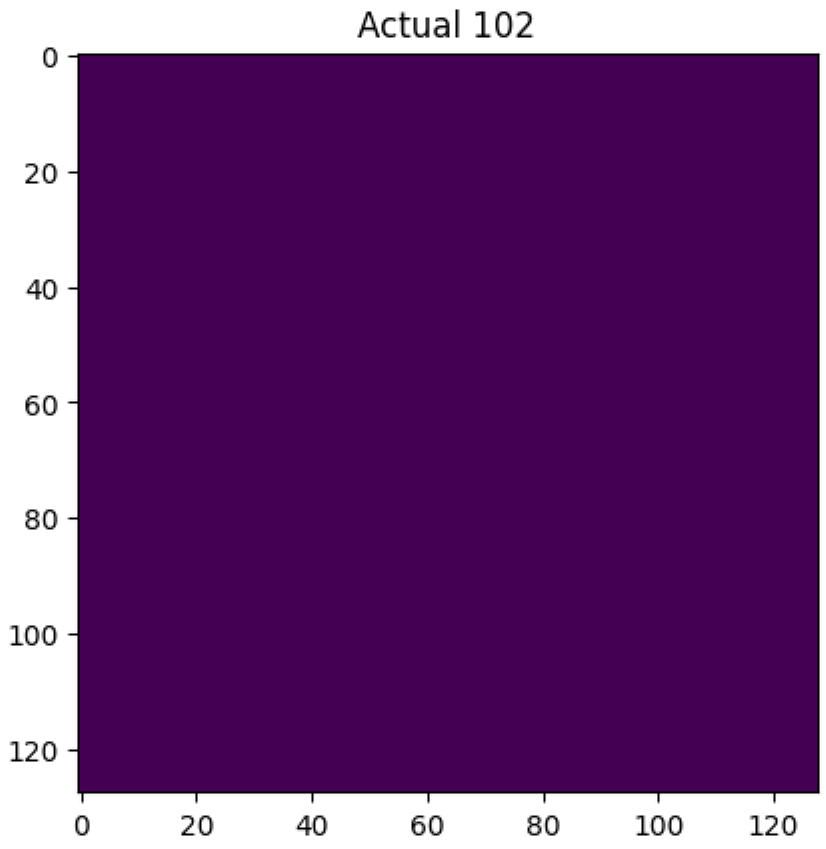
Actual 102
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80
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120
0
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100
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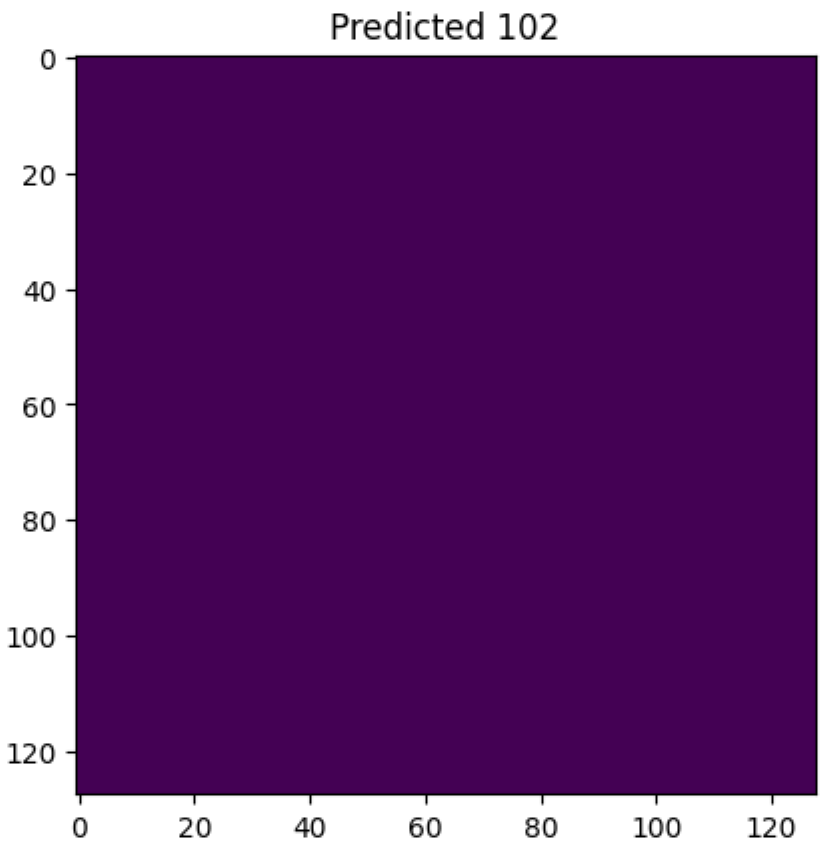
Predicted 102
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0
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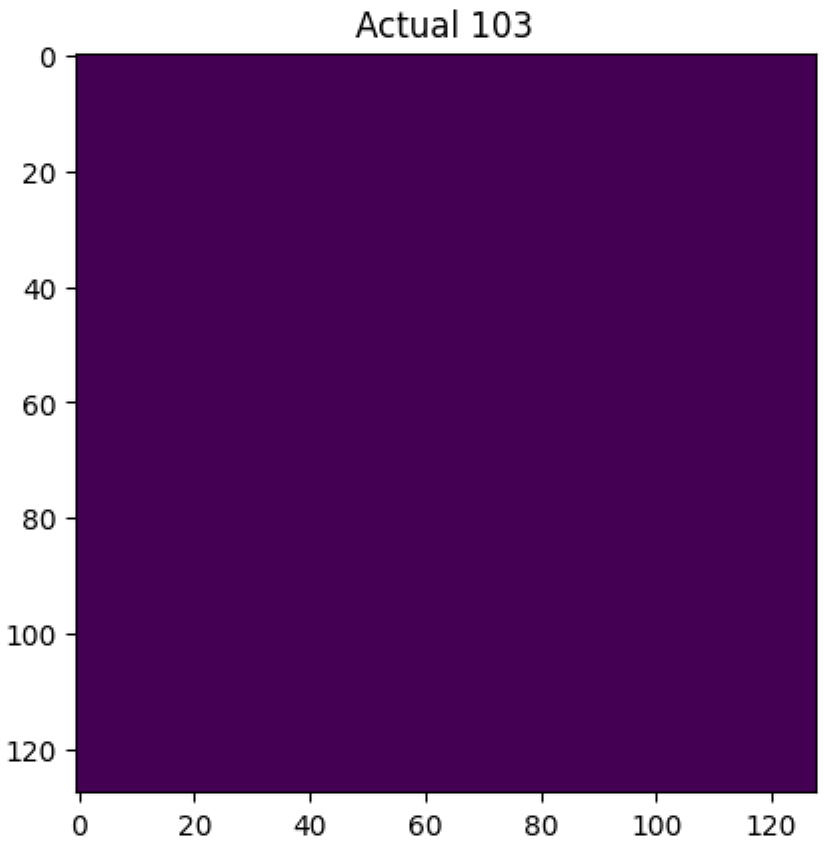
Actual 103
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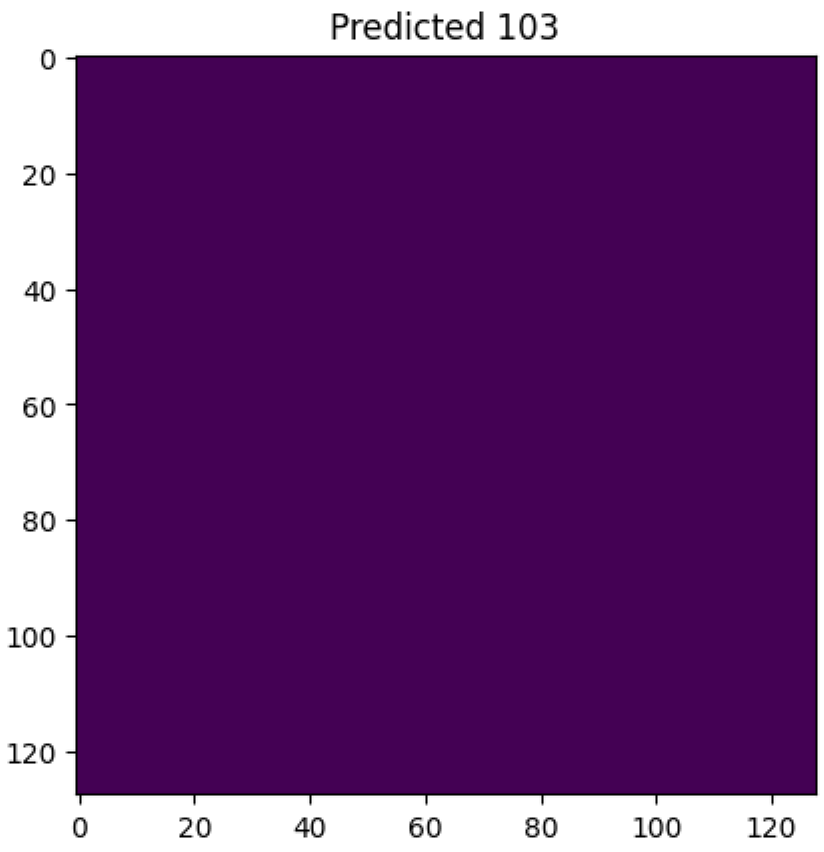
Predicted 103
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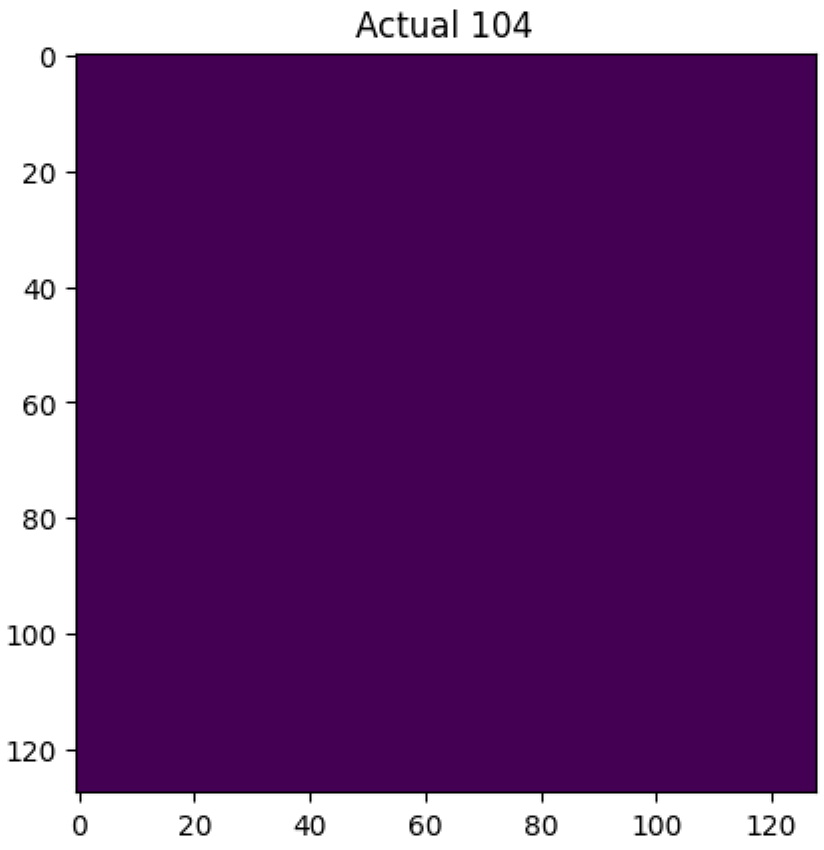
Actual 104
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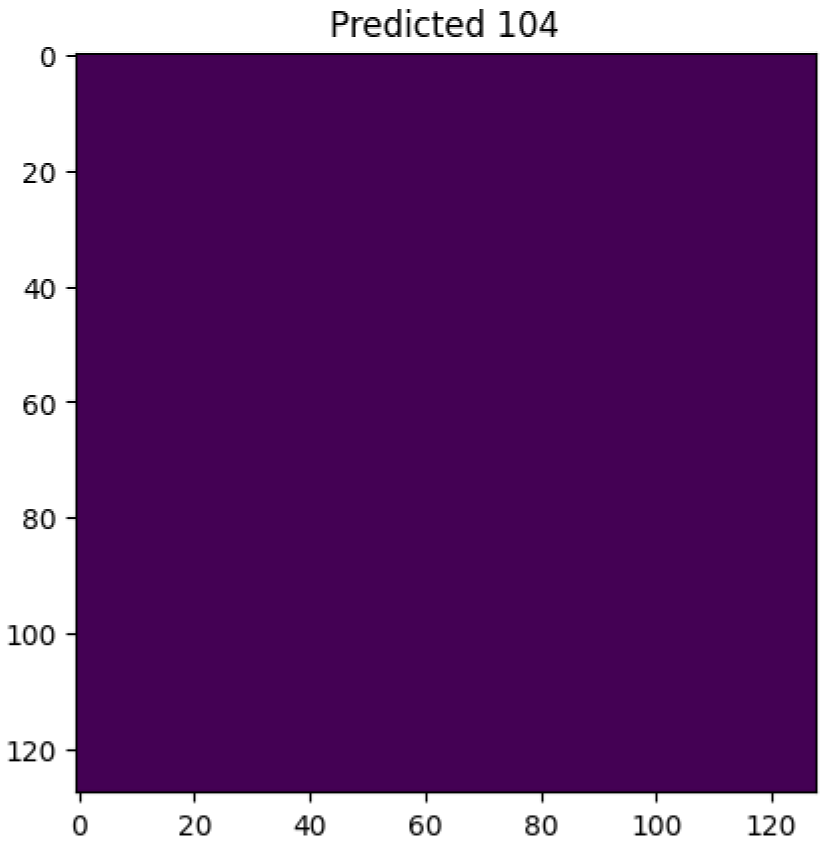
Predicted 104
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100
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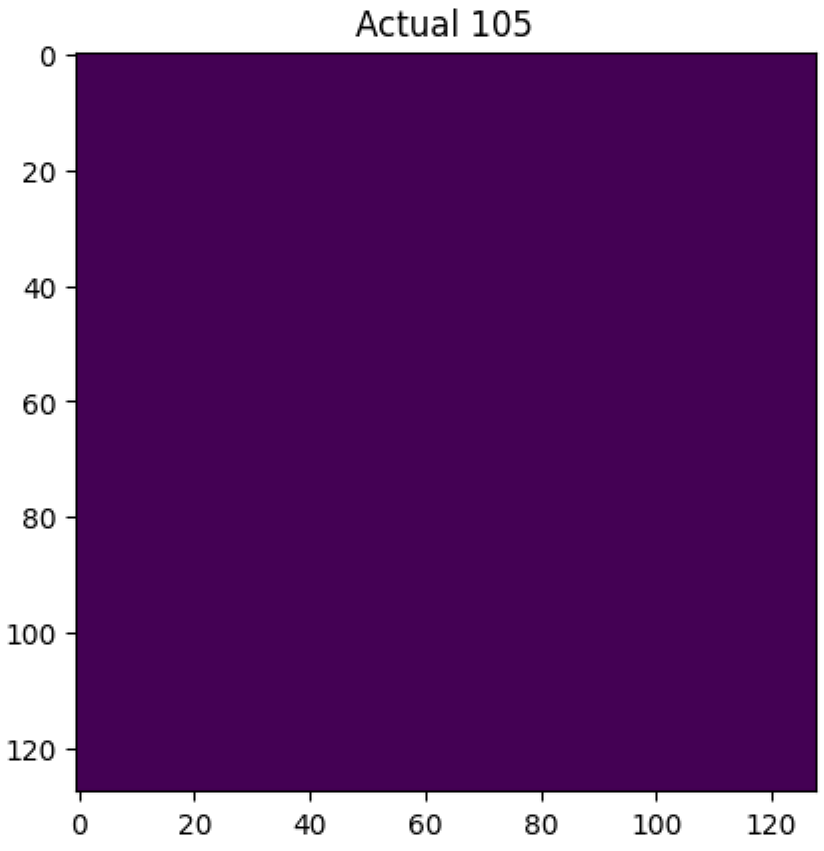
Actual 105
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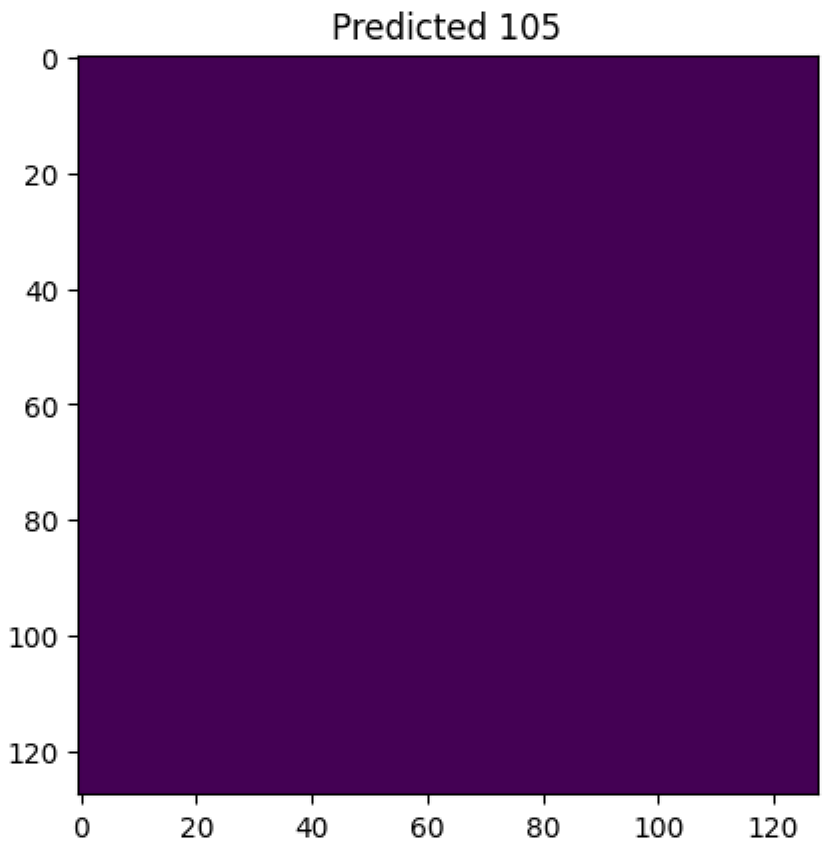
80
100
120


Predicted 105
0
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40
60
80
100
120
0
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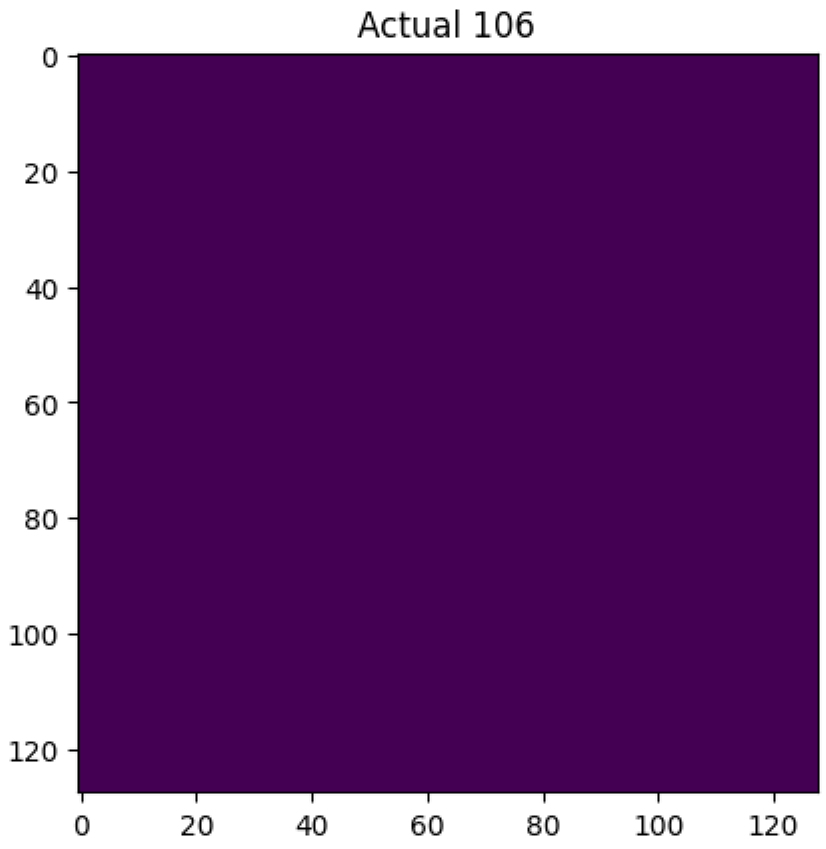
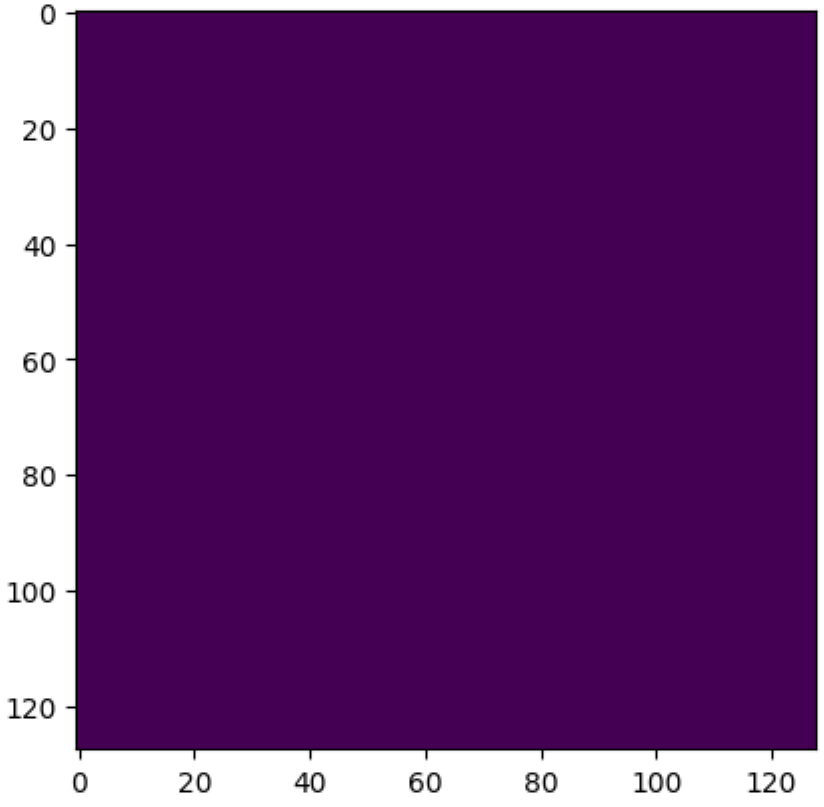
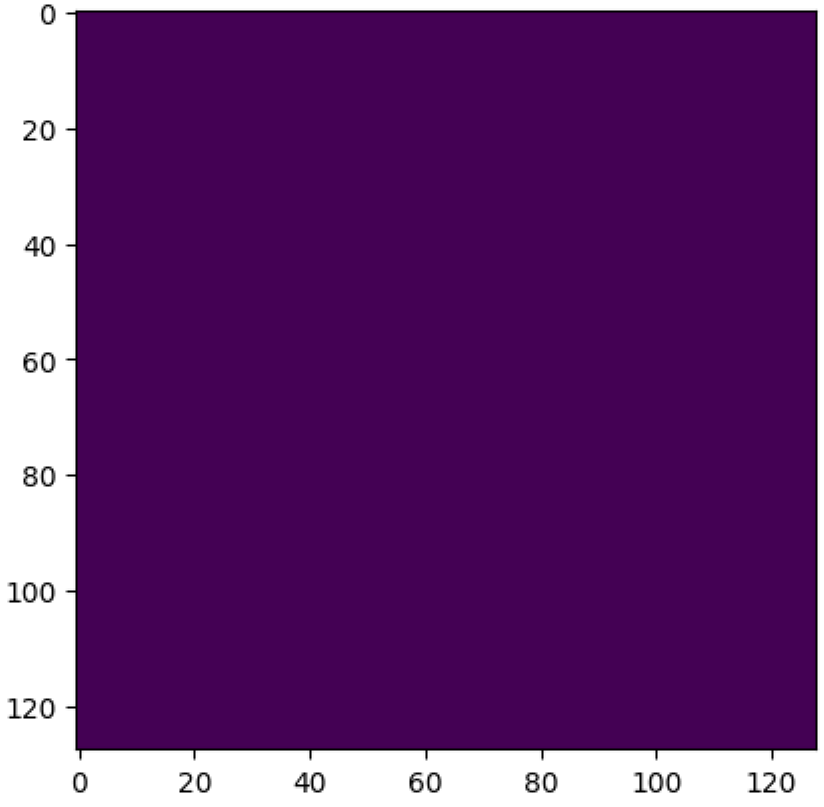
60
80
100
120

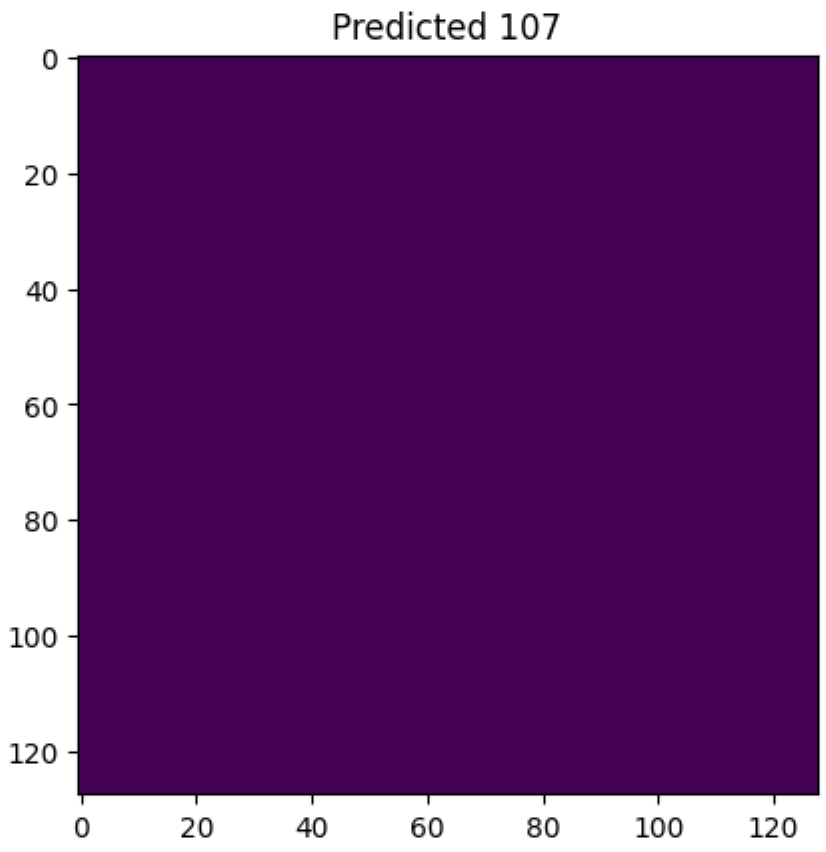

Actual 106
0
20
40
60
80
100
120
0
20
40
60
80
100
120

Predicted 106



Actual 107




Predicted 107
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80
100
120
0
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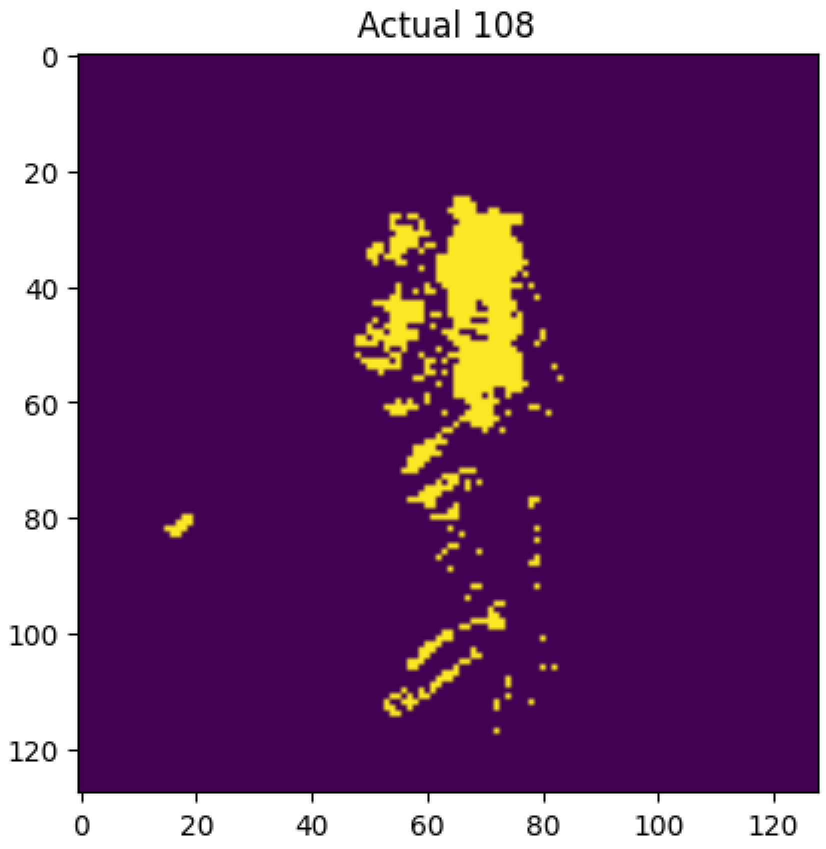
60
80
100
120


Actual 108
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80
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60
80
100
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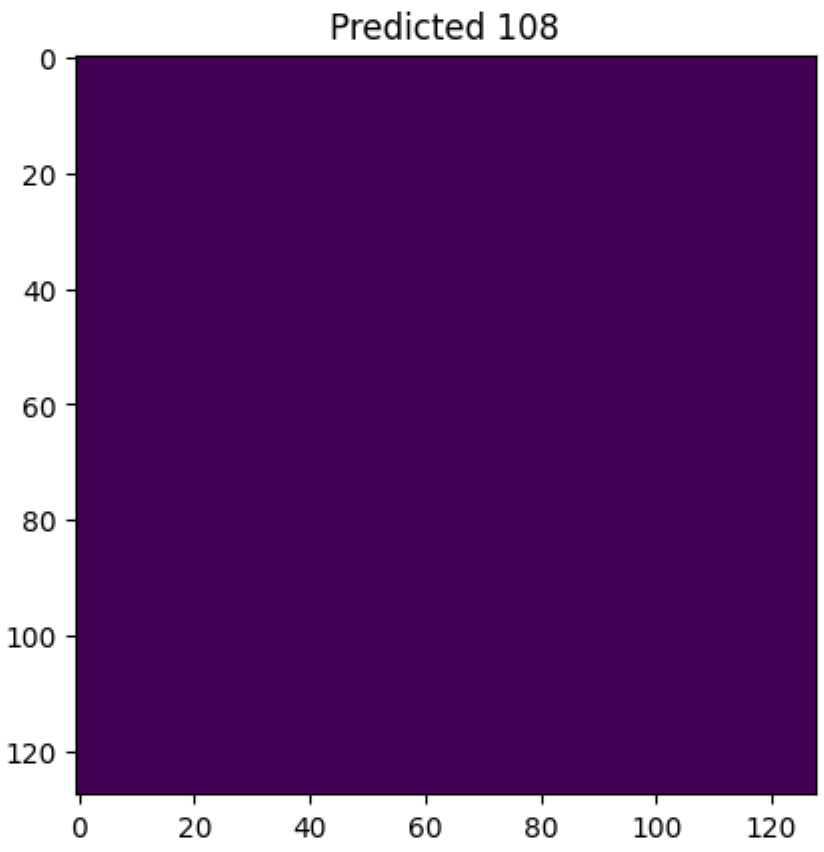
Predicted 108
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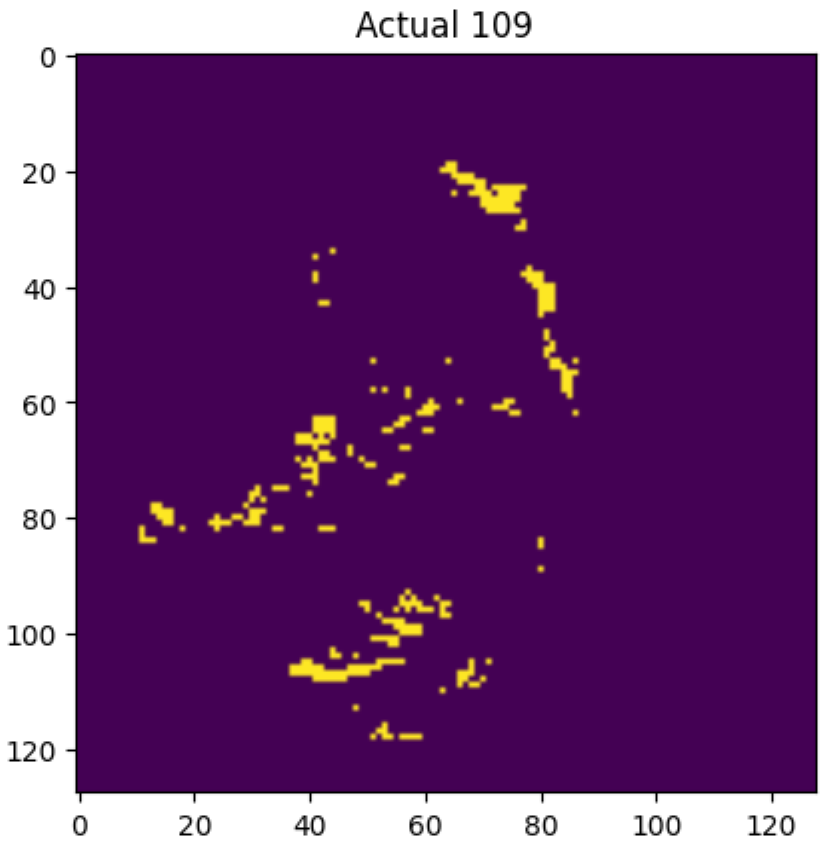
Actual 109
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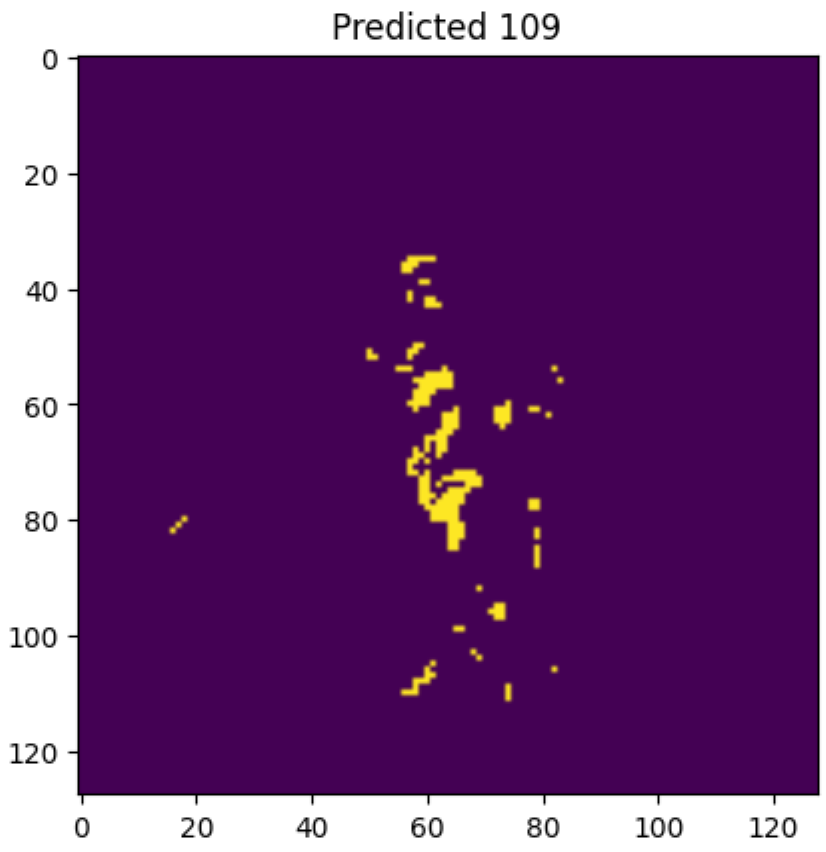
Predicted 109
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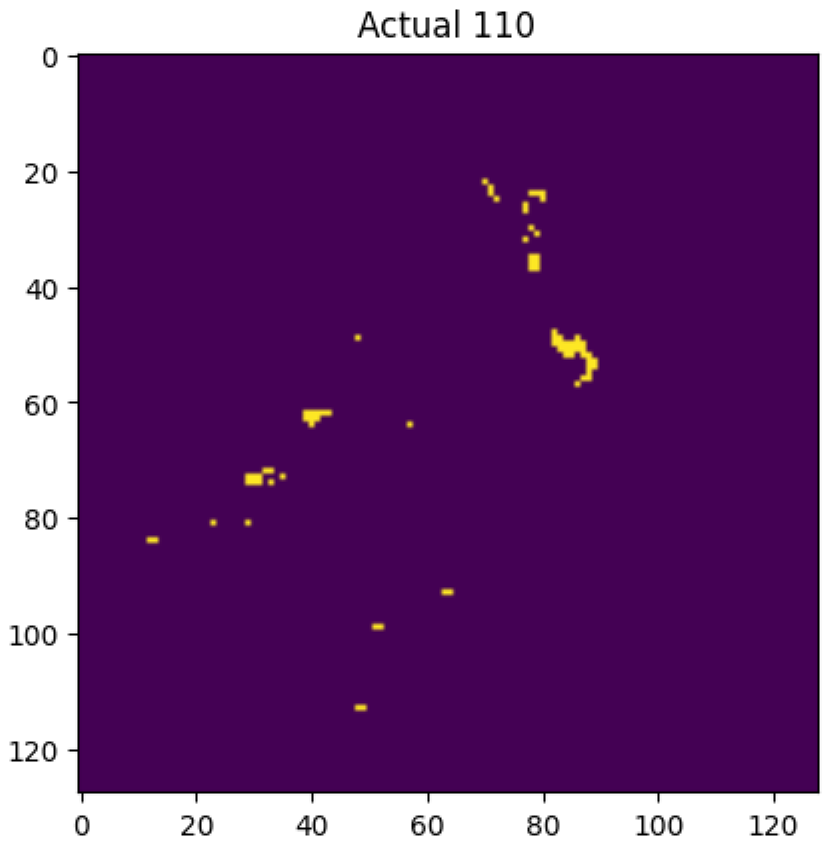
Actual 110
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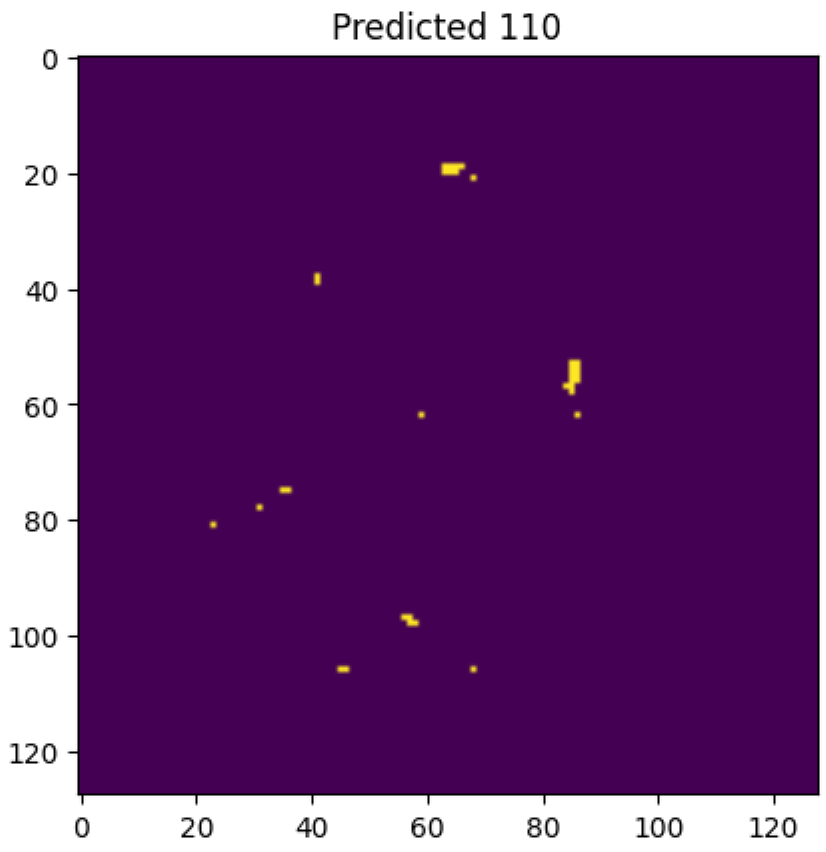
Predicted 110
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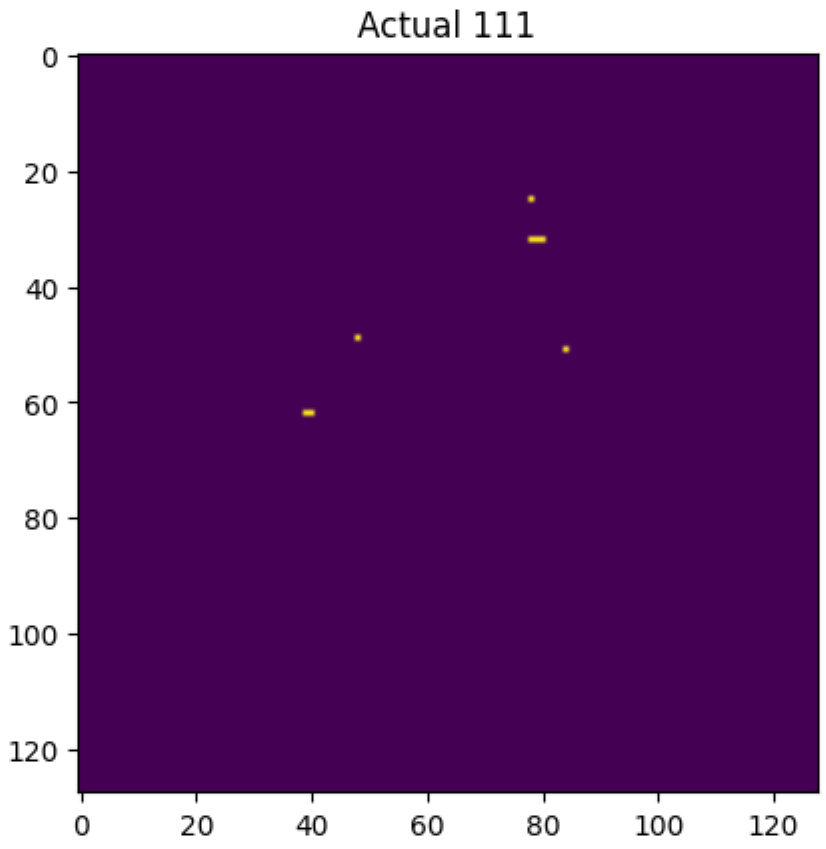
Actual 111
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100
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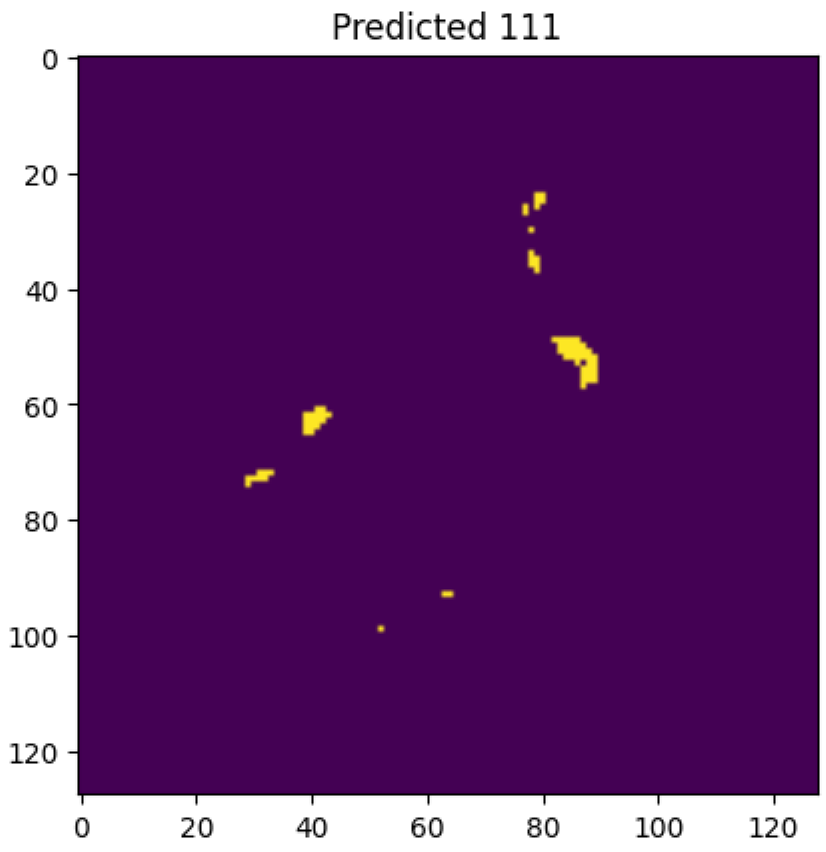
Predicted 111
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120
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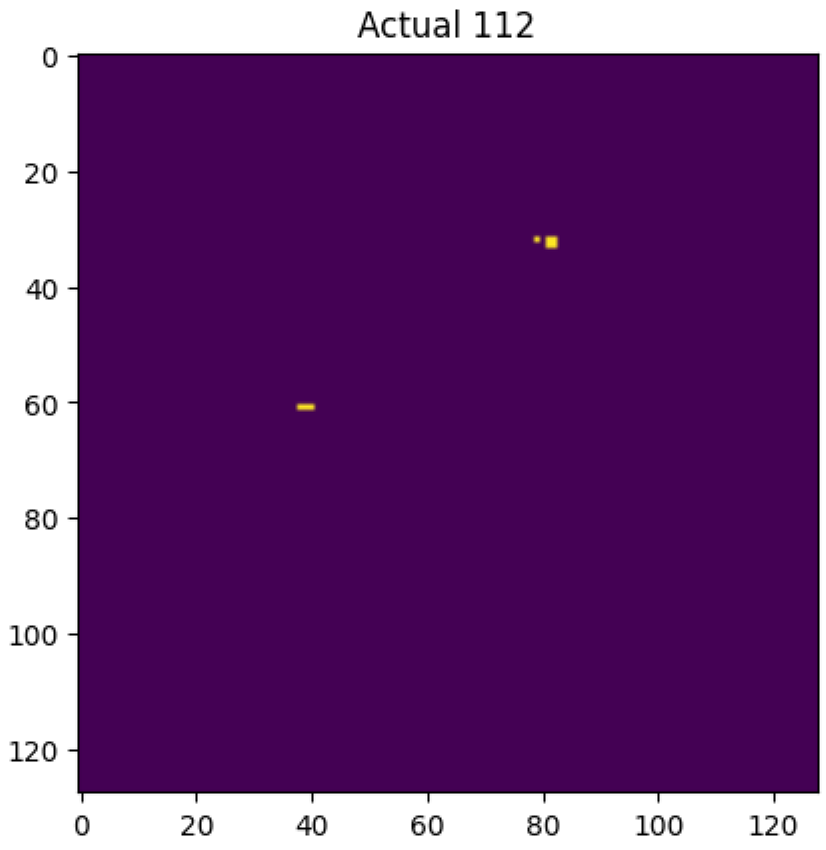
Actual 112
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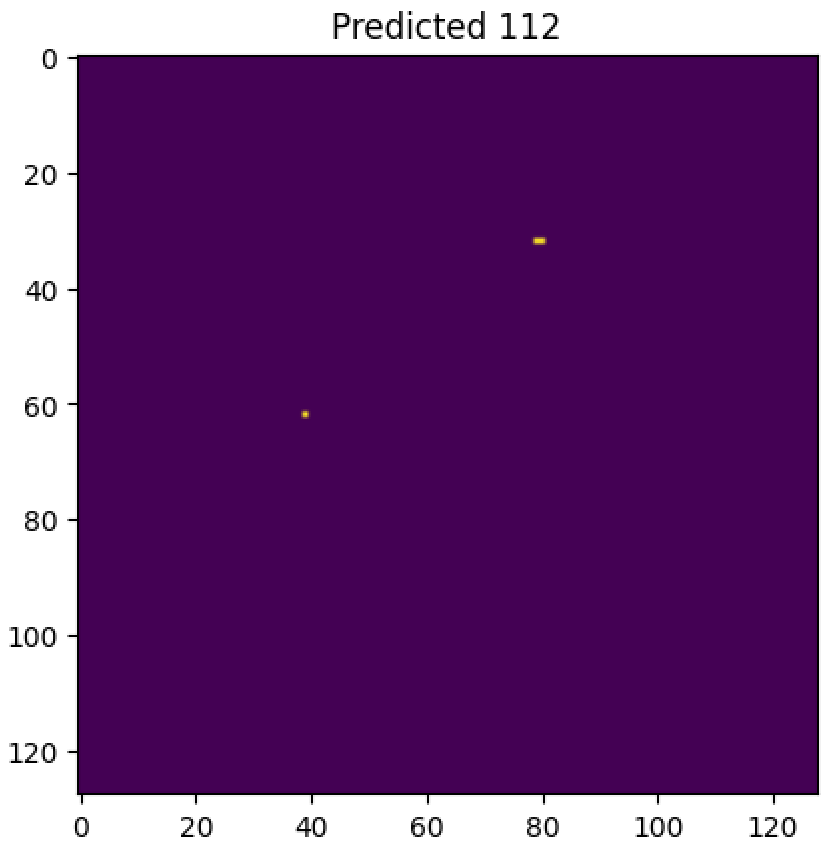
Predicted 112
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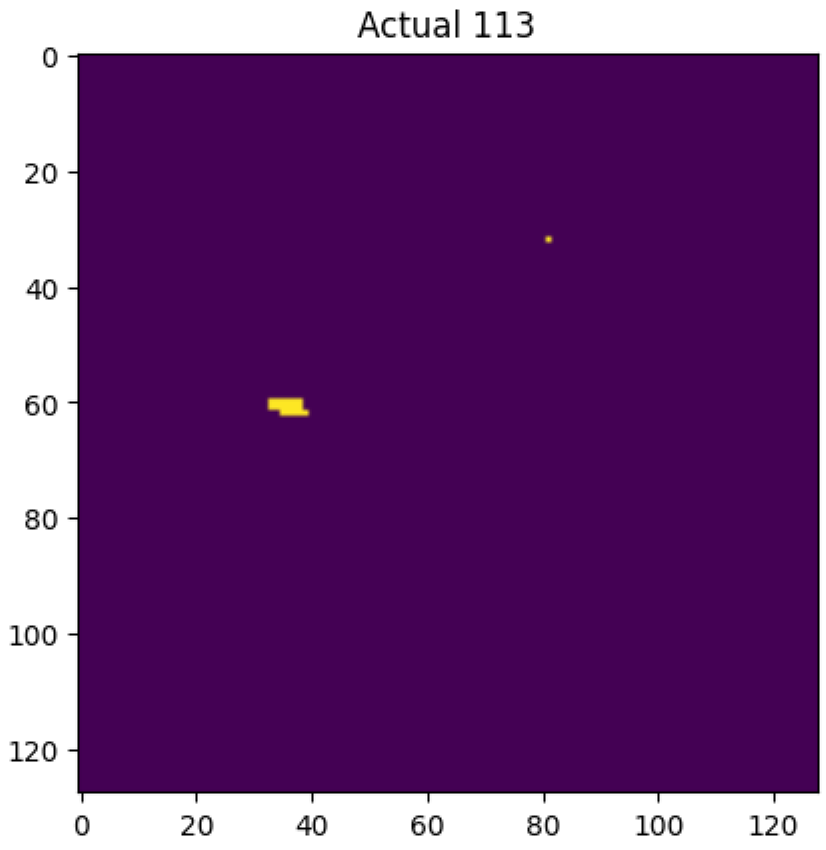
Actual 113
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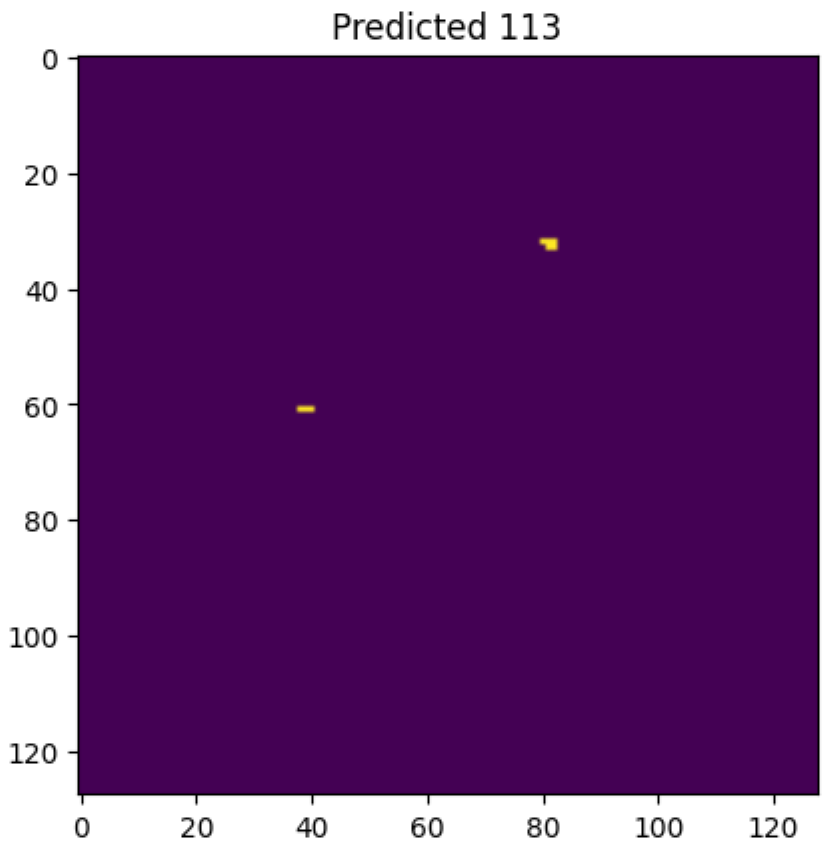
Predicted 113
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100
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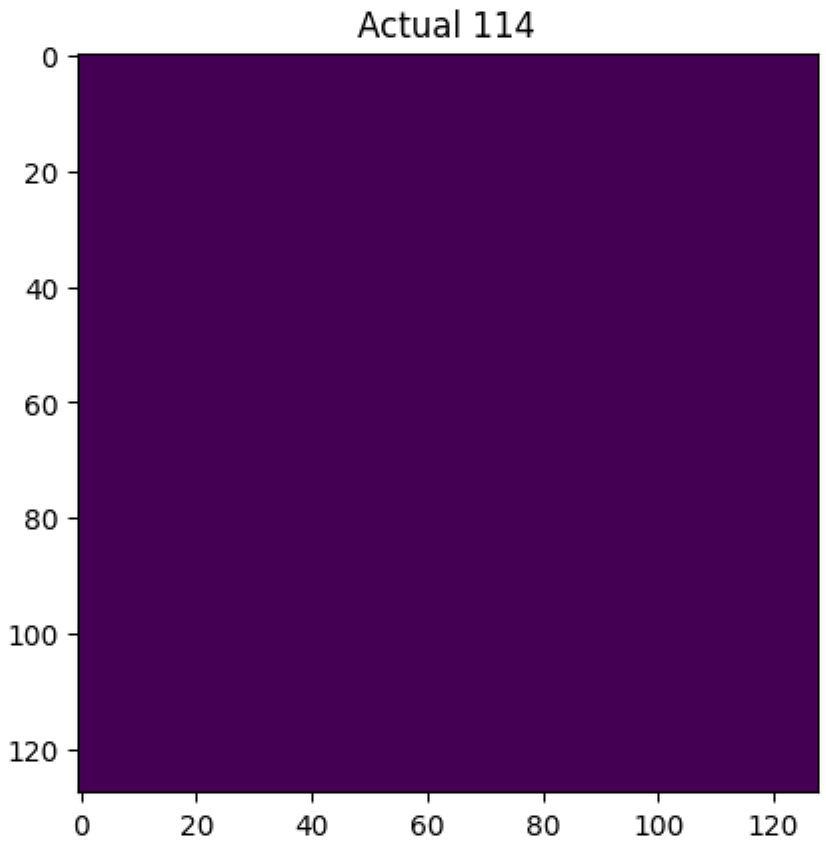
Actual 114
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100
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0
20
40
60
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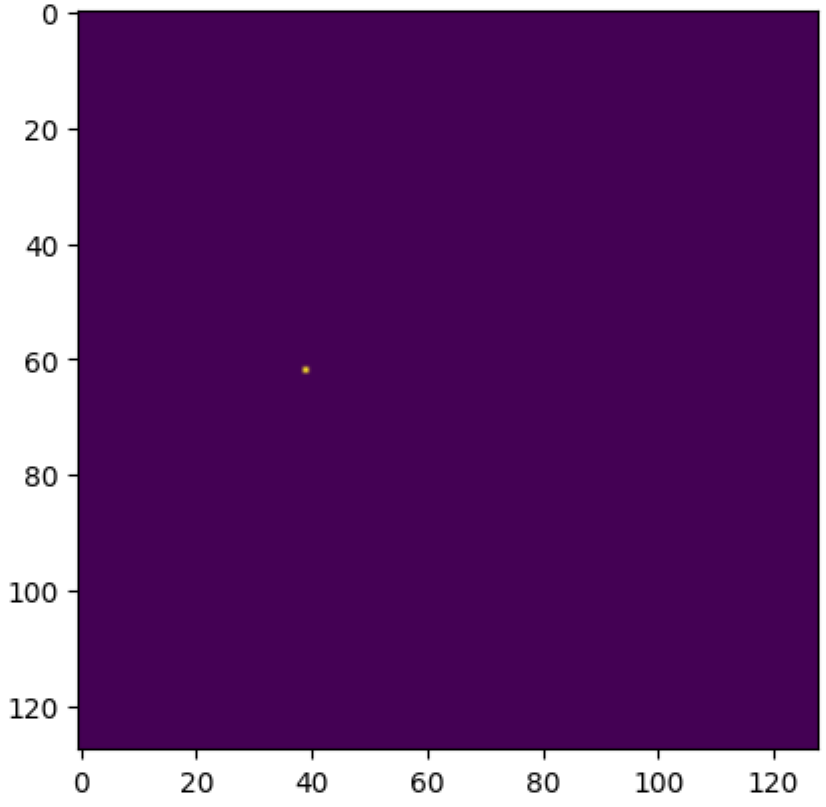
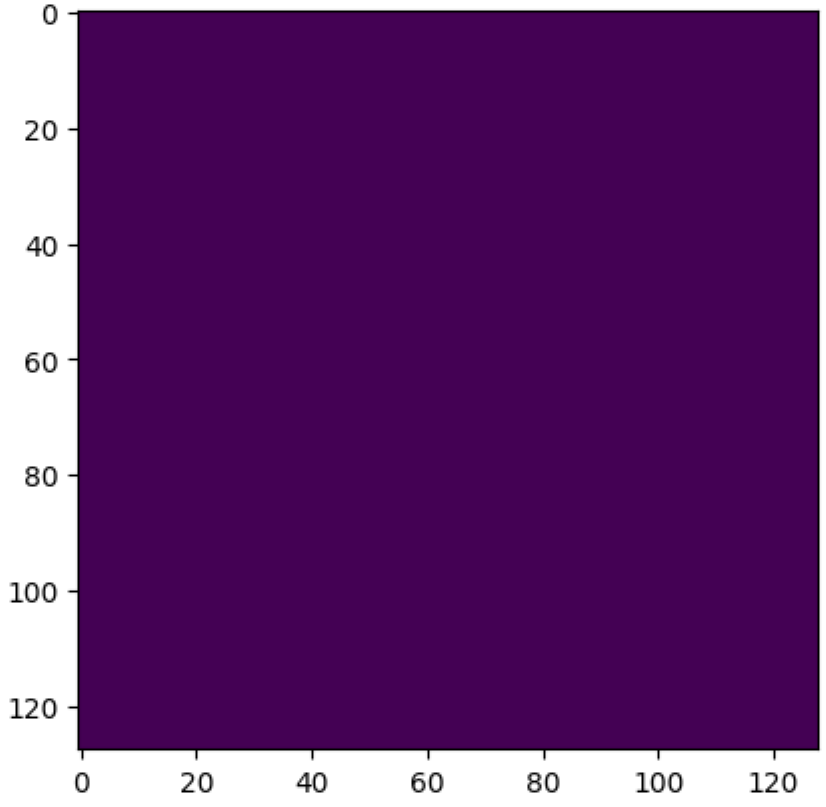
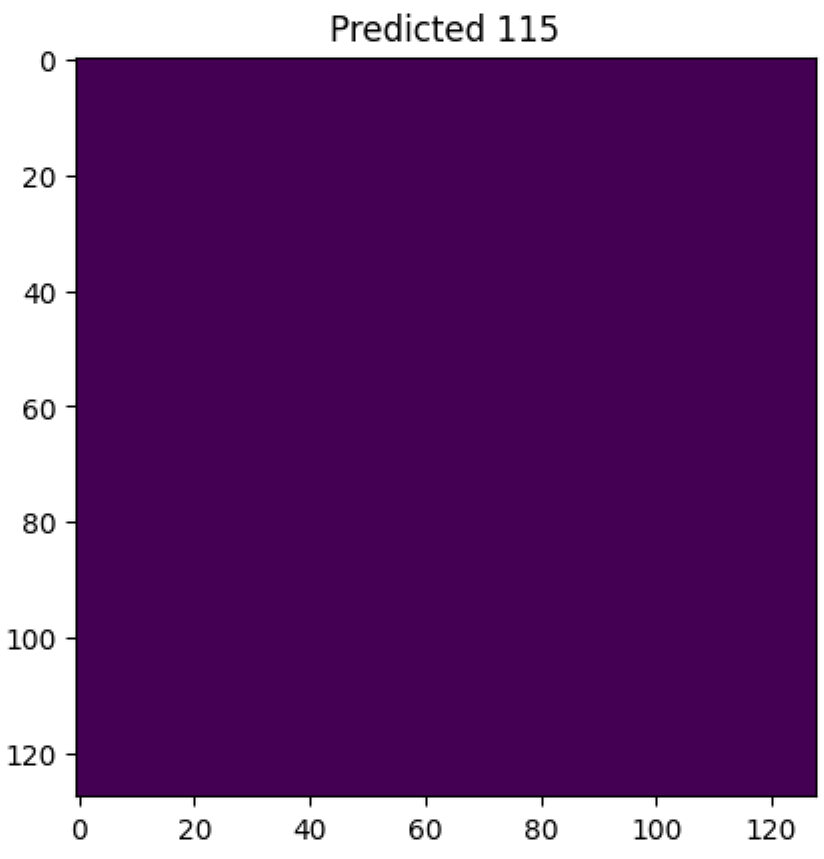
100
120

Predicted 114



Actual 115




Predicted 115
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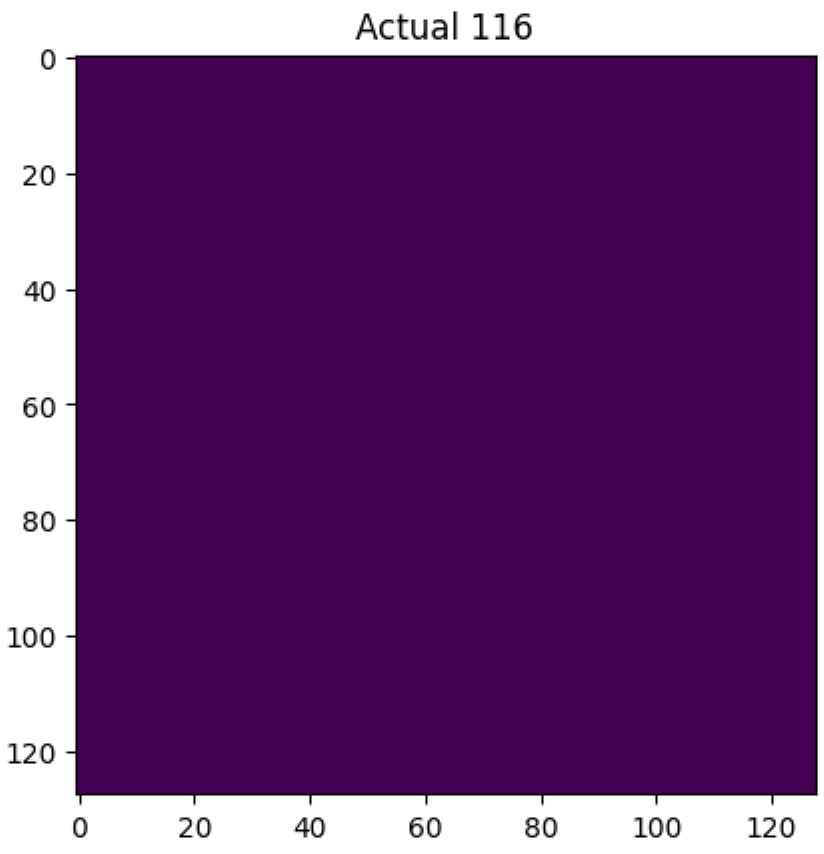
Actual 116
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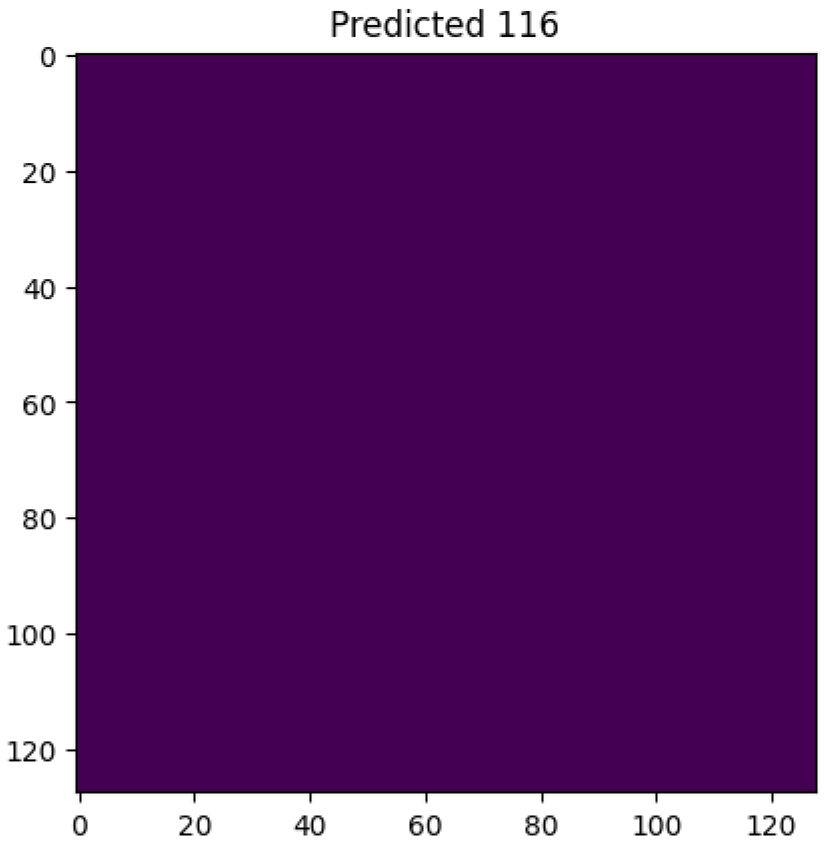
Predicted 116
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100
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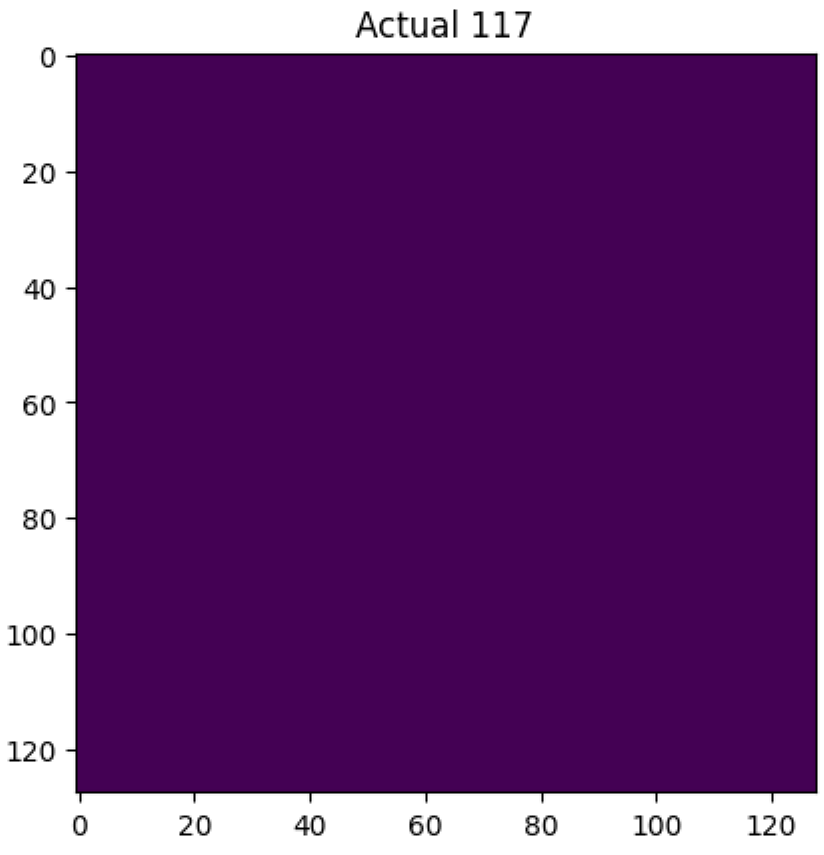
Actual 117
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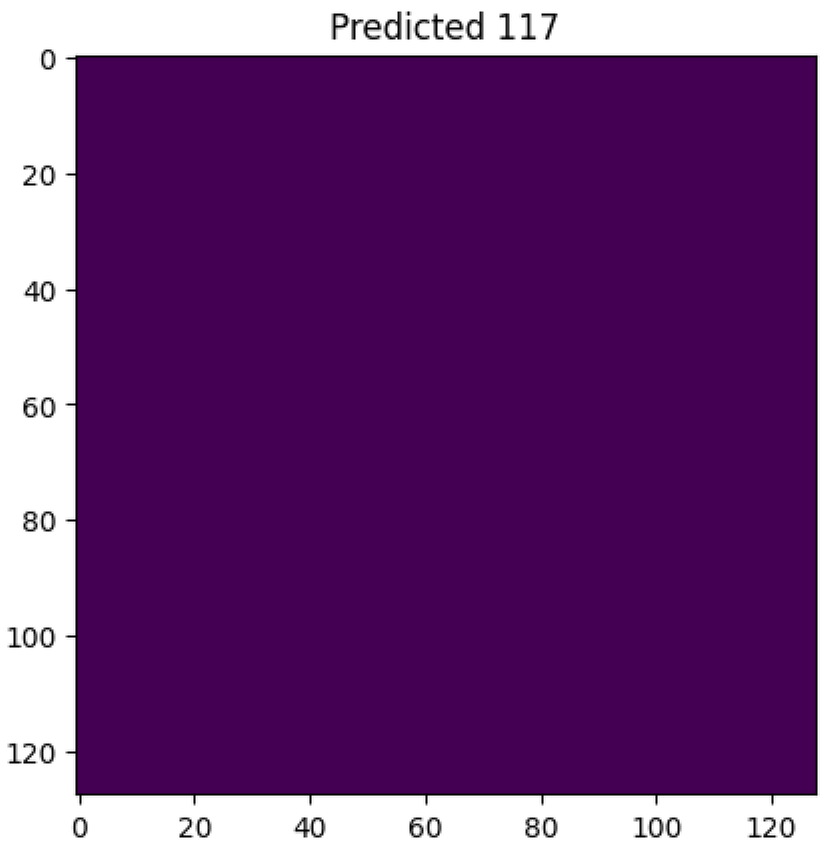
Predicted 117
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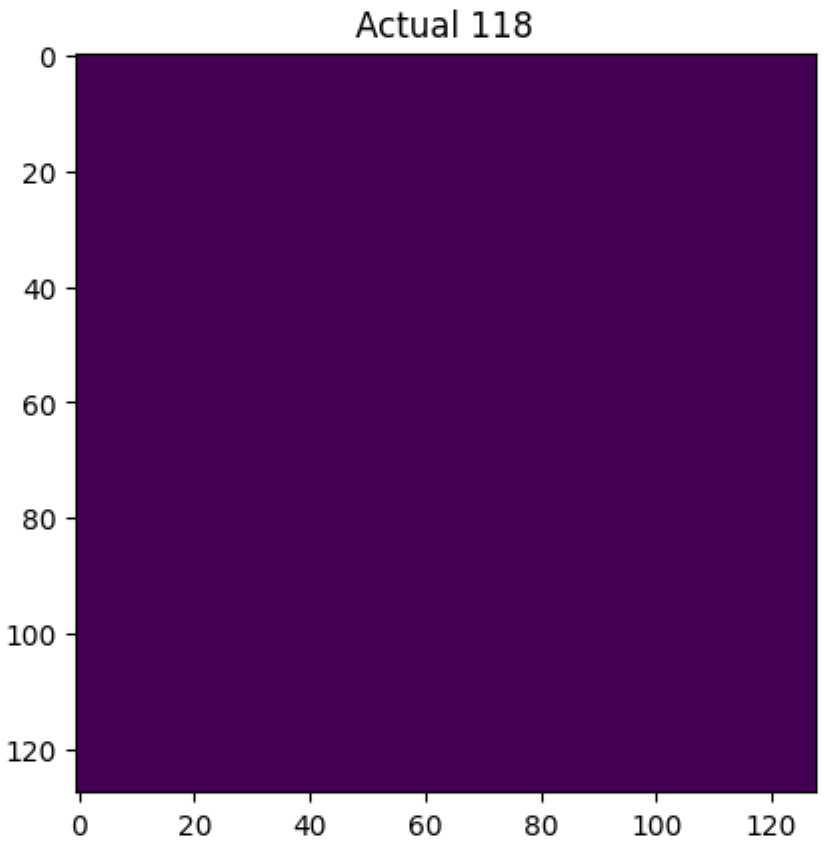
Actual 118
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80
100
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0
20
40
60
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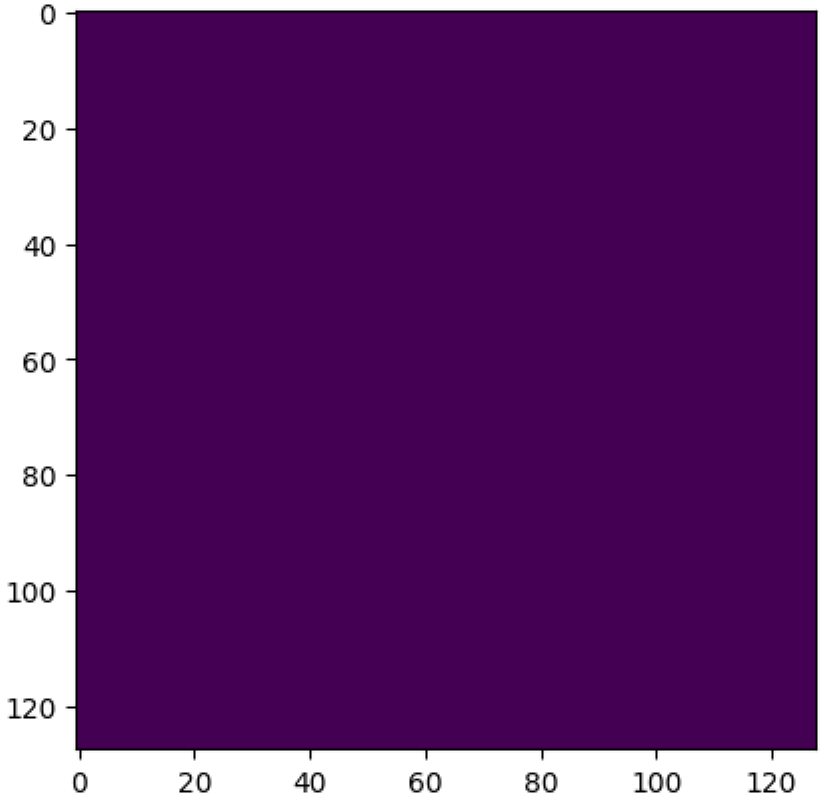
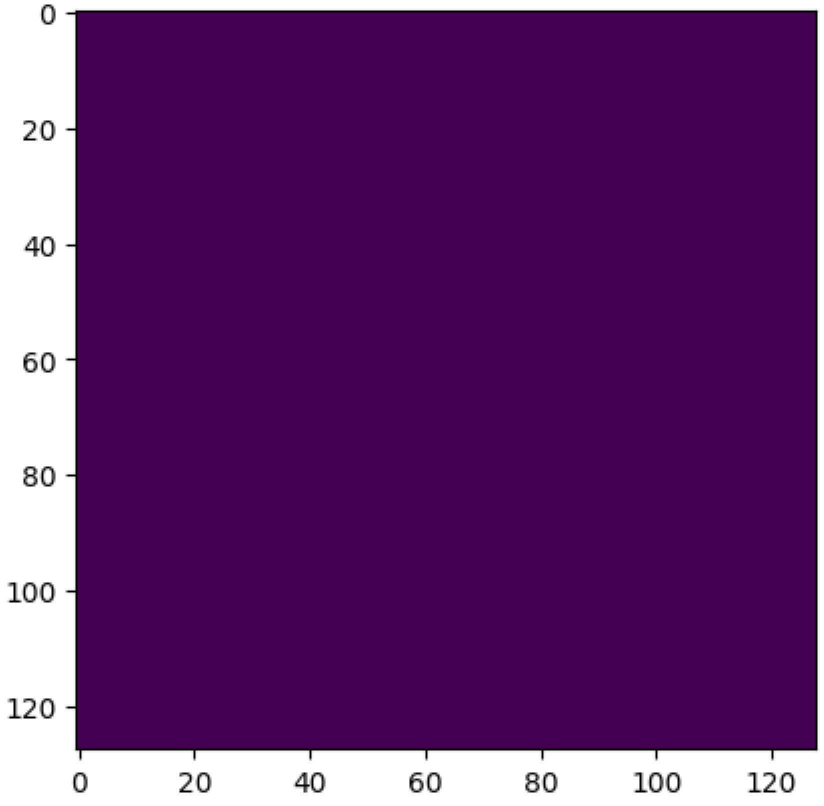
100
120

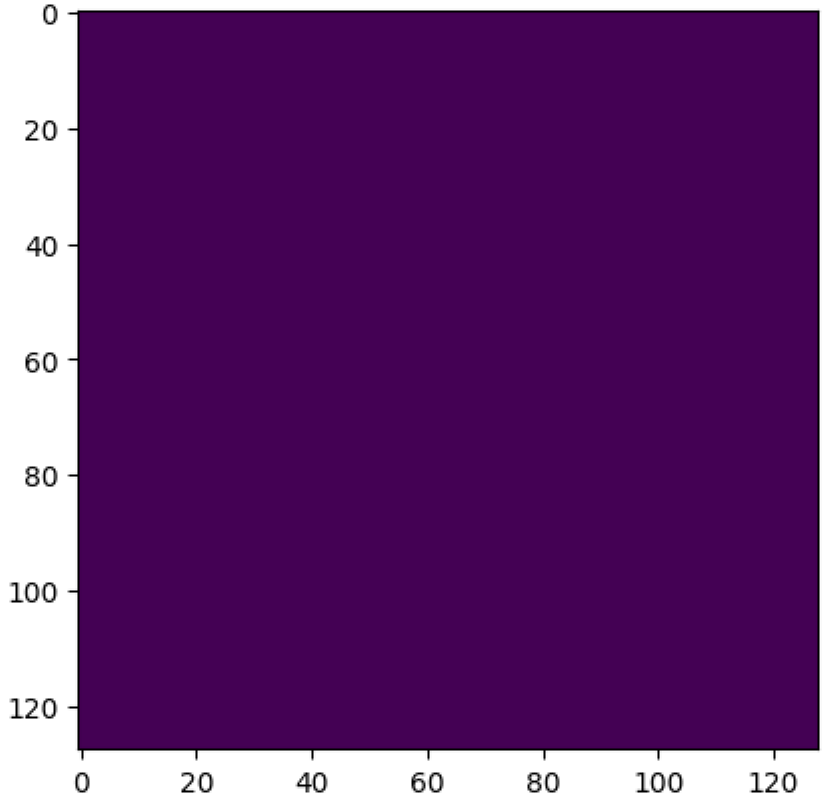
Predicted 118



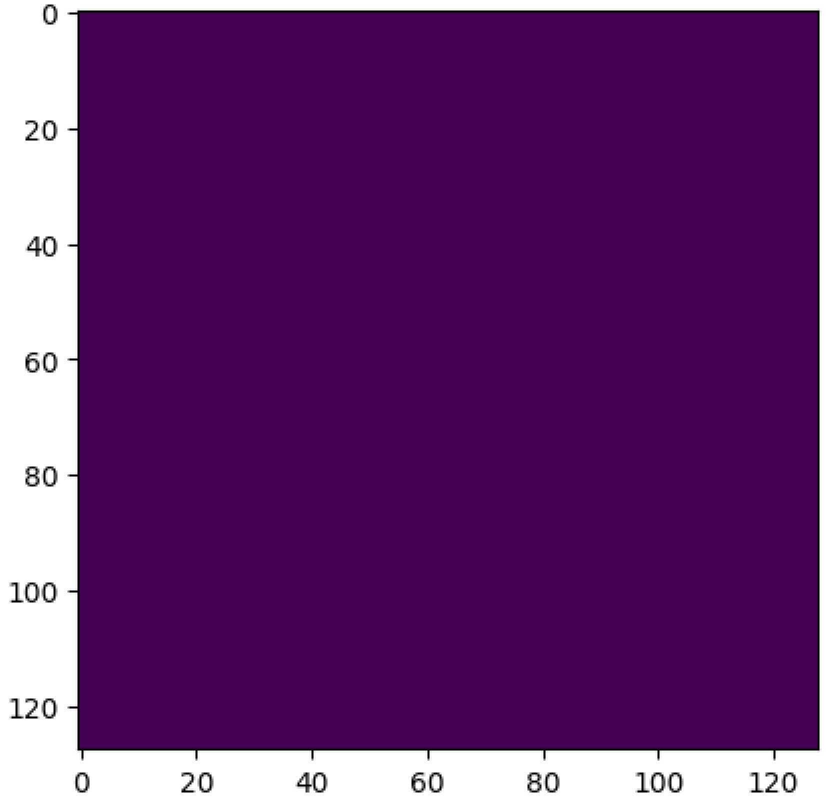
Actual 119



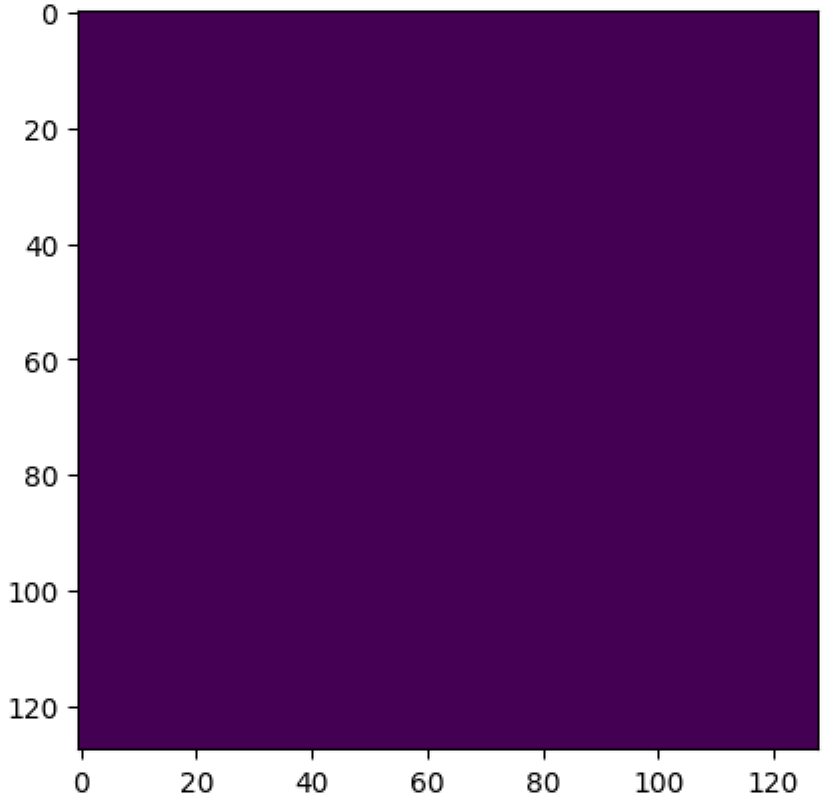
Predicted 119



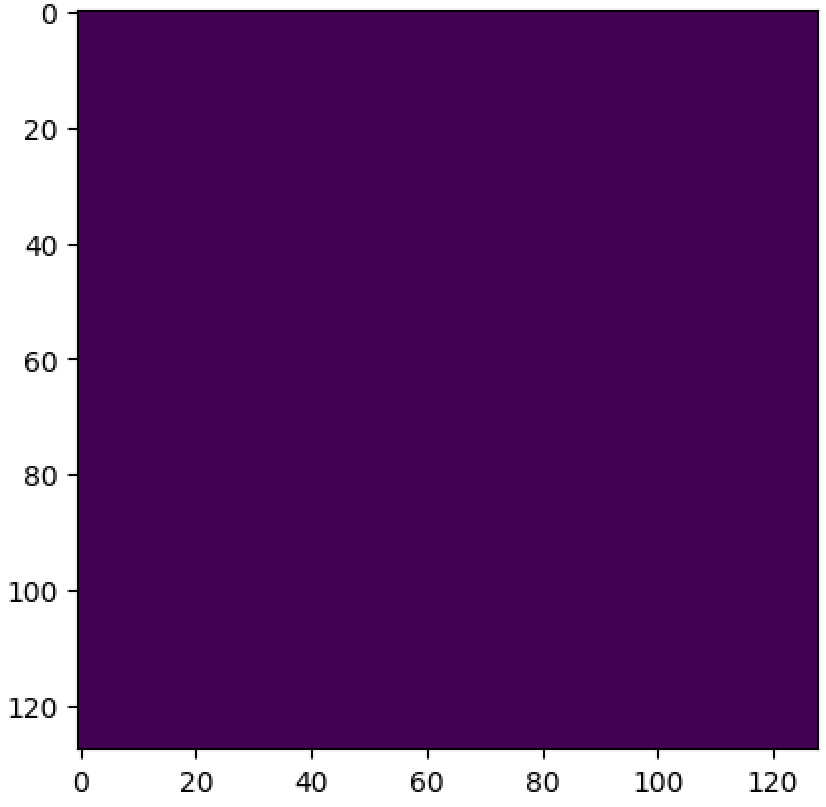
Actual 120

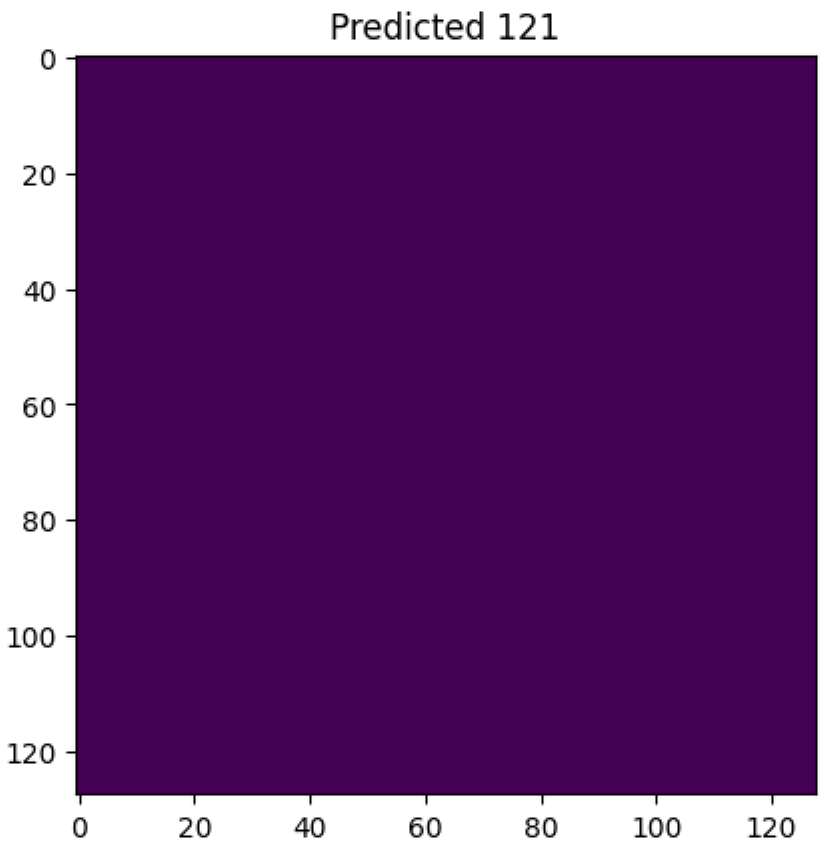


Predicted 120



Actual 121




Predicted 121
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80
100
120
0
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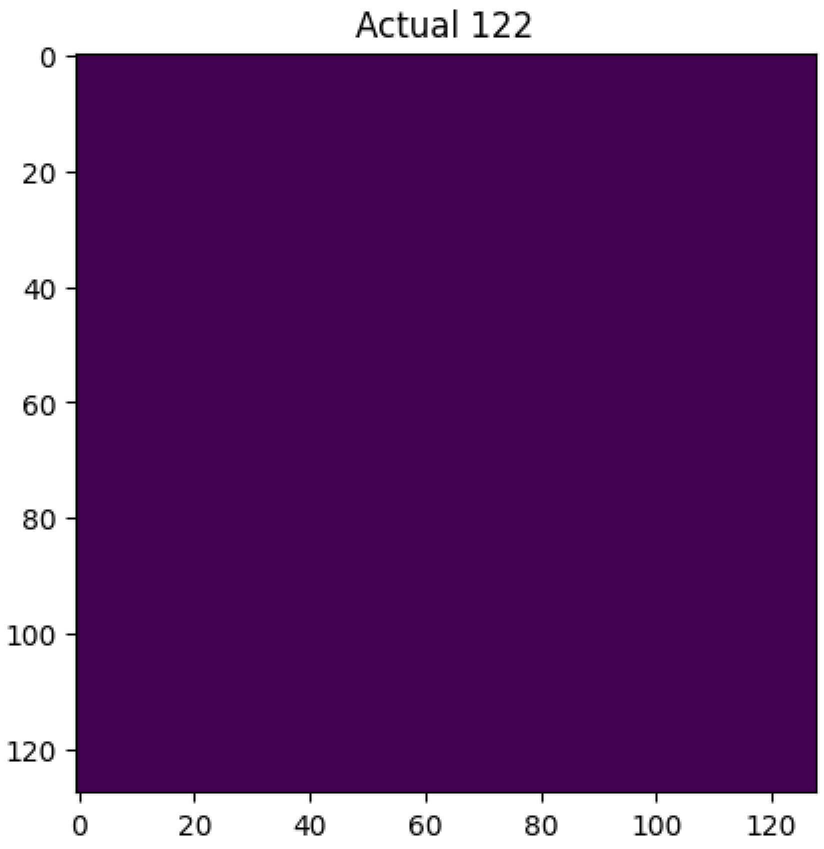
60
80
100
120


Actual 122
0
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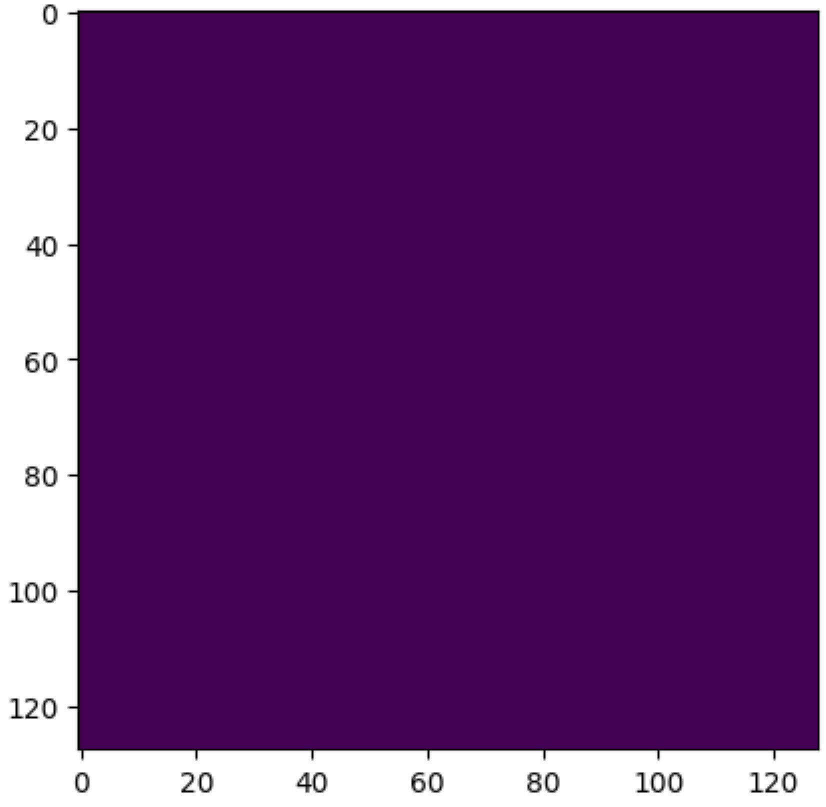
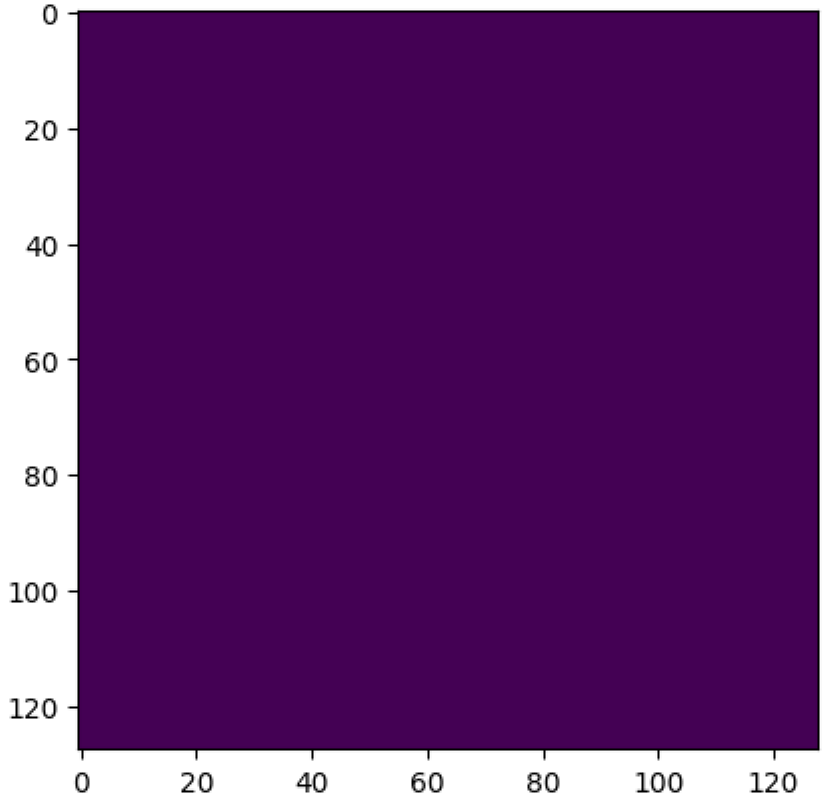
60
80
100
120
0
20
40
60
80
100
120

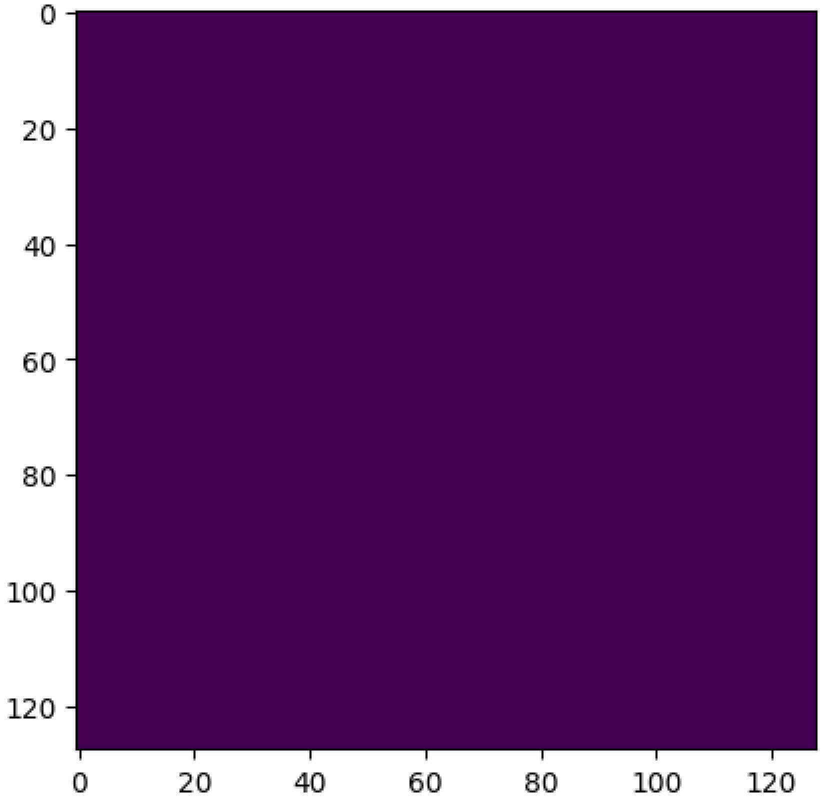
Predicted 122



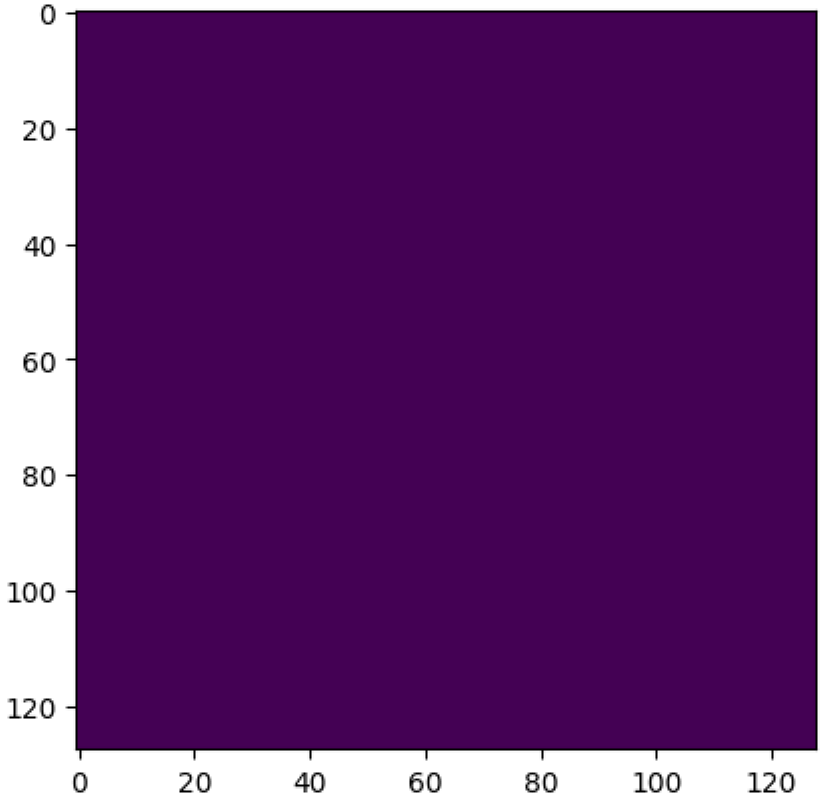
Actual 123

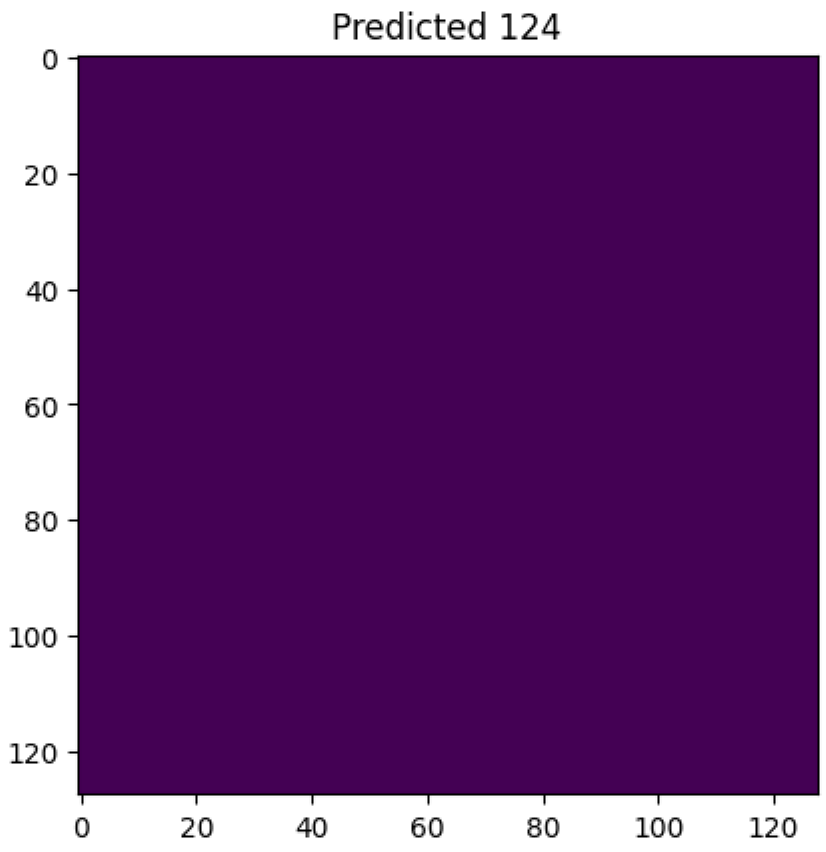


Predicted 123



Actual 124




Predicted 124
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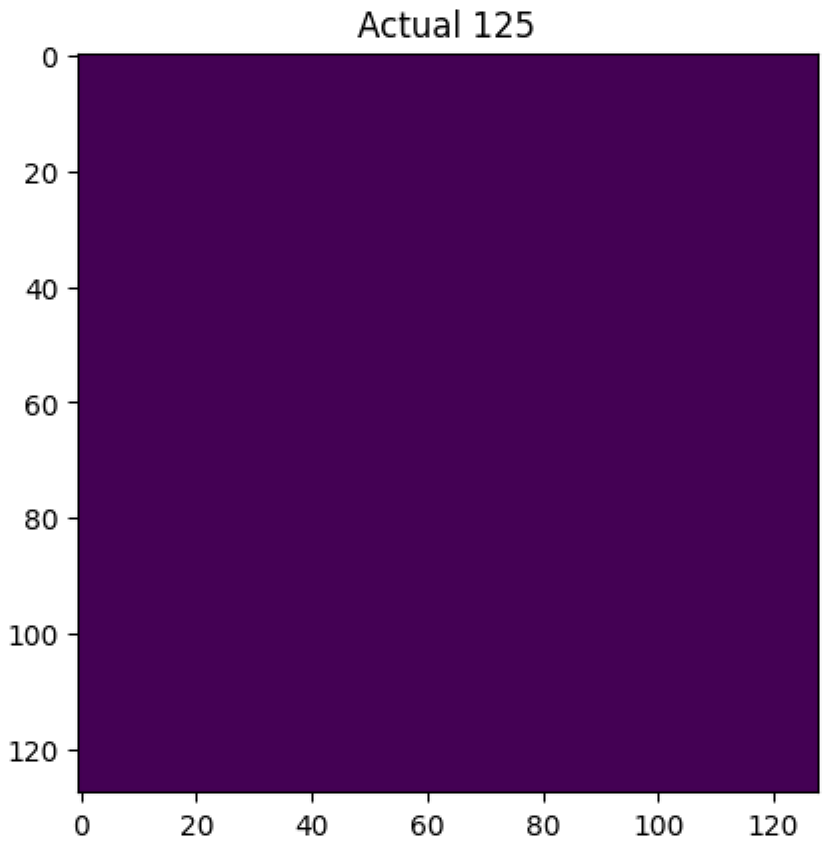
60
80
100
120


Actual 125
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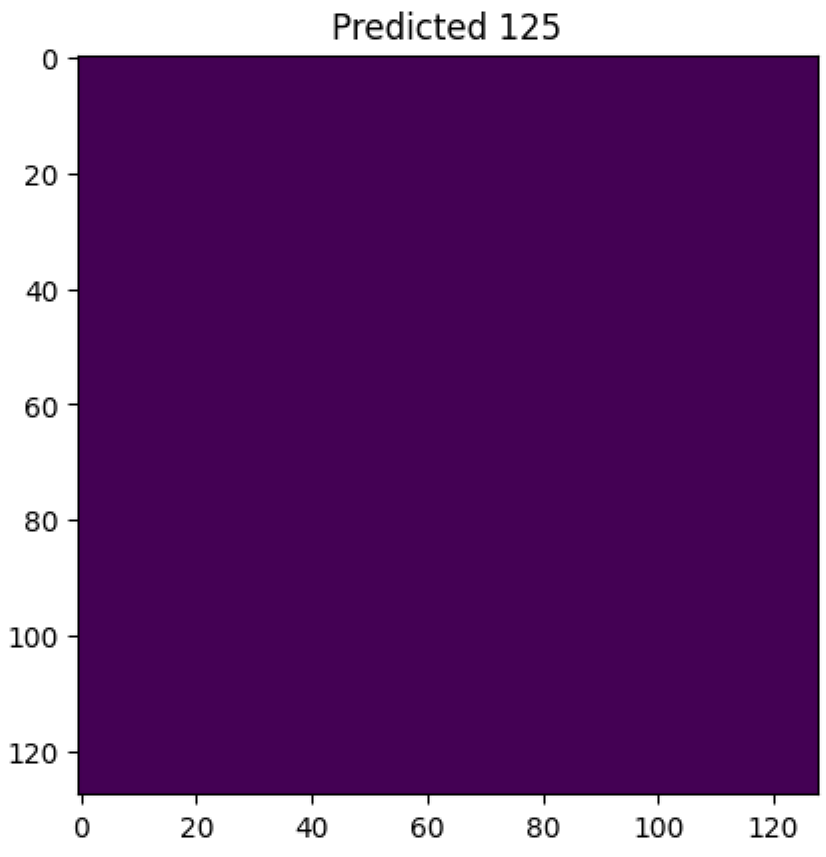
60
80
100
120


Predicted 125
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80
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120
0
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60
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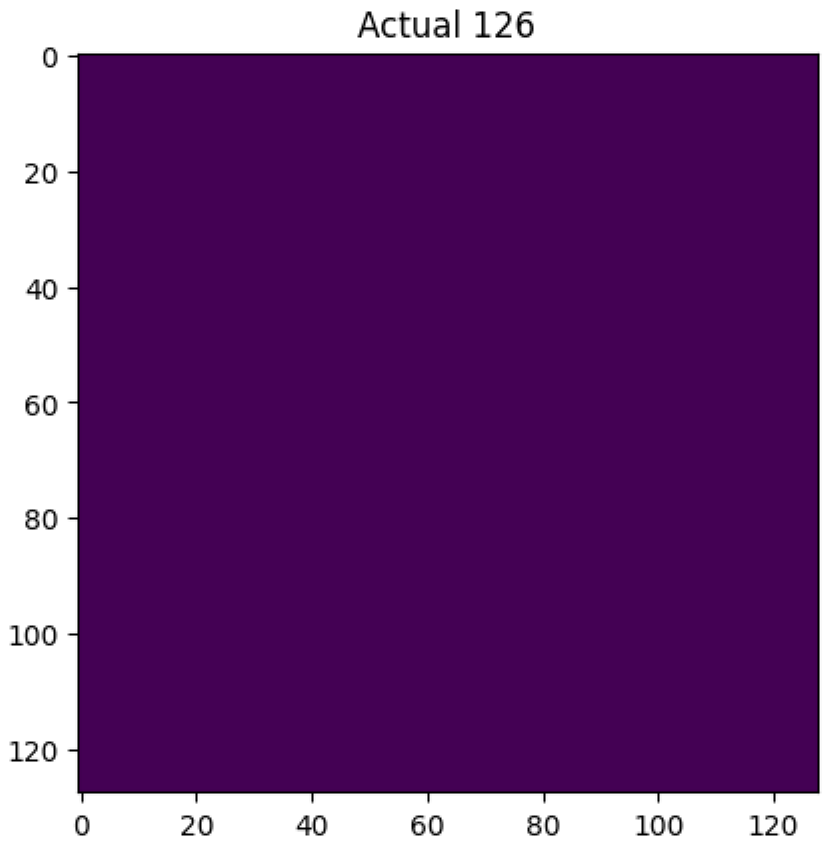
100
120


Actual 126
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80
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0
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100
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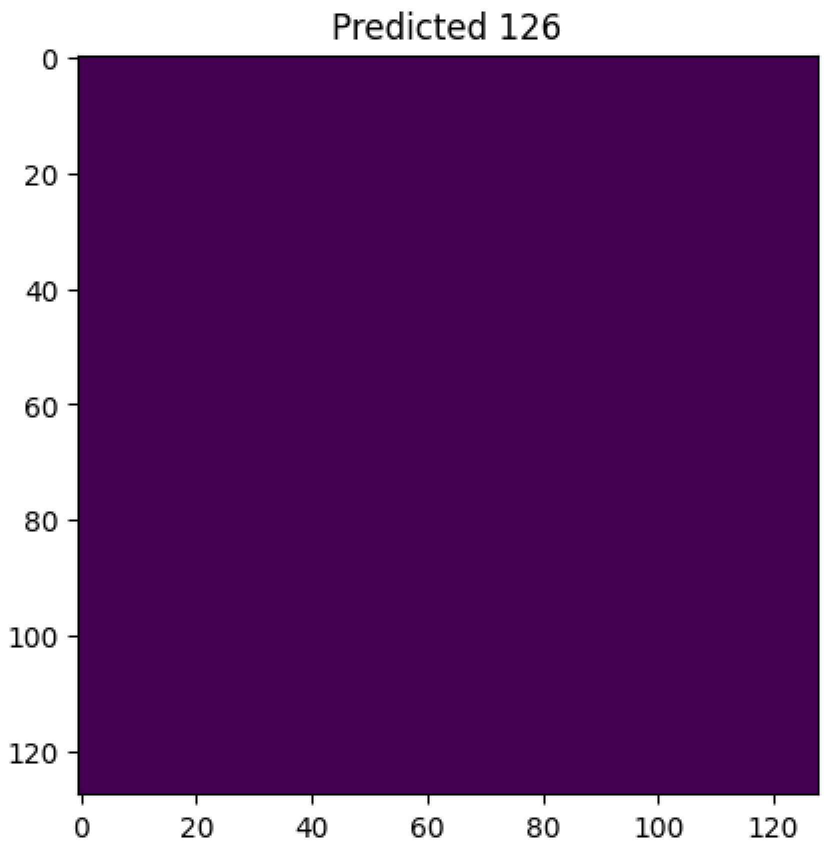
Predicted 126
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40
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80
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0
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60
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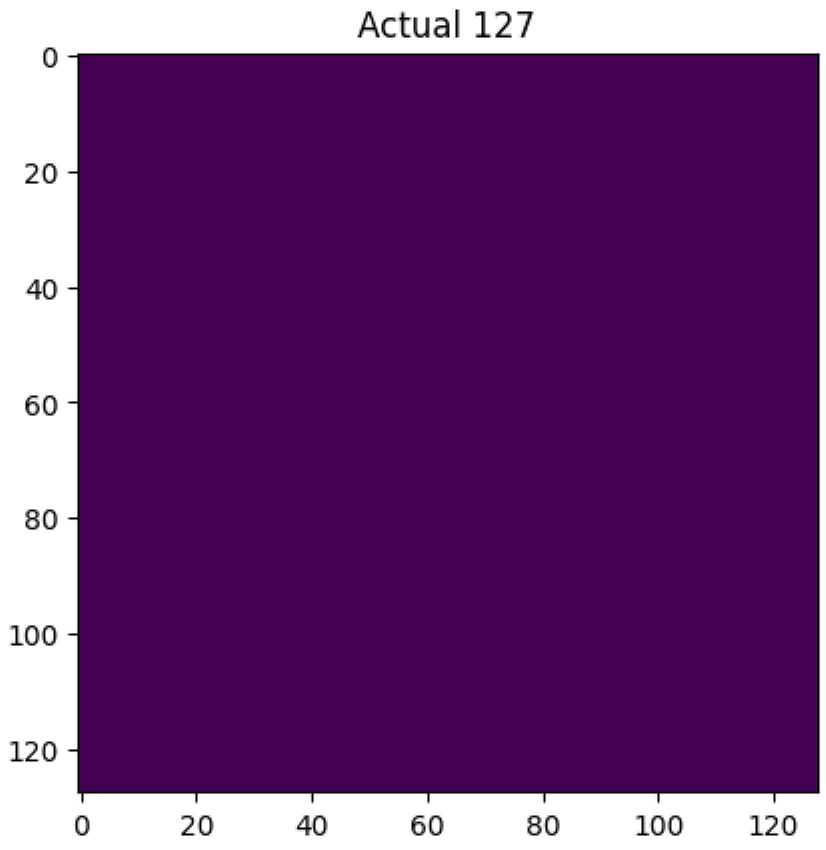
100
120


Actual 127
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80
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0
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60
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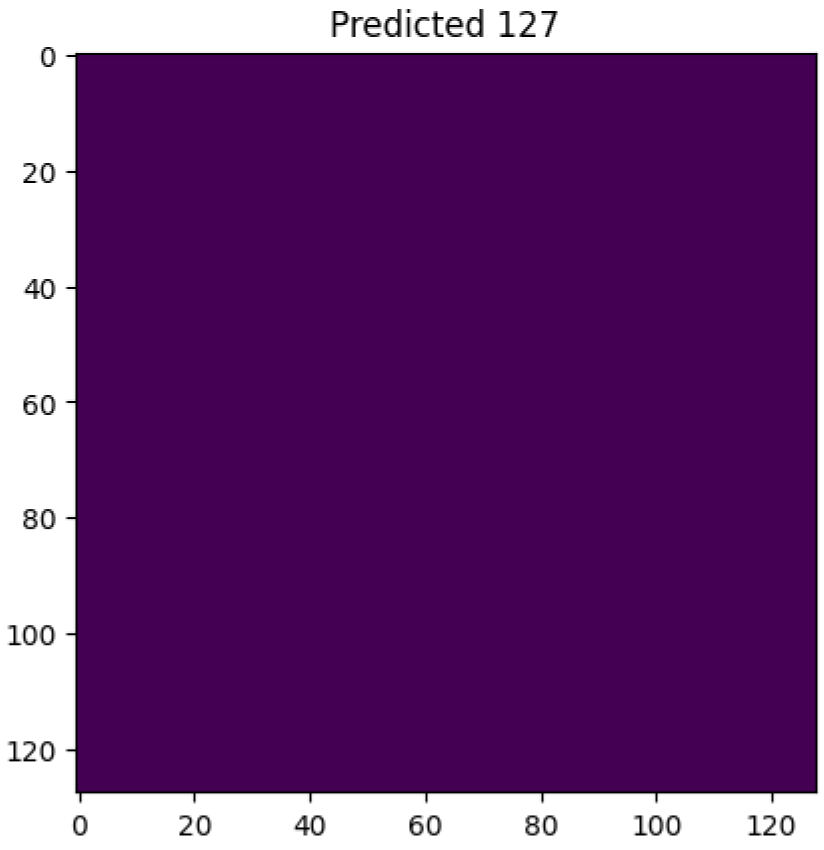
100
120


Predicted 127
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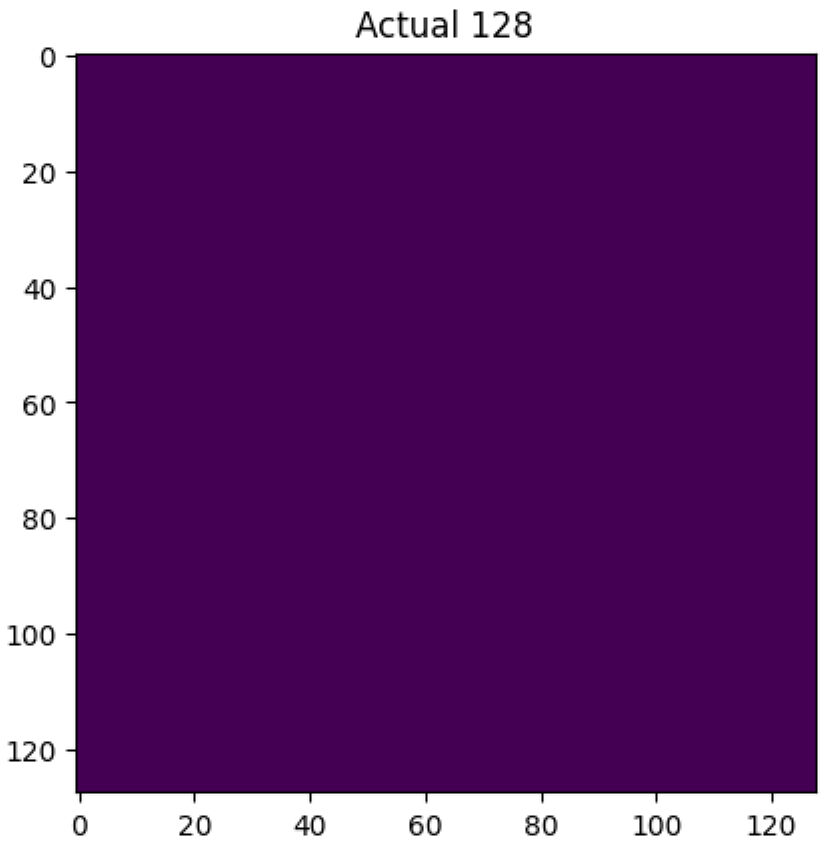
Actual 128
0
20
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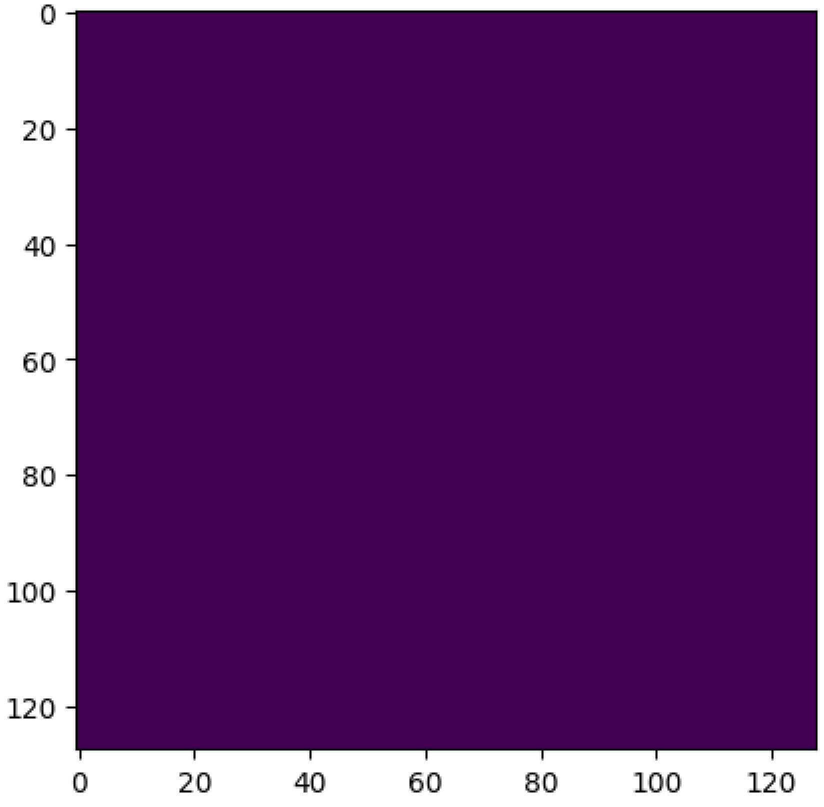
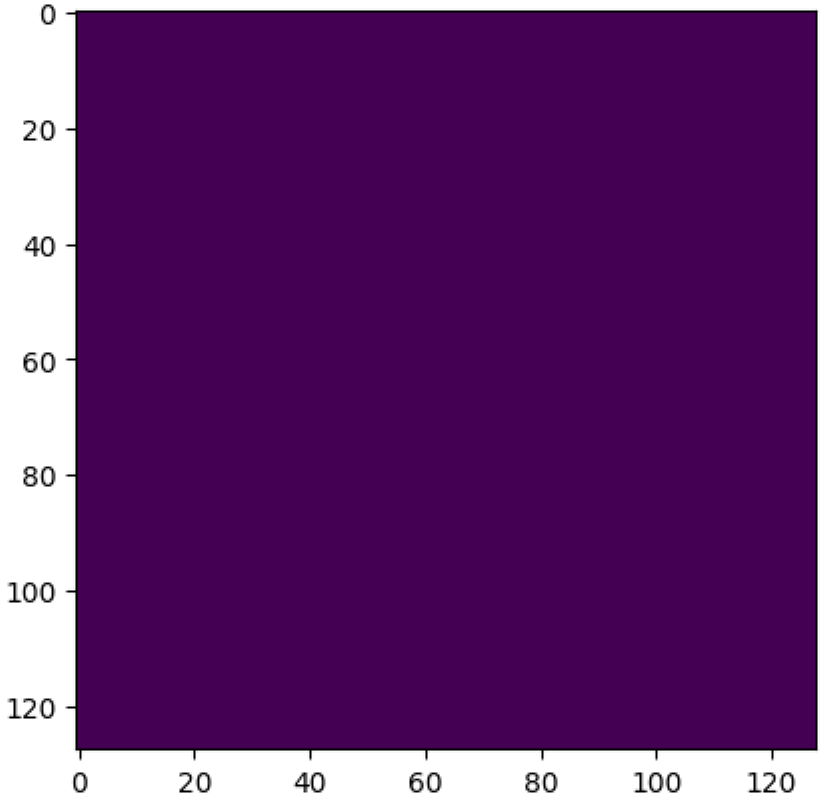
60
80
100
120

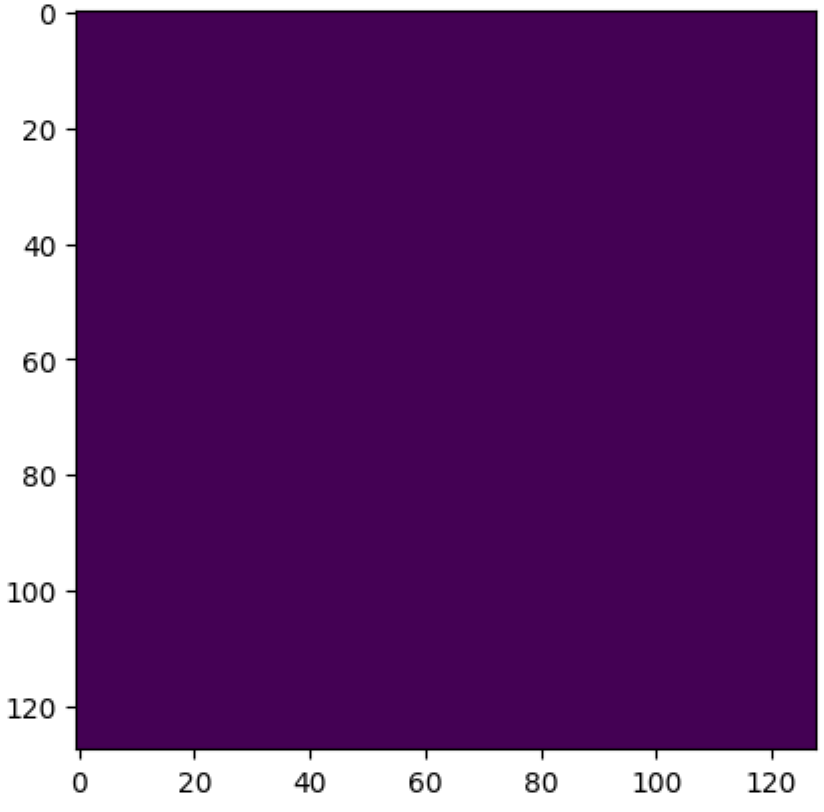
Predicted 128



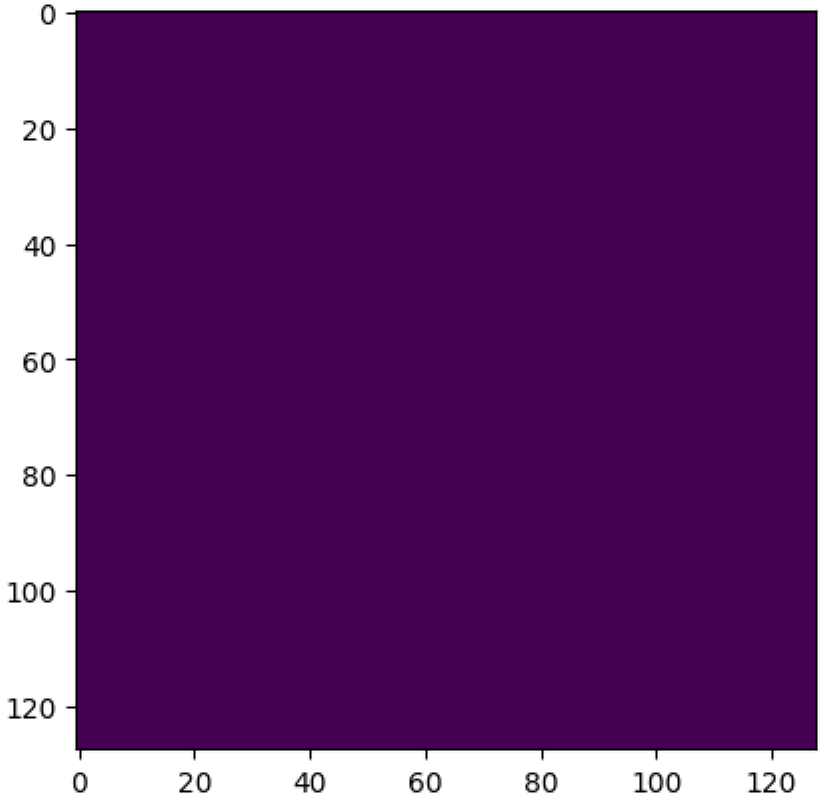
Actual 129

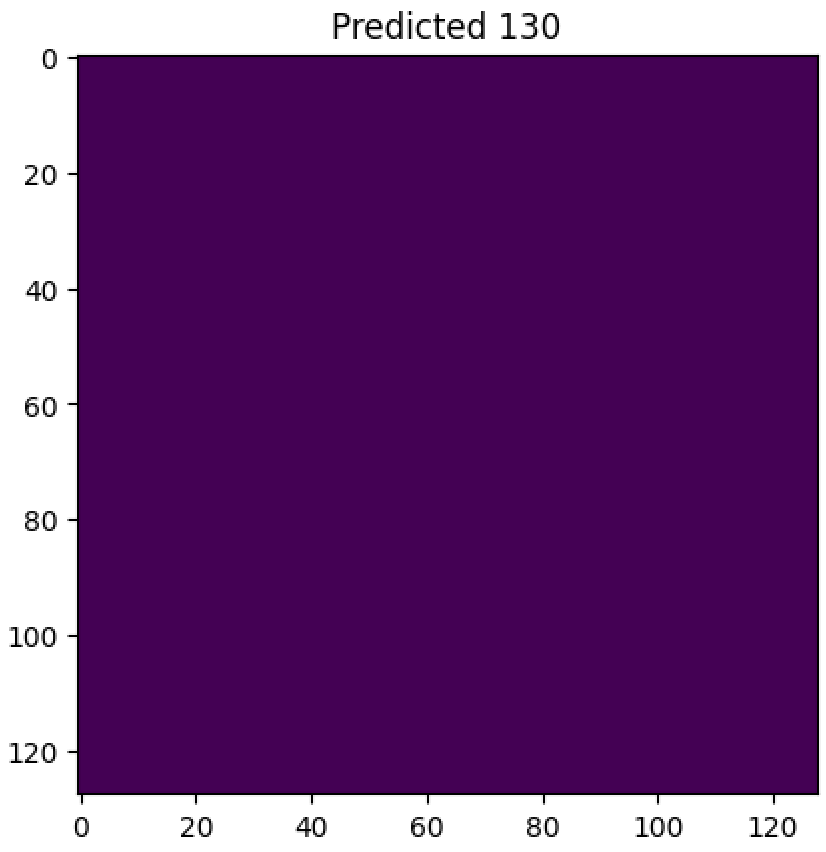


Predicted 129



Actual 130




Predicted 130
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0
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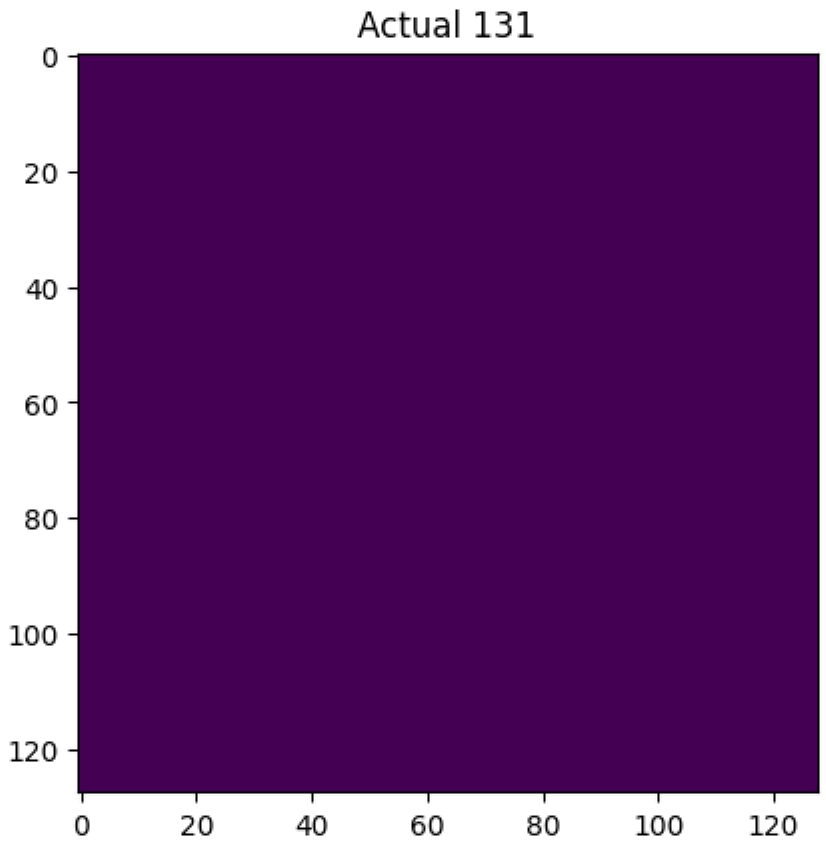
60
80
100
120


Actual 131
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0
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40
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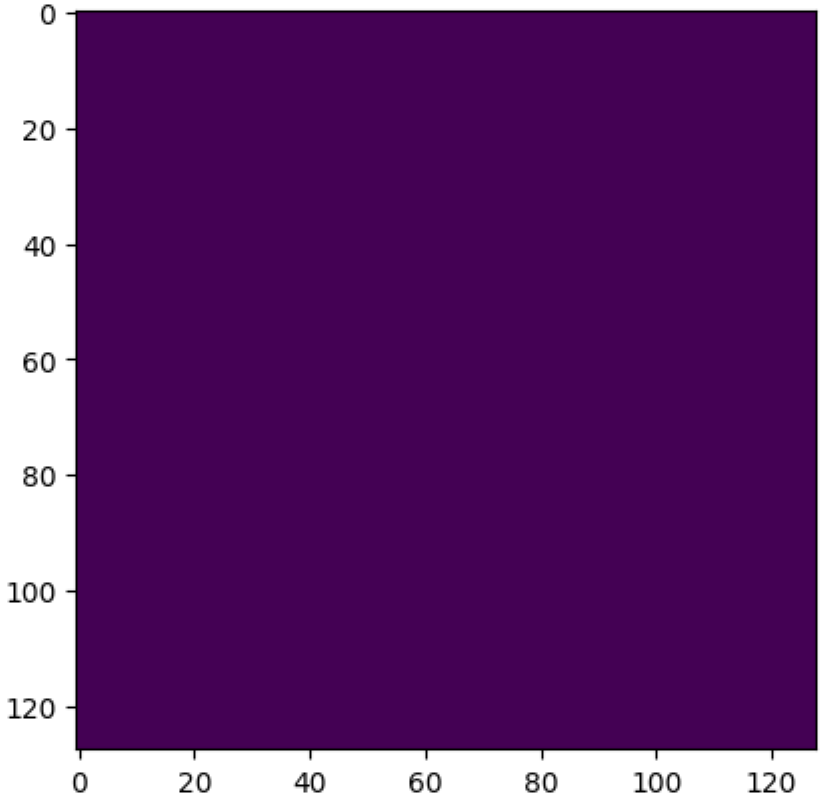
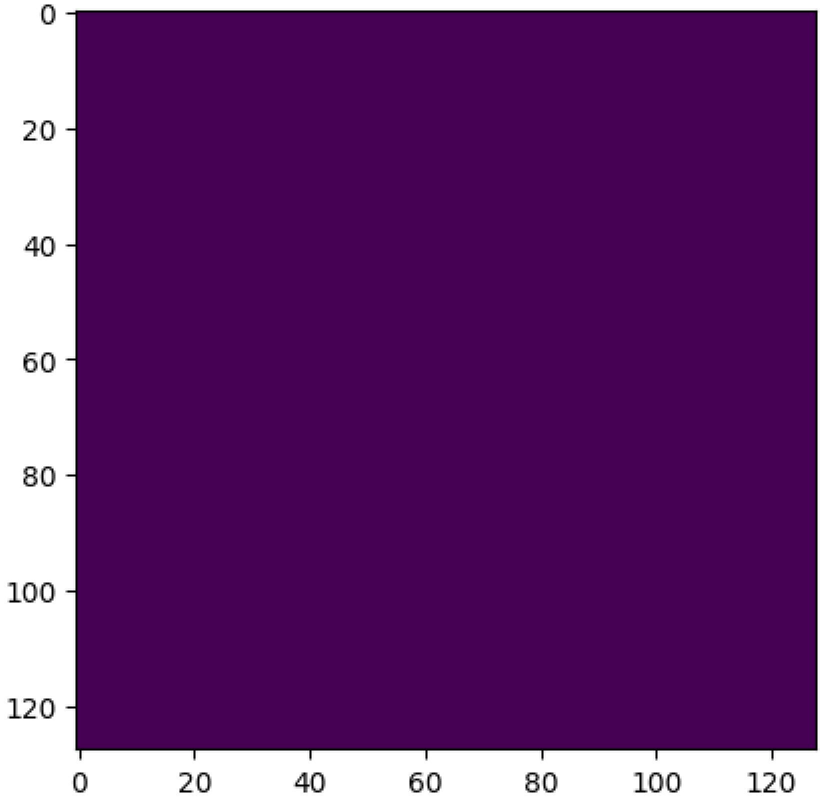
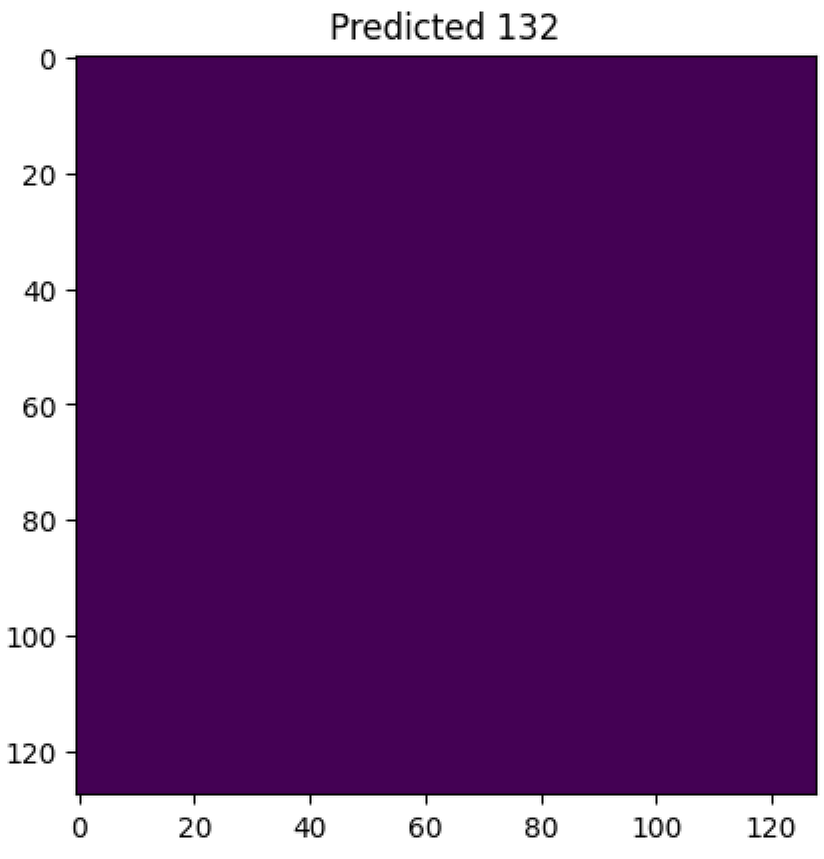
100
120

Predicted 131



Actual 132




Predicted 132
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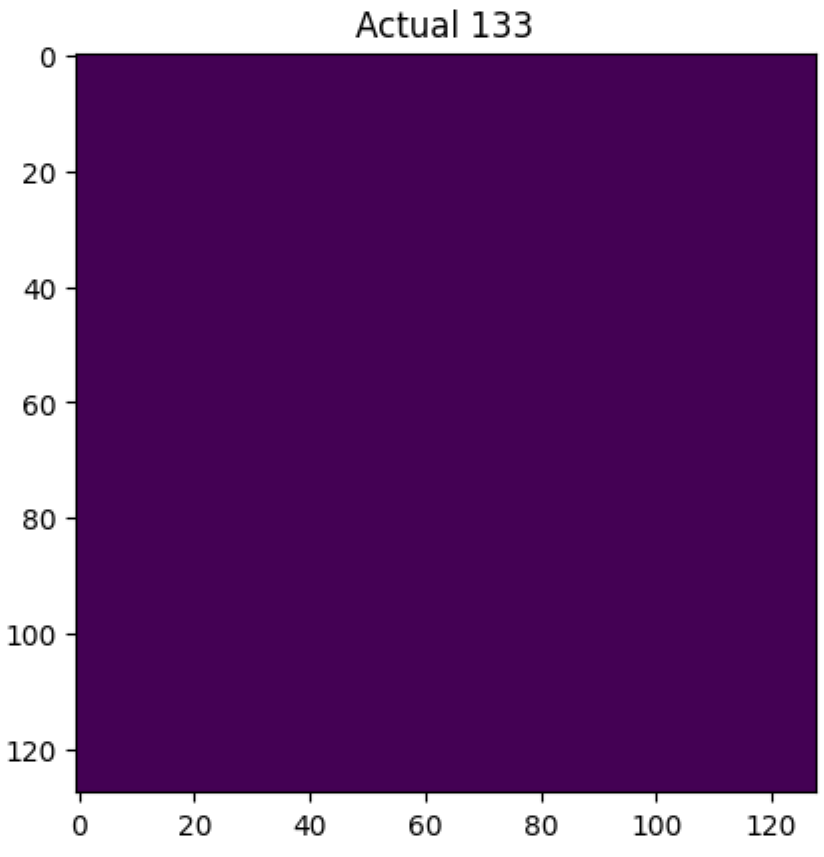
Actual 133
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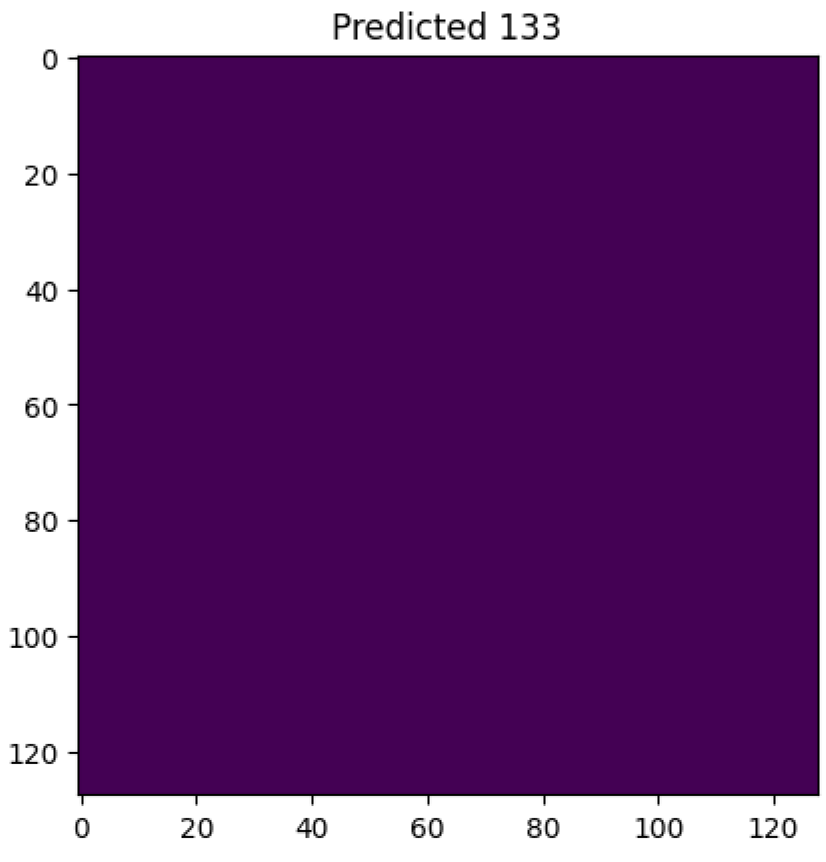
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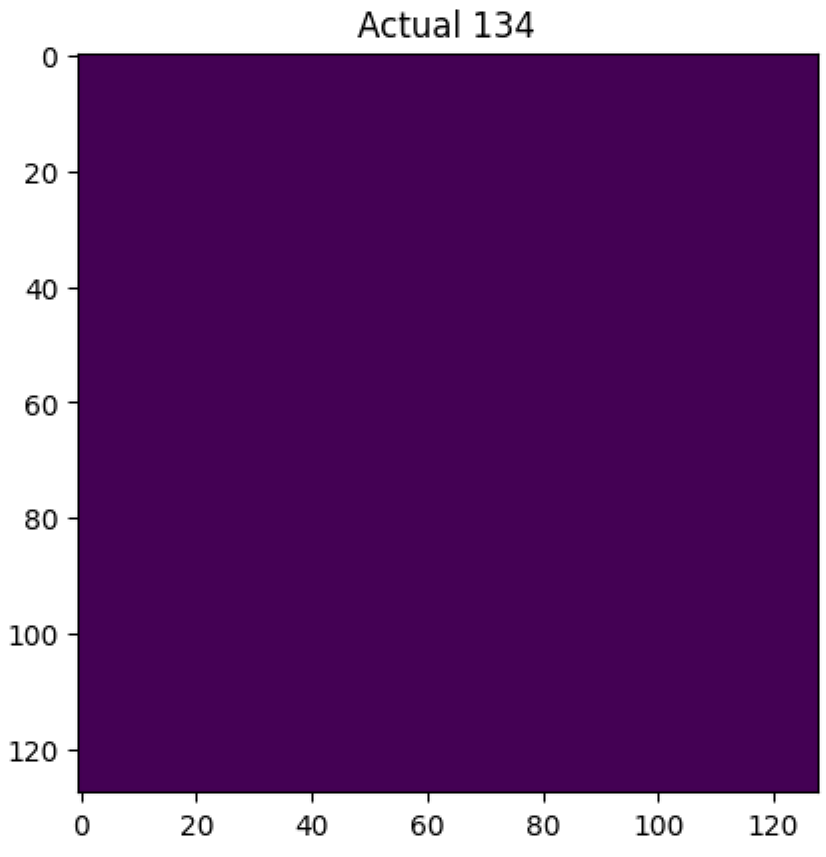
Actual 134
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80
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0
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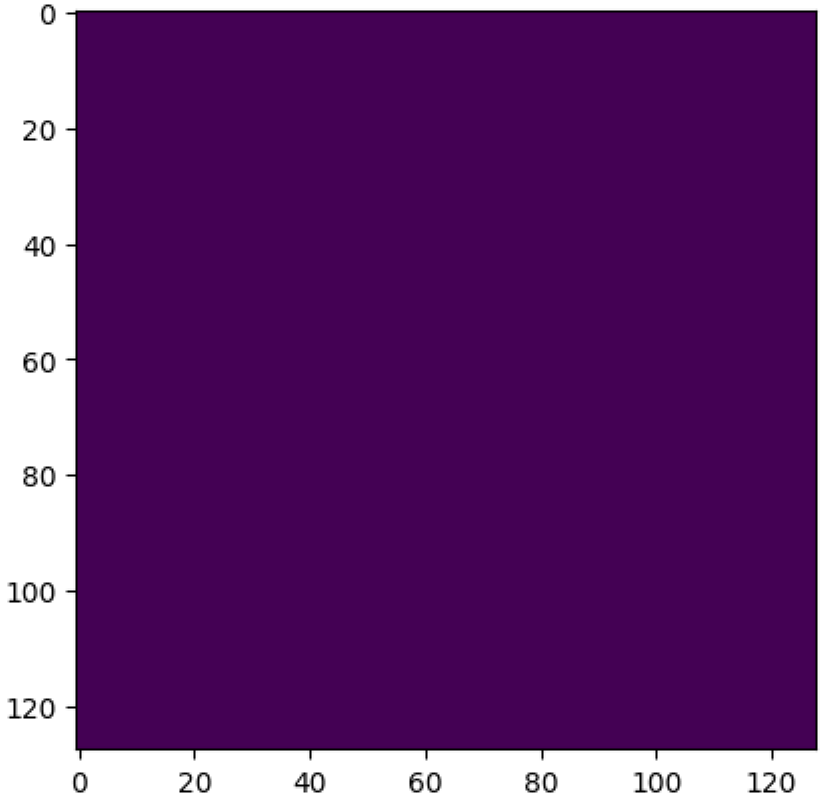
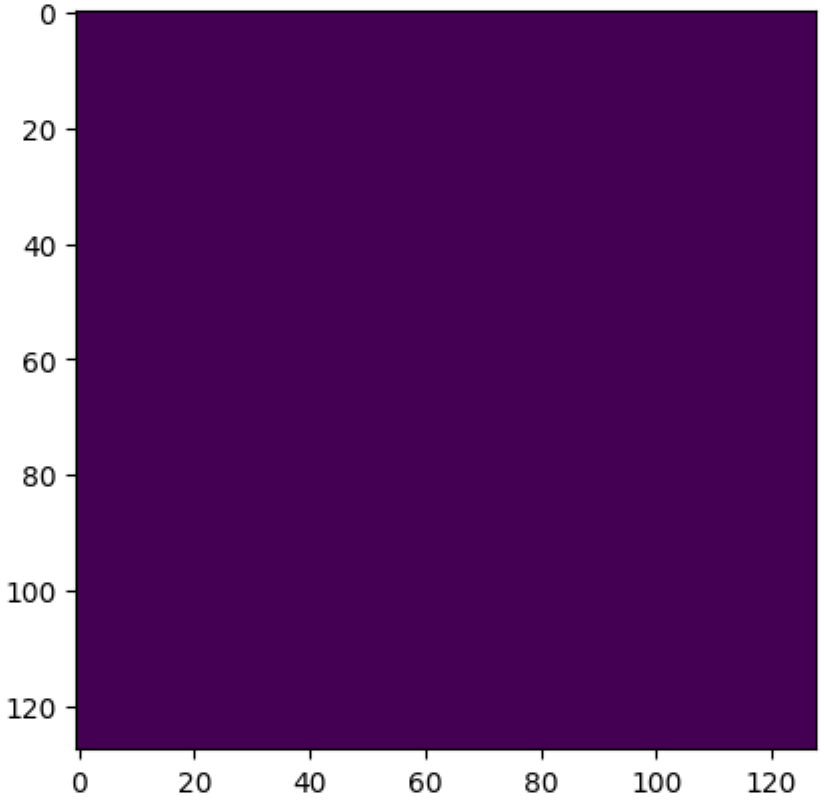
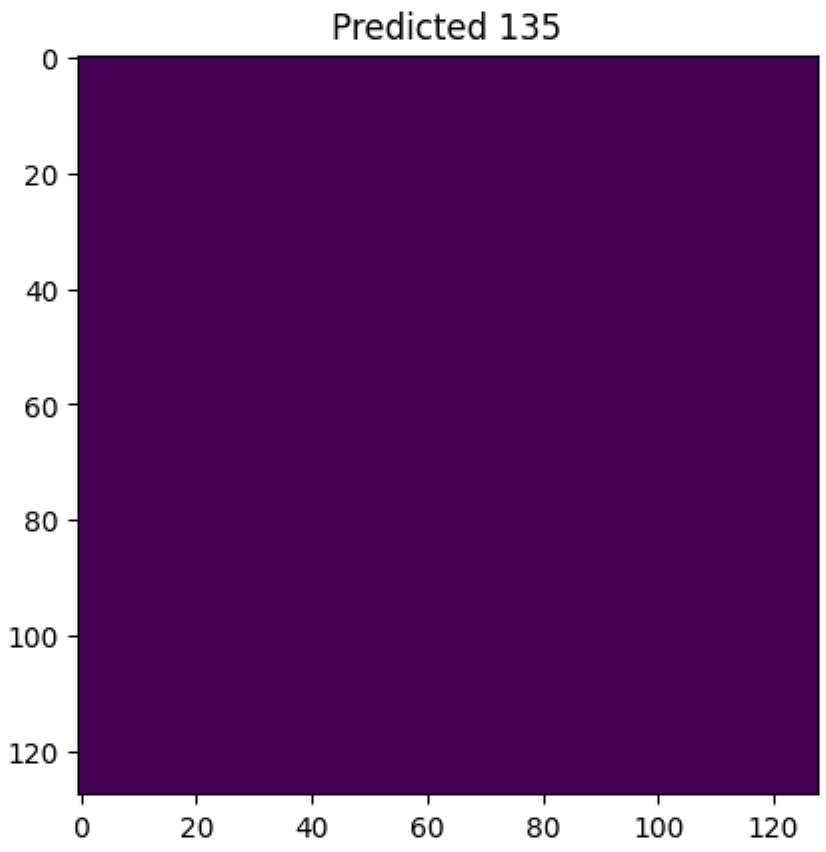
100
120

Predicted 134



Actual 135




Predicted 135
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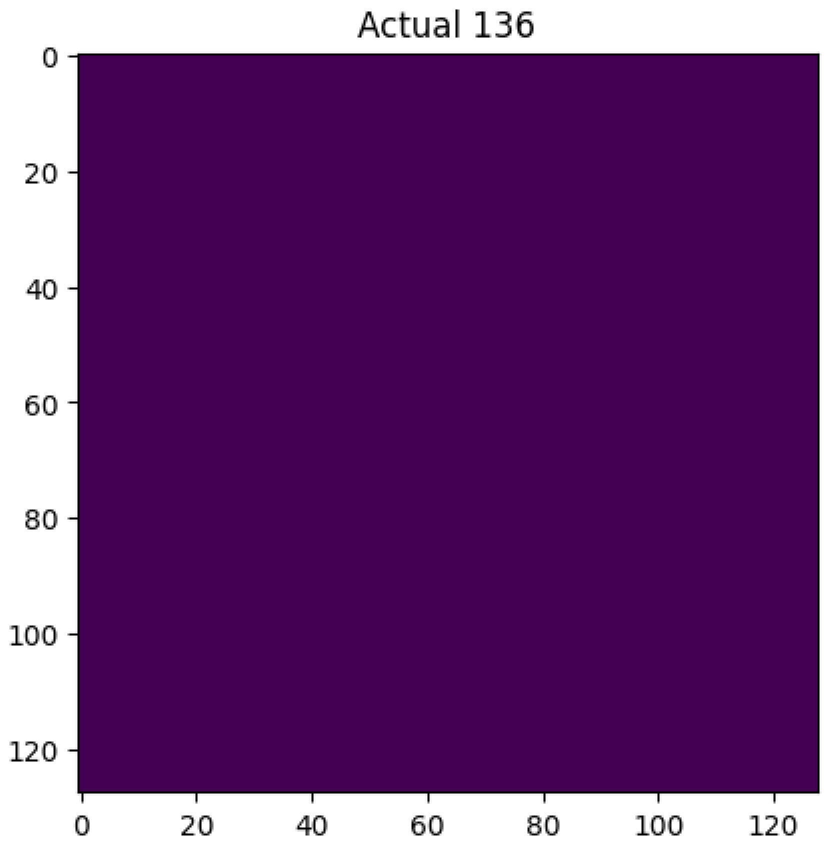
Actual 136
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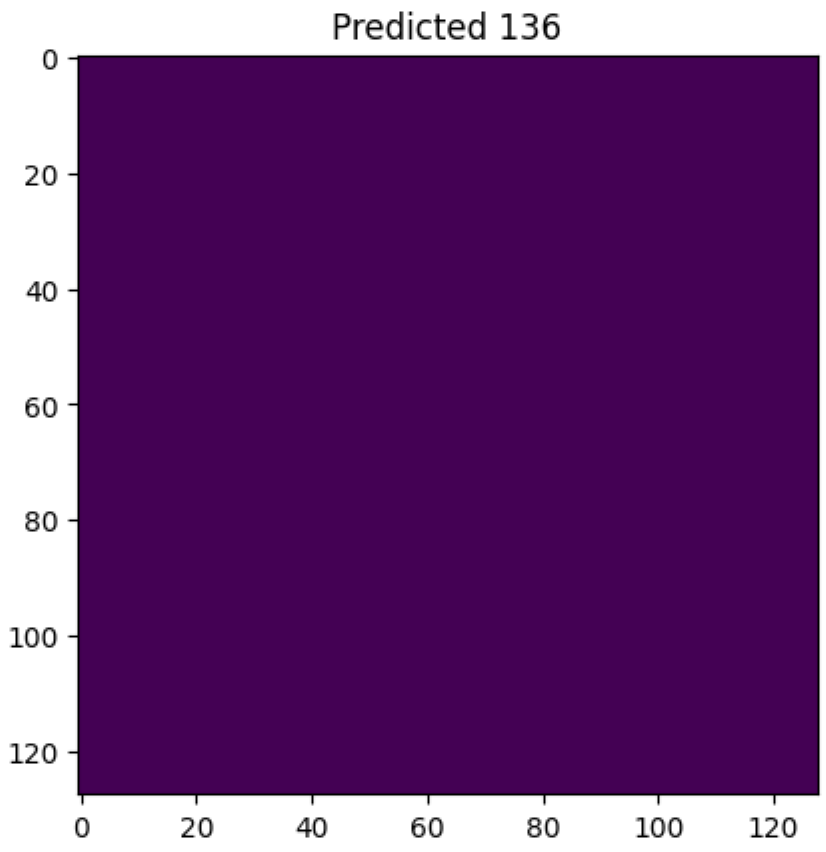
Predicted 136
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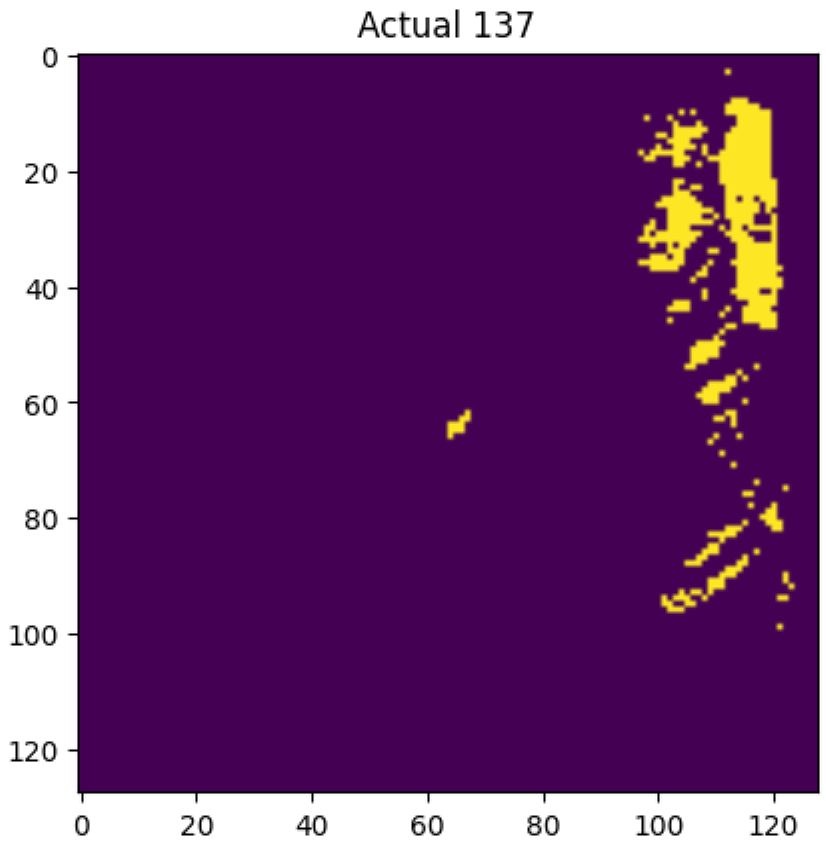
Actual 137
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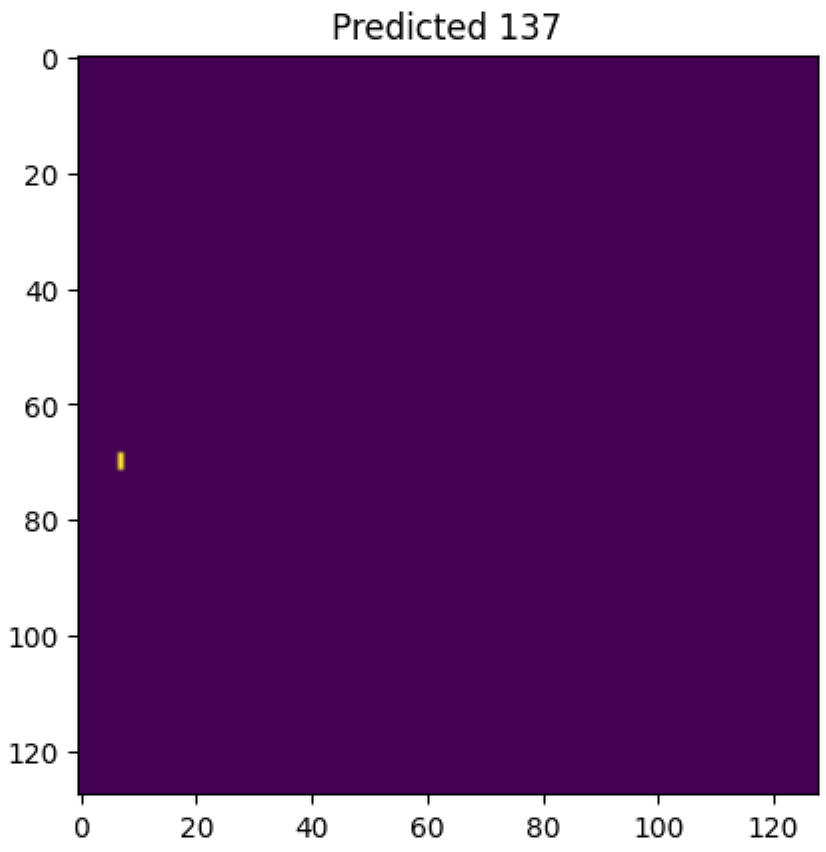
Predicted 137
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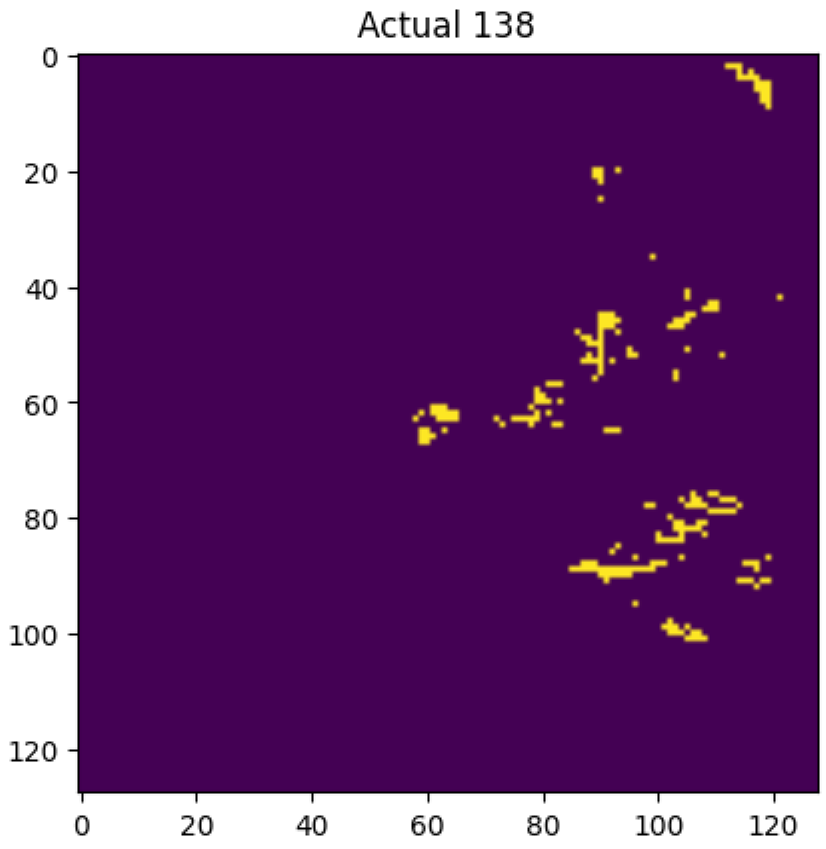
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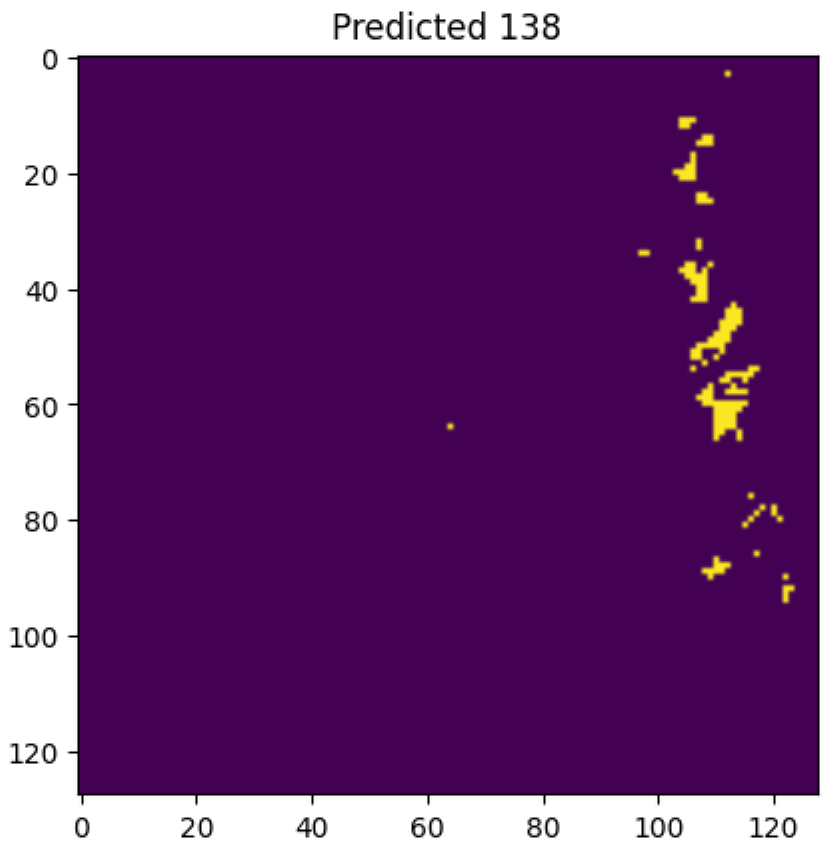
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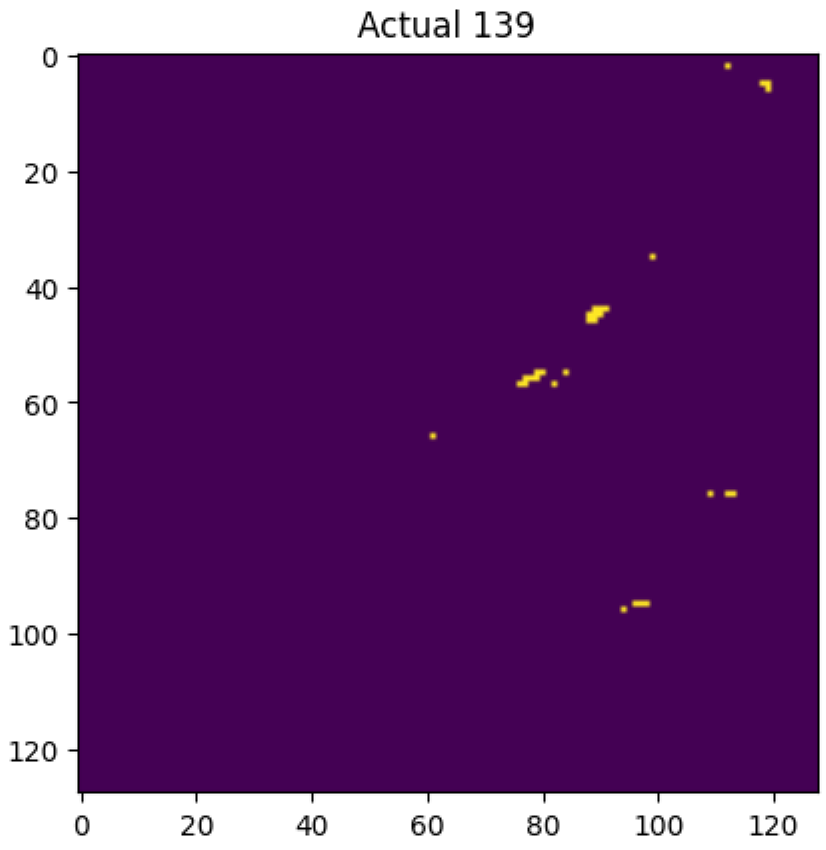
Actual 139
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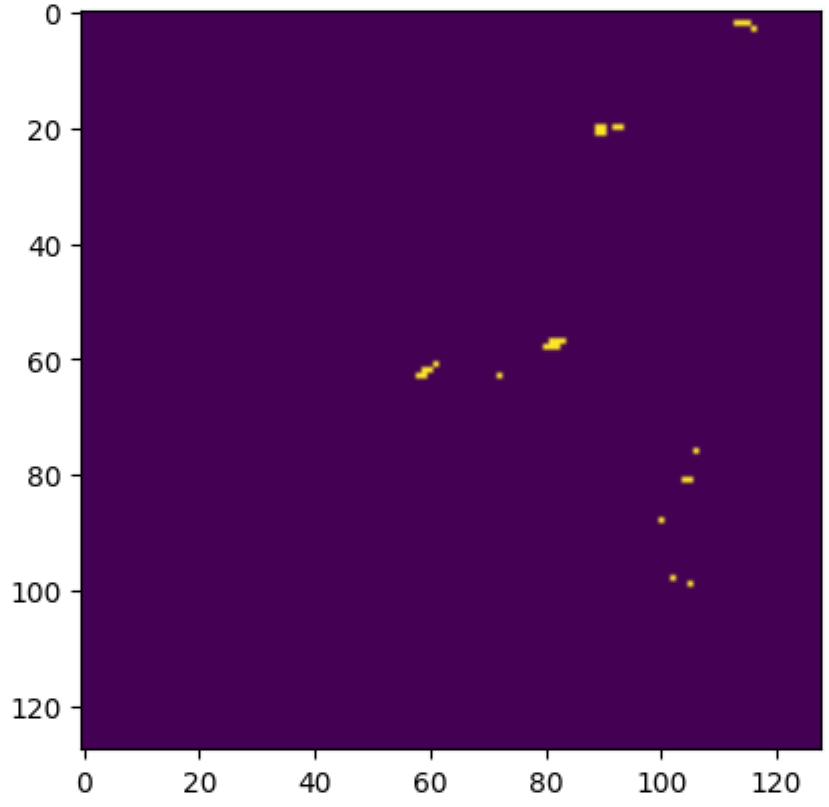
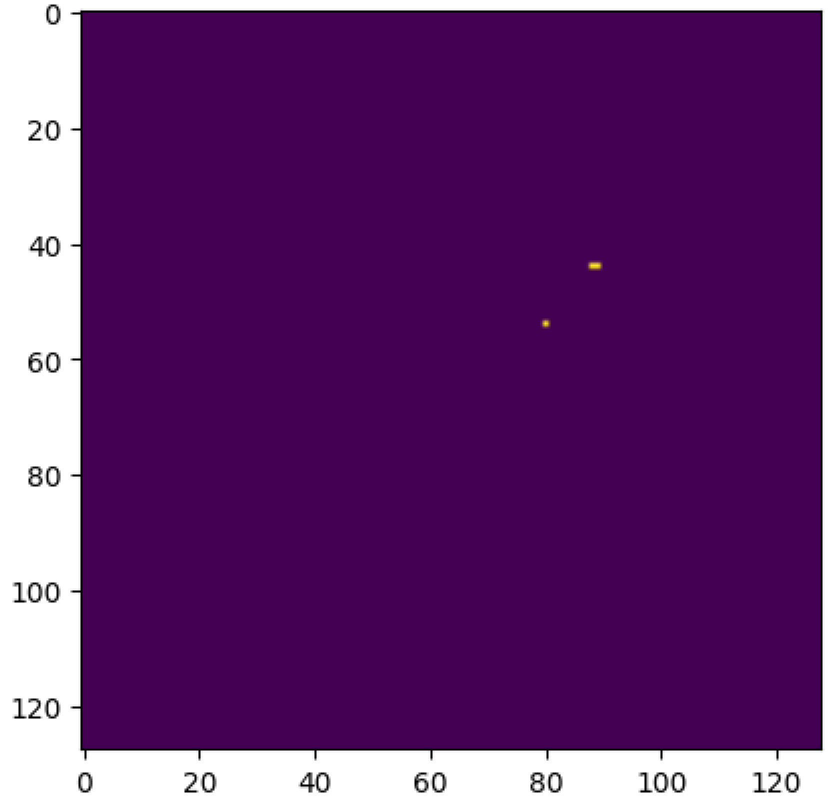
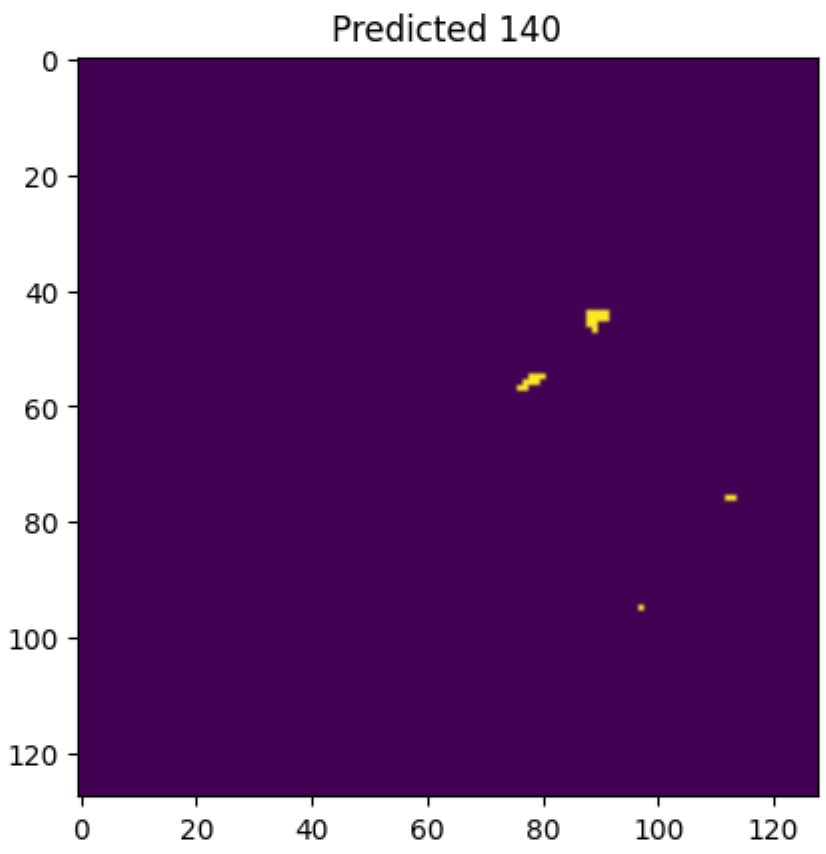
Predicted 139



Actual 140




Predicted 140
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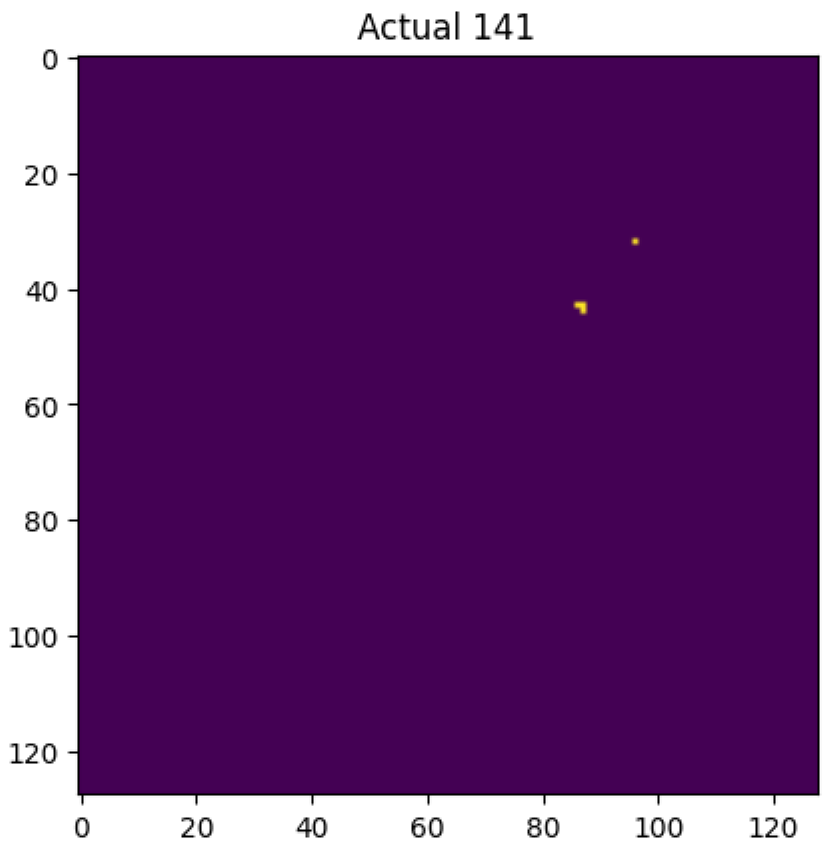
Actual 141
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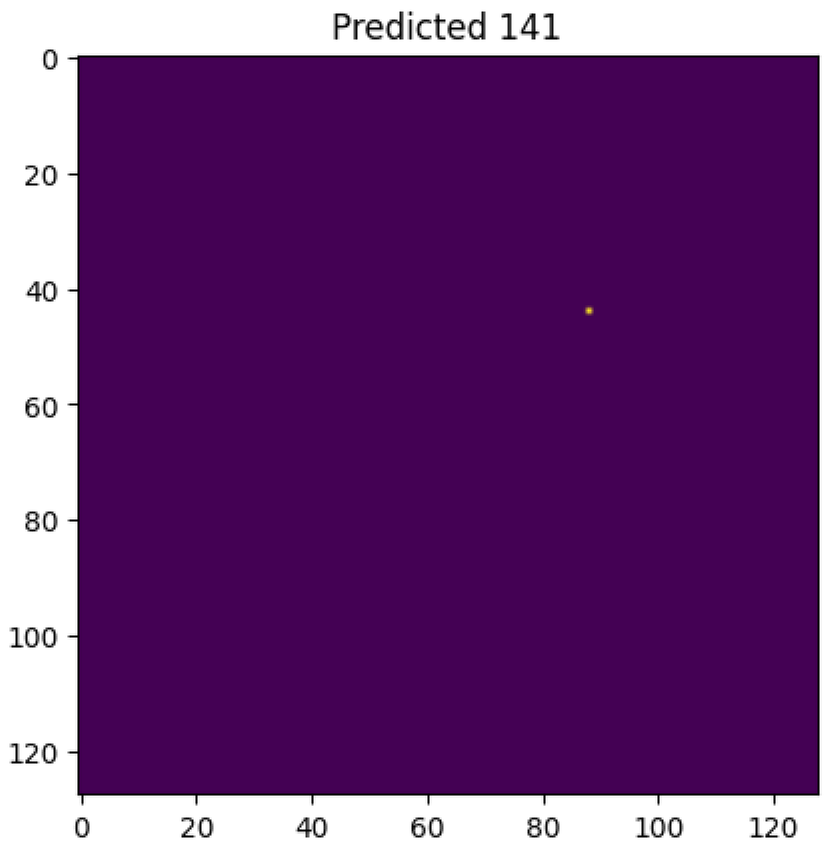
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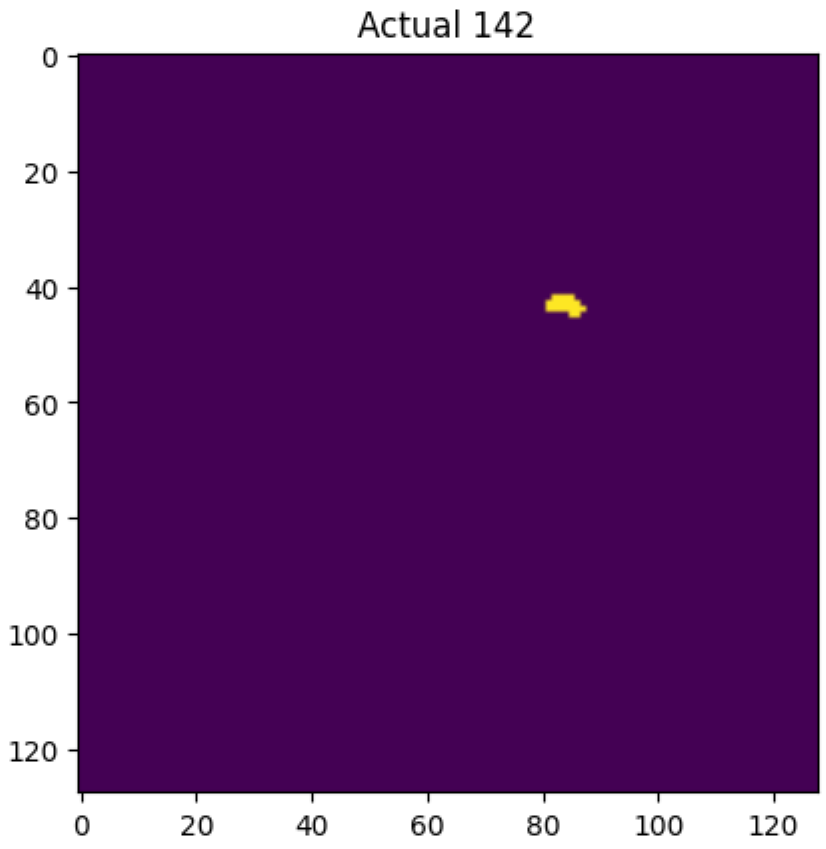
Actual 142
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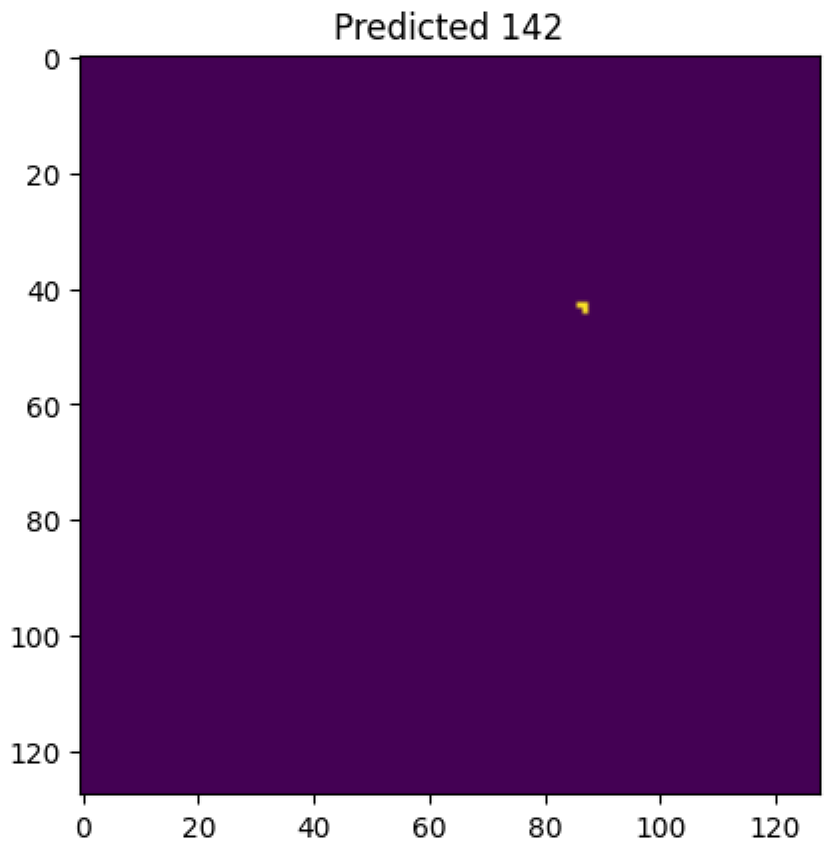
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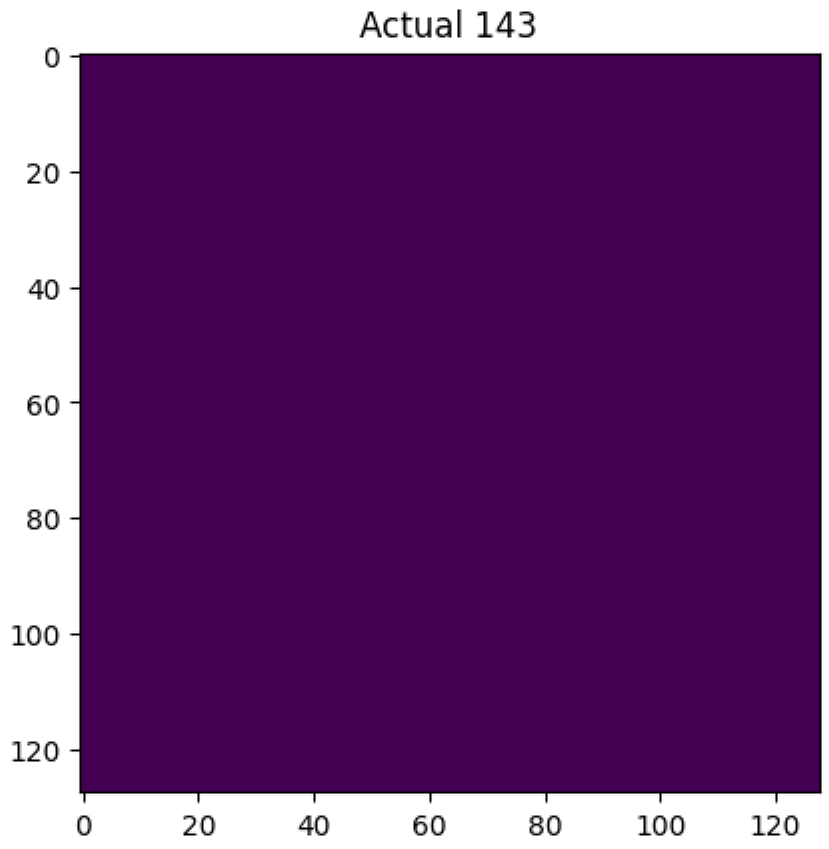
Actual 143
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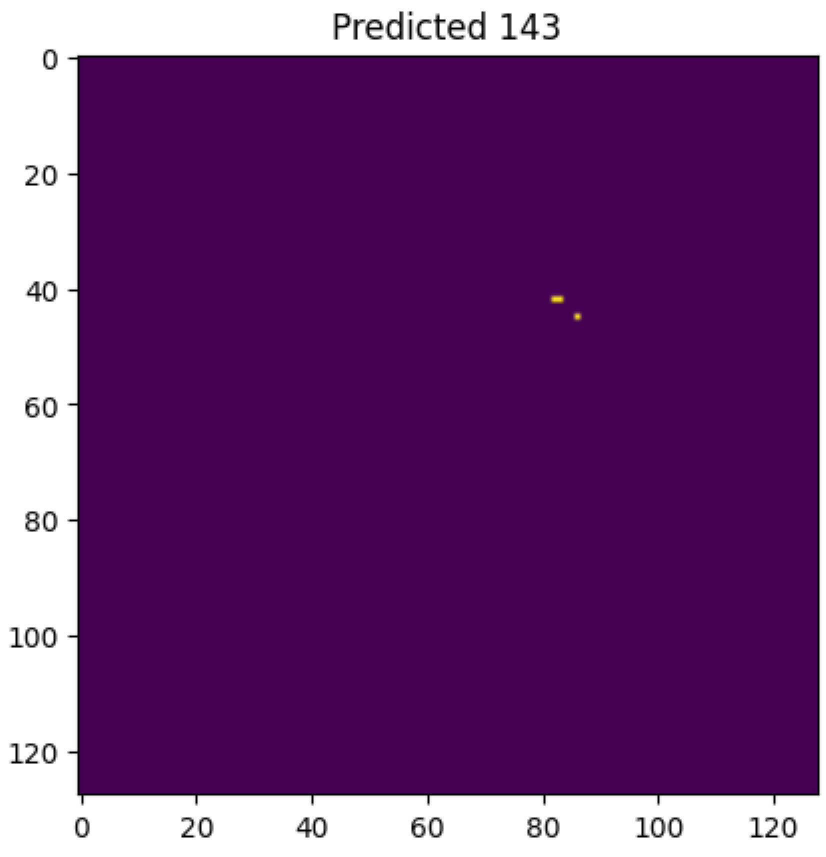
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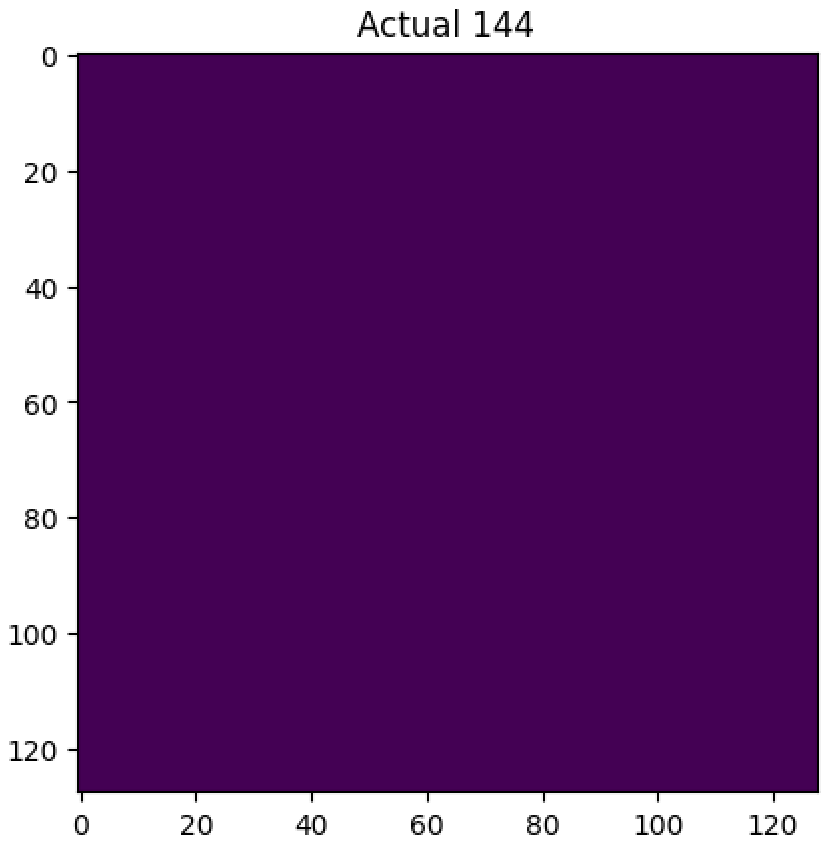
Actual 144
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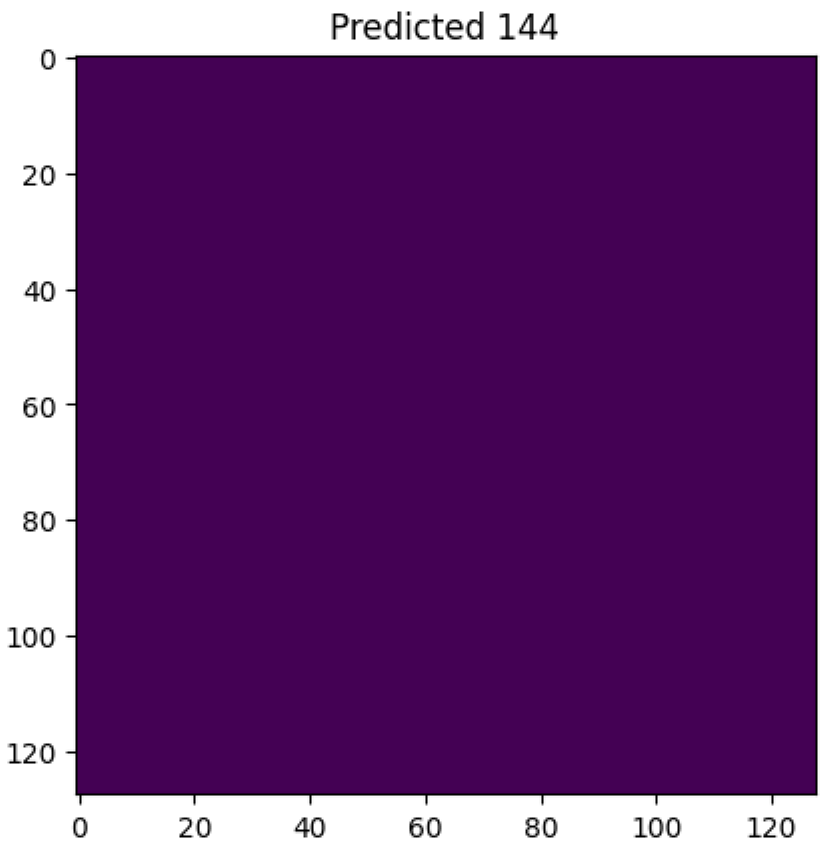

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