

# abstract-reasoning-example

July 12, 2018

```
In [1]: import numpy as np
import matplotlib.pyplot as plot
```

```
In [2]: data = np.load('../data/neutral/PGM_neutral_train_30.npz')
```

```
print(data.keys())
```

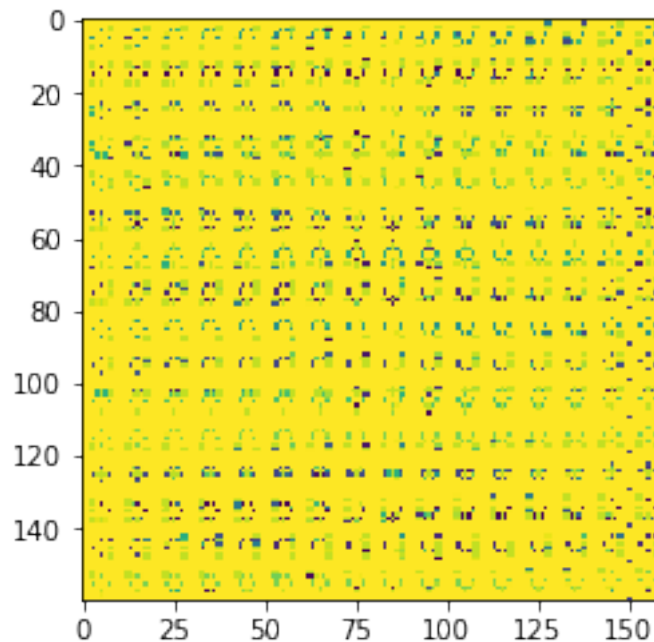
```
images, target, structure_bin, structure_str = data['image'], np.asscalar(data['target'])
```

```
images.shape, target, structure_bin.shape, structure_str.shape
```

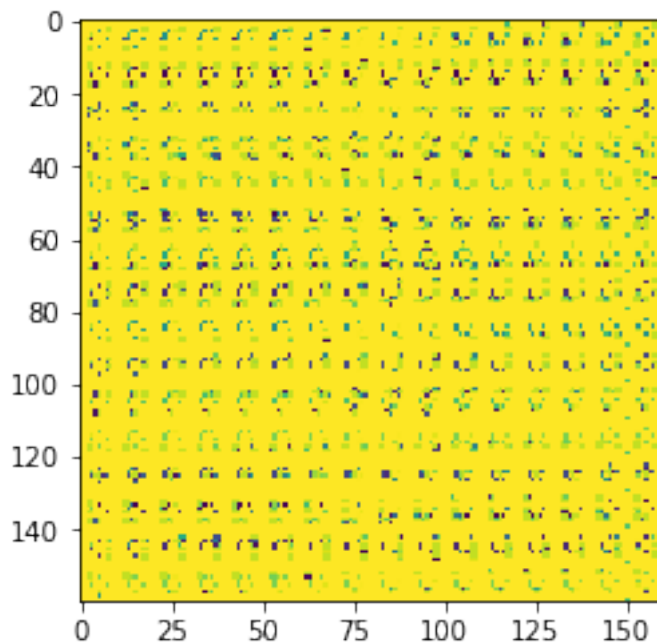
```
['target', 'image', 'relation_structure_encoded', 'relation_structure', 'meta_target']
```

```
Out[2]: ((160, 160, 16), 5, (4, 12), (1, 3))
```

```
In [3]: plot.imshow(images[:, :, 0])
plot.show()
```



```
In [4]: plot.imshow(images[:, :, 1])
        plot.show()
```



```
In [5]: figure_size = (7, 7)
```

```
context_figure = plot.figure(figsize=figure_size)
context_figure.suptitle('One image is missing from the matrix below')
```

```
num_context_figure_row = 3
num_context_figure_col = 3
num_context_image = 8
```

```
for i in range(num_context_image):
    axis = context_figure.add_subplot(num_context_figure_row, num_context_figure_col, i+1)
    axis.set_axis_off()
    plot.imshow(images[:, :, i])
plot.show()
```

```
choice_figure = plot.figure(figsize=figure_size)
choice_figure.suptitle('Choose one image from below')
```

```
num_choice_figure_row = 3
num_choice_figure_col = 3
```

```

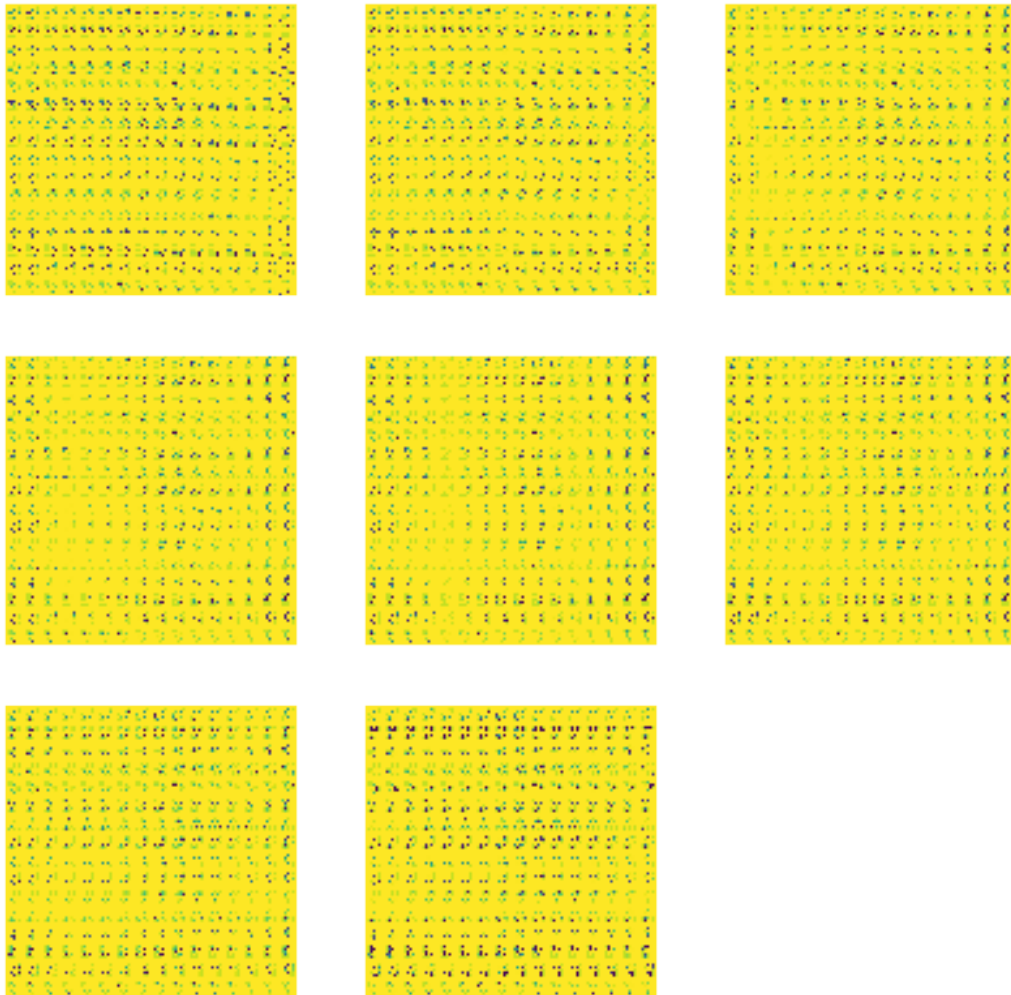
num_choice_image = 8

for i in range(num_choice_image):
    axis = choice_figure.add_subplot(num_choice_figure_row, num_choice_figure_col, i+1)
    axis.set_axis_off()
    axis.set_title(i+1)
    plot.imshow(images[:, :, i+num_context_image])
plot.show()

print('The correct answer is ' + str(target))
print('The reason for the answer is ' + str(structure_str))

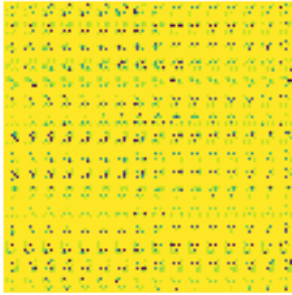
```

One image is missing from the matrix below

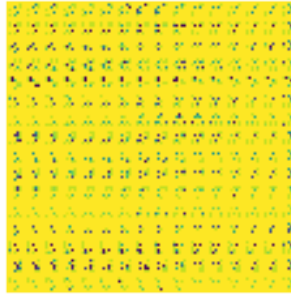


Choose one image from below

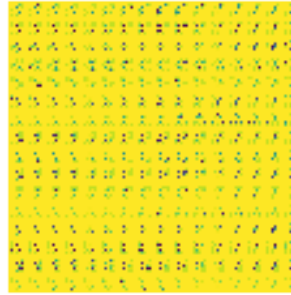
1



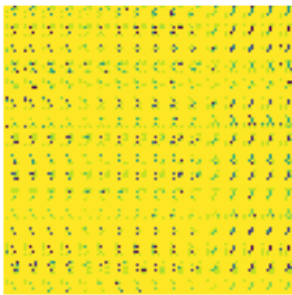
2



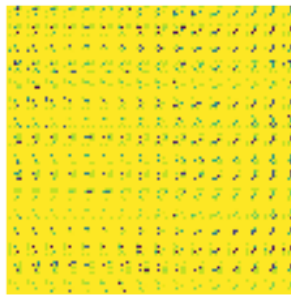
3



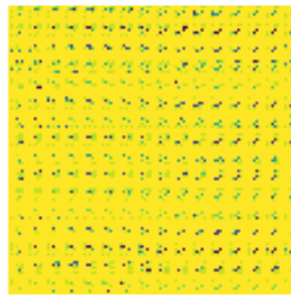
4



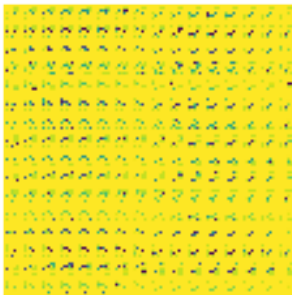
5



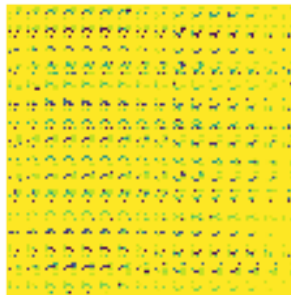
6



7



8



The correct answer is 5

The reason for the answer is `[[b'shape' b'position' b'XOR']]`