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2025 USA-NA-AIO Round 2, Problem 3, Part 4

USAAIO 

May 2025

Part 4 (5 points, coding task)

In this part, we preprocess image data.

1. Your job is to create a tensor `images_pt` from `image_list` that has shape `(1000,3,224,224)` and datatype `float64` .
 - The data range is from -1 to 1.
 - Hint: If `a` is a PIL object, then you can use `a.resize` to resize it.
2. Print `images_pt.shape` .
3. Print `images_pt.dtype` .
4. Print `images_pt[5]` .

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```
### WRITE YOUR SOLUTION HERE ###
```

```
images_pt_list = []
```

```
for image in image_list:
    image = image.resize((224,224)) # Resize the image
    image_np = np.array(image) # Convert to numpy array
    image_pt = torch.from_numpy(image_np) # Convert to pytorch tensor
    image_pt = image_pt.permute(2,0,1) # Permute the dimension
    image_pt = image_pt / 255 # Normalize value between 0 and 1
    image_pt = image_pt * 2 - 1 # Normalize value between -1 and 1
```

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```
images_pt_list.append(image_pt)

images_pt = torch.stack(images_pt_list)

print(images_pt.shape)
print(images_pt.dtype)
print(images_pt[5])

""" END OF THIS PART """
```

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