ONNX Pre-processing WG

Monthly meeting - Jan 11, 2023

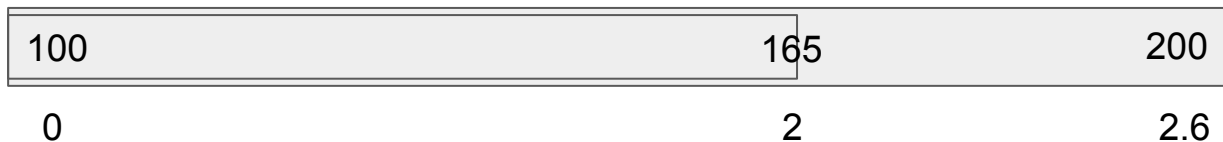# Agenda

- Status
- Resize - flip invariant
- Open floor

Status

- ResNet-50 https://github.com/onnx/tutorials/pull/266
  - Waiting for ONNX Runtime support for ONNX opset 18

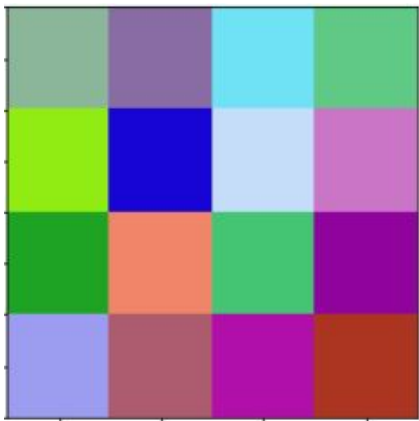# Resize - flip-invariant properties

- ROI placement:
  - `data=[100, 200], scale=1.3`
  - Scaled data should be 2.6 long, but the actual output size is truncated to 2
  - Where do we sample the 2 locations from?
- "half_pixel" (current implementation)
  - `x_ori = (x + 0.5) / scale_factor - 0.5`
  - Biased towards the beginning of the input: `[100., 165.38]`

100	165	200
0	2	2.6

Resize - flip-invariant properties

"half_pixel"

```
data = (np.random.rand(4,4,3) * 255).astype('uint8')
scales = np.array([1.0, 0.875, 1], dtype=np.float32)
```
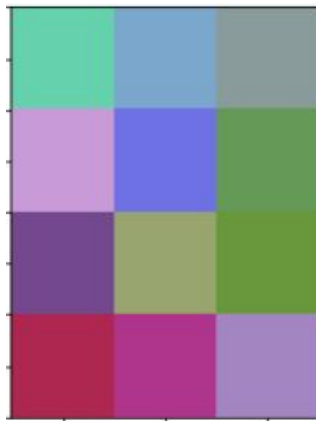
```
flipped_then_resized = \
  resize(data[:, ::-1, :], ...)
```
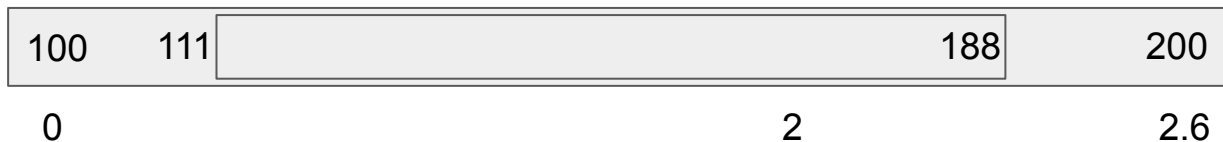
```
resized_then_flipped = \
  resize(data, ...)[:, ::-1, :]
```
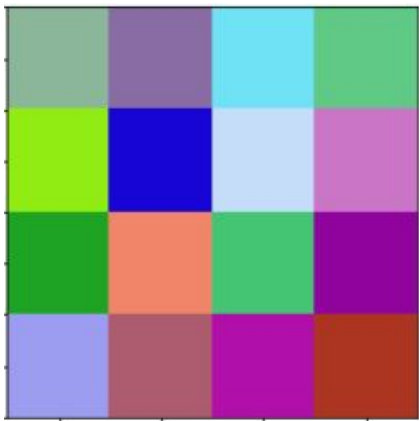
!=

Resize - flip-invariant properties

- "half_pixel_symmetric" (proposal)
  - ```
    adjustment = int(output_width) / output_width
    center = input_width / 2
    roi_start = -center * adjustment + center
    x_ori = roi_start + (x + 0.5) / scale_factor - 0.5
    ```

  - Centered: `[111.54 188.46]`

100	111			188	200
0			2		2.6

Resize - flip-invariant properties

"half_pixel_symmetric"

```
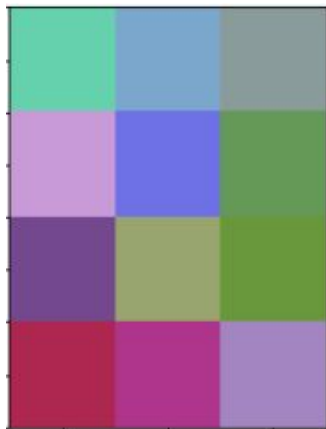data = (np.random.rand(4,4,3) * 255).astype('uint8')
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    resize(data, ...)[:, ::-1, :]
```


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Open floor