Package 'torchvision'

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Title Models, Datasets and Transformations for Images

Version 0.4.1

Description Provides access to datasets, models and preprocessing facilities for deep learning with images. Integrates seamlessly with the 'torch' package and it's 'API' borrows heavily from 'PyTorch' vision package.

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Encoding UTF-8

URL https://torchvision.mlverse.org, https://github.com/mlverse/torchvision

RoxygenNote 7.1.2

Suggests testthat, magick, coro, zip

Imports torch (>= 0.3.0), fs, rlang, rappdirs, utils, jpeg, png, abind, withr

NeedsCompilation no

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R topics documented:

base_loader *Base loader*

Description

Loads an image using jpeg, or png packages depending on the file extension.

Usage

```
base_loader(path)
```

Arguments

path	path to the image to load from

cifar10_dataset *Cifar datasets*

Description

CIFAR10 Dataset.

Downloads and prepares the CIFAR100 dataset.

Usage

```
cifar10_dataset(
  root,
  train = TRUE,
  transform = NULL,
  target_transform = NULL,
  download = FALSE
)

cifar100_dataset(
  root,
  train = TRUE,
  transform = NULL,
  target_transform = NULL,
  download = FALSE
)
```

Arguments

root	(string): Root directory of dataset where directory `cifar-10-batches-bin` exists or will be saved to if download is set to TRUE.
train	(bool, optional): If TRUE, creates dataset from training set, otherwise creates from test set.
transform	(callable, optional): A function/transform that takes in an PIL image and returns a transformed version. E.g, `transforms.RandomCrop`
target_transform	(callable, optional): A function/transform that takes in the target and transforms it.
download	(bool, optional): If true, downloads the dataset from the internet and puts it in root directory. If dataset is already downloaded, it is not downloaded again.

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image_folder_dataset *Create an image folder dataset*

Description

A generic data loader for images stored in folders. See `Details` for more information.

Usage

```
image_folder_dataset(
  root,
  transform = NULL,
  target_transform = NULL,
  loader = NULL,
  is_valid_file = NULL
)
```

Arguments

root	Root directory path.
transform	A function/transform that takes in an PIL image and returns a transformed version. E.g, `transform_random_crop()`.
target_transform	A function/transform that takes in the target and transforms it.
loader	A function to load an image given its path.
is_valid_file	A function that takes path of an Image file and check if the file is a valid file (used to check of corrupt files)

Details

This function assumes that the images for each class are contained in subdirectories of `root`. The names of these subdirectories are stored in the `classes` attribute of the returned object.

An example folder structure might look as follows:

```
root/dog/xxx.png
root/dog/xxy.png
root/dog/xxz.png

root/cat/123.png
root/cat/nsdf3.png
root/cat/asd932_.png
```

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kmnist_dataset *Kuzushiji-MNIST*

Description

Prepares the Kuzushiji-MNIST dataset and optionally downloads it.

Usage

```
kmnist_dataset(
  root,
  train = TRUE,
  transform = NULL,
  target_transform = NULL,
  download = FALSE
)
```

Arguments

`root`	(string): Root directory of dataset where `KMNIST/processed/training.pt` and `KMNIST/processed/test.pt` exist.
`train`	(bool, optional): If TRUE, creates dataset from `training.pt`, otherwise from `test.pt`.
`transform`	(callable, optional): A function/transform that takes in an PIL image and returns a transformed version. E.g, `transforms.RandomCrop`.
`target_transform`	(callable, optional): A function/transform that takes in the target and transforms it.
`download`	(bool, optional): If true, downloads the dataset from the internet and puts it in root directory. If dataset is already downloaded, it is not downloaded again.

magick_loader *Load an Image using ImageMagick*

Description

Load an image located at `path` using the `{magick}` package.

Usage

```
magick_loader(path)
```

Arguments

`path`	path to the image to load from.

mnist_dataset *MNIST dataset*

Description

Prepares the MNIST dataset and optionally downloads it.

Usage

```
mnist_dataset(
  root,
  train = TRUE,
  transform = NULL,
  target_transform = NULL,
  download = FALSE
)
```

Arguments

`root`	(string): Root directory of dataset where `MNIST/processed/training.pt` and `MNIST/processed/test.pt` exist.
`train`	(bool, optional): If True, creates dataset from `training.pt`, otherwise from `test.pt`.
`transform`	(callable, optional): A function/transform that takes in an PIL image and returns a transformed version. E.g, `transforms.RandomCrop`.
`target_transform`	(callable, optional): A function/transform that takes in the target and transforms it.
`download`	(bool, optional): If true, downloads the dataset from the internet and puts it in root directory. If dataset is already downloaded, it is not downloaded again.

`model_alexnet` *AlexNet Model Architecture*

Description

AlexNet model architecture from the One weird trick... paper.

Usage

```
model_alexnet(pretrained = FALSE, progress = TRUE, ...)
```

Arguments

`pretrained`	(bool): If TRUE, returns a model pre-trained on ImageNet.
`progress`	(bool): If TRUE, displays a progress bar of the download to stderr.
`...`	other parameters passed to the model intializer. currently only `num_classes` is used.

See Also

Other models: `model_mobilenet_v2()`, `model_resnet`

`model_mobilenet_v2` *Constructs a MobileNetV2 architecture from* R*hrefhttps://arxiv.org/abs/1801.04381MobileNetV2: Inverted Residuals and Linear Bottlenecks.*

Description

Constructs a MobileNetV2 architecture from MobileNetV2: Inverted Residuals and Linear Bottlenecks.

Usage

```
model_mobilenet_v2(pretrained = FALSE, progress = TRUE, ...)
```

Arguments

`pretrained`	(bool): If TRUE, returns a model pre-trained on ImageNet.
`progress`	(bool): If TRUE, displays a progress bar of the download to stderr.
`...`	Other parameters passed to the model implementation.

See Also

Other models: `model_alexnet()`, `model_resnet`

`model_resnet` *ResNet implementation*

Description

ResNet models implementation from Deep Residual Learning for Image Recognition and later related papers (see Functions)

Usage

```
model_resnet18(pretrained = FALSE, progress = TRUE, ...)

model_resnet34(pretrained = FALSE, progress = TRUE, ...)

model_resnet50(pretrained = FALSE, progress = TRUE, ...)

model_resnet101(pretrained = FALSE, progress = TRUE, ...)

model_resnet152(pretrained = FALSE, progress = TRUE, ...)

model_resnext50_32x4d(pretrained = FALSE, progress = TRUE, ...)

model_resnext101_32x8d(pretrained = FALSE, progress = TRUE, ...)

model_wide_resnet50_2(pretrained = FALSE, progress = TRUE, ...)

model_wide_resnet101_2(pretrained = FALSE, progress = TRUE, ...)
```

Arguments

`pretrained`	(bool): If TRUE, returns a model pre-trained on ImageNet.
`progress`	(bool): If TRUE, displays a progress bar of the download to stderr.
`...`	Other parameters passed to the resnet model.

Functions

- `model_resnet18`: ResNet 18-layer model
- `model_resnet34`: ResNet 34-layer model
- `model_resnet50`: ResNet 50-layer model
- `model_resnet101`: ResNet 101-layer model
- `model_resnet152`: ResNet 152-layer model
- `model_resnext50_32x4d`: ResNeXt-50 32x4d model from "Aggregated Residual Transformation for Deep Neural Networks" with 32 groups having each a width of 4.
- `model_resnext101_32x8d`: ResNeXt-101 32x8d model from "Aggregated Residual Transformation for Deep Neural Networks" with 32 groups having each a width of 8.

- `model_wide_resnet50_2`: Wide ResNet-50-2 model from "Wide Residual Networks" with width per group of 128.
- `model_wide_resnet101_2`: Wide ResNet-101-2 model from "Wide Residual Networks" with width per group of 128.

See Also

Other models: `model_alexnet()`, `model_mobilenet_v2()`

`model_vgg` *VGG implementation*

Description

VGG models implementations based on Very Deep Convolutional Networks For Large-Scale Image Recognition

Usage

```
model_vgg11(pretrained = FALSE, progress = TRUE, ...)

model_vgg11_bn(pretrained = FALSE, progress = TRUE, ...)

model_vgg13(pretrained = FALSE, progress = TRUE, ...)

model_vgg13_bn(pretrained = FALSE, progress = TRUE, ...)

model_vgg16(pretrained = FALSE, progress = TRUE, ...)

model_vgg16_bn(pretrained = FALSE, progress = TRUE, ...)

model_vgg19(pretrained = FALSE, progress = TRUE, ...)

model_vgg19_bn(pretrained = FALSE, progress = TRUE, ...)
```

Arguments

`pretrained`	(bool): If TRUE, returns a model pre-trained on ImageNet
`progress`	(bool): If TRUE, displays a progress bar of the download to stderr
`...`	other parameters passed to the VGG model implementation.

Functions

- `model_vgg11`: VGG 11-layer model (configuration "A")
- `model_vgg11_bn`: VGG 11-layer model (configuration "A") with batch normalization
- `model_vgg13`: VGG 13-layer model (configuration "B")

- `model_vgg13_bn`: VGG 13-layer model (configuration "B") with batch normalization
- `model_vgg16`: VGG 13-layer model (configuration "D")
- `model_vgg16_bn`: VGG 13-layer model (configuration "D") with batch normalization
- `model_vgg19`: VGG 19-layer model (configuration "E")
- `model_vgg19_bn`: VGG 19-layer model (configuration "E") with batch normalization

---

`tiny_imagenet_dataset` *Tiny ImageNet dataset*

Description

Prepares the Tiny ImageNet dataset and optionally downloads it.

Usage

```
tiny_imagenet_dataset(root, split = "train", download = FALSE, ...)
```

Arguments

`root`	directory path to download the dataset.
`split`	dataset split, `train`, `validation` or `test`.
`download`	whether to download or not the dataset.
`...`	other arguments passed to `image_folder_dataset()`.

`transform_adjust_brightness`
Adjust the brightness of an image

Description

Adjust the brightness of an image

Usage

```
transform_adjust_brightness(img, brightness_factor)
```

Arguments

`img`	A `magick-image`, `array` or `torch_tensor`.
`brightness_factor`	(float): How much to adjust the brightness. Can be any non negative number. 0 gives a black image, 1 gives the original image while 2 increases the brightness by a factor of 2.

See Also

Other transforms: transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_center_crop(), transform_color_jitter(), transform_convert_image_dtype(), transform_crop(), transform_five_crop(), transform_grayscale(), transform_hflip(), transform_linear_transformation(), transform_normalize(), transform_pad(), transform_perspective(), transform_random_affine(), transform_random_apply(), transform_random_choice(), transform_random_crop(), transform_random_erasing(), transform_random_grayscale(), transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

---

transform_adjust_contrast

Adjust the contrast of an image

Description

Adjust the contrast of an image

Usage

```
transform_adjust_contrast(img, contrast_factor)
```

Arguments

img	A magick-image, array or torch_tensor.
contrast_factor	(float): How much to adjust the contrast. Can be any non negative number. 0 gives a solid gray image, 1 gives the original image while 2 increases the contrast by a factor of 2.

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_center_crop(), transform_color_jitter(), transform_convert_image_dtype(), transform_crop(), transform_five_crop(), transform_grayscale(), transform_hflip(), transform_linear_transformation(), transform_normalize(), transform_pad(), transform_perspective(), transform_random_affine(), transform_random_apply(), transform_random_choice(), transform_random_crop(), transform_random_erasing(), transform_random_grayscale(), transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

`transform_adjust_gamma` *Adjust the gamma of an RGB image*

Description

Also known as Power Law Transform. Intensities in RGB mode are adjusted based on the following equation:

$$I_{\text{out}} = 255 \times \text{gain} \times \left(\frac{I_{\text{in}}}{255}\right)^{\gamma}$$

Usage

```
transform_adjust_gamma(img, gamma, gain = 1)
```

Arguments

`img`	A `magick-image`, `array` or `torch_tensor`.
`gamma`	(float): Non negative real number, same as γ in the equation. gamma larger than 1 make the shadows darker, while gamma smaller than 1 make dark regions lighter.
`gain`	(float): The constant multiplier.

Details

See Gamma Correction for more details.

See Also

Other transforms: `transform_adjust_brightness()`, `transform_adjust_contrast()`, `transform_adjust_hue()`, `transform_adjust_saturation()`, `transform_affine()`, `transform_center_crop()`, `transform_color_jitter()`, `transform_convert_image_dtype()`, `transform_crop()`, `transform_five_crop()`, `transform_grayscale()`, `transform_hflip()`, `transform_linear_transformation()`, `transform_normalize()`, `transform_pad()`, `transform_perspective()`, `transform_random_affine()`, `transform_random_apply()`, `transform_random_choice()`, `transform_random_crop()`, `transform_random_erasing()`, `transform_random_grayscale()`, `transform_random_horizontal_flip()`, `transform_random_order()`, `transform_random_perspective()`, `transform_random_resized_crop()`, `transform_random_rotation()`, `transform_random_vertical_flip()`, `transform_resized_crop()`, `transform_resize()`, `transform_rgb_to_grayscale()`, `transform_rotate()`, `transform_ten_crop()`, `transform_to_tensor()`, `transform_vflip()`

`transform_adjust_hue` *Adjust the hue of an image*

Description

The image hue is adjusted by converting the image to HSV and cyclically shifting the intensities in the hue channel (H). The image is then converted back to original image mode.

Usage

```
transform_adjust_hue(img, hue_factor)
```

Arguments

`img`	A `magick-image`, `array` or `torch_tensor`.
`hue_factor`	(float): How much to shift the hue channel. Should be in [-0.5, 0.5]. 0.5 and -0.5 give complete reversal of hue channel in HSV space in positive and negative direction respectively. 0 means no shift. Therefore, both -0.5 and 0.5 will give an image with complementary colors while 0 gives the original image.

Details

`hue_factor` is the amount of shift in H channel and must be in the interval [-0.5, 0.5].

See Hue for more details.

See Also

Other transforms: `transform_adjust_brightness()`, `transform_adjust_contrast()`, `transform_adjust_gamma()`, `transform_adjust_saturation()`, `transform_affine()`, `transform_center_crop()`, `transform_color_jitter()`, `transform_convert_image_dtype()`, `transform_crop()`, `transform_five_crop()`, `transform_grayscale()`, `transform_hflip()`, `transform_linear_transformation()`, `transform_normalize()`, `transform_pad()`, `transform_perspective()`, `transform_random_affine()`, `transform_random_apply()`, `transform_random_choice()`, `transform_random_crop()`, `transform_random_erasing()`, `transform_random_grayscale()`, `transform_random_horizontal_flip()`, `transform_random_order()`, `transform_random_perspective()`, `transform_random_resized_crop()`, `transform_random_rotation()`, `transform_random_vertical_flip()`, `transform_resized_crop()`, `transform_resize()`, `transform_rgb_to_grayscale()`, `transform_rotate()`, `transform_ten_crop()`, `transform_to_tensor()`, `transform_vflip()`

transform_adjust_saturation *Adjust the color saturation of an image*

Description

Adjust the color saturation of an image

Usage

```
transform_adjust_saturation(img, saturation_factor)
```

Arguments

img	A magick-image, array or torch_tensor.
saturation_factor	(float): How much to adjust the saturation. 0 will give a black and white image, 1 will give the original image while 2 will enhance the saturation by a factor of 2.

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_affine(), transform_center_crop(), transform_color_jitter(), transform_convert_image_dtype(), transform_crop(), transform_five_crop(), transform_grayscale(), transform_hflip(), transform_linear_transformation(), transform_normalize(), transform_pad(), transform_perspective(), transform_random_affine(), transform_random_apply(), transform_random_choice(), transform_random_crop(), transform_random_erasing(), transform_random_grayscale(), transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

transform_affine *Apply affine transformation on an image keeping image center invariant*

Description

Apply affine transformation on an image keeping image center invariant

Usage

```
transform_affine(
  img,
  angle,
  translate,
  scale,
  shear,
  resample = 0,
  fillcolor = NULL
)
```

Arguments

img	A magick-image, array or torch_tensor.
angle	(float or int): rotation angle value in degrees, counter-clockwise.
translate	(tuple, optional): tuple of maximum absolute fraction for horizontal and vertical translations. For example translate=(a, b), then horizontal shift is randomly sampled in the range -img_width * a < dx < img_width * a and vertical shift is randomly sampled in the range -img_height * b < dy < img_height * b. Will not translate by default.
scale	(tuple, optional): scaling factor interval, e.g (a, b), then scale is randomly sampled from the range a <= scale <= b. Will keep original scale by default.
shear	(sequence or float or int, optional): Range of degrees to select from. If shear is a number, a shear parallel to the x axis in the range (-shear, +shear) will be applied. Else if shear is a tuple or list of 2 values a shear parallel to the x axis in the range (shear[1], shear[2]) will be applied. Else if shear is a tuple or list of 4 values, a x-axis shear in (shear[1], shear[2]) and y-axis shear in (shear[3], shear[4]) will be applied. Will not apply shear by default.
resample	(int, optional): An optional resampling filter.
fillcolor	(tuple or int): Optional fill color (Tuple for RGB Image and int for grayscale) for the area outside the transform in the output image (Pillow>=5.0.0). This option is not supported for Tensor input. Fill value for the area outside the transform in the output image is always 0.

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_center_crop(), transform_color_jitter(transform_convert_image_dtype(), transform_crop(), transform_five_crop(), transform_grayscale(), transform_hflip(), transform_linear_transformation(), transform_normalize(), transform_pad(), transform_perspective(), transform_random_affine(), transform_random_apply(), transform_random_choice(transform_random_crop(), transform_random_erasing(), transform_random_grayscale(), transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

transform_center_crop *Crops the given image at the center*

Description

The image can be a Magick Image or a torch Tensor, in which case it is expected to have [..., H, W] shape, where ... means an arbitrary number of leading dimensions.

Usage

```
transform_center_crop(img, size)
```

Arguments

img	A magick-image, array or torch_tensor.
size	(sequence or int): Desired output size of the crop. If size is an int instead of sequence like (h, w), a square crop (size, size) is made. If provided a tuple or list of length 1, it will be interpreted as (size, size).

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_color_jitter(), transform_convert_image_dtype(), transform_crop(), transform_five_crop(), transform_grayscale(), transform_hflip(), transform_linear_transformation(), transform_normalize(), transform_pad(), transform_perspective(), transform_random_affine(), transform_random_apply(), transform_random_choice(), transform_random_crop(), transform_random_erasing(), transform_random_grayscale(), transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

transform_color_jitter

Randomly change the brightness, contrast and saturation of an image

Description

Randomly change the brightness, contrast and saturation of an image

Usage

```
transform_color_jitter(
  img,
  brightness = 0,
  contrast = 0,
  saturation = 0,
  hue = 0
)
```

Arguments

img	A magick-image, array or torch_tensor.
brightness	(float or tuple of float (min, max)): How much to jitter brightness. brightness_factor is chosen uniformly from [max(0, 1 - brightness), 1 + brightness] or the given [min, max]. Should be non negative numbers.
contrast	(float or tuple of float (min, max)): How much to jitter contrast. contrast_factor is chosen uniformly from [max(0, 1 - contrast), 1 + contrast] or the given [min, max]. Should be non negative numbers.
saturation	(float or tuple of float (min, max)): How much to jitter saturation. saturation_factor is chosen uniformly from [max(0, 1 - saturation), 1 + saturation] or the given [min, max]. Should be non negative numbers.
hue	(float or tuple of float (min, max)): How much to jitter hue. hue_factor is chosen uniformly from [-hue, hue] or the given [min, max]. Should have 0<= hue <= 0.5 or -0.5 <= min <= max <= 0.5.

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_center_crop(), transform_convert_image_dtype(), transform_crop(), transform_five_crop(), transform_grayscale(), transform_hflip(), transform_linear_transformation(), transform_normalize(), transform_pad(), transform_perspective(), transform_random_affine(), transform_random_apply(), transform_random_choice(), transform_random_crop(), transform_random_erasing(), transform_random_grayscale(), transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

---

transform_convert_image_dtype

Convert a tensor image to the given dtype *and scale the values accordingly*

Description

Convert a tensor image to the given dtype and scale the values accordingly

Usage

```
transform_convert_image_dtype(img, dtype = torch::torch_float())
```

Arguments

img	A magick-image, array or torch_tensor.
dtype	(torch.dtype): Desired data type of the output.

Note

When converting from a smaller to a larger integer dtype the maximum values are **not** mapped exactly. If converted back and forth, this mismatch has no effect.

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_center_crop(), transform_color_jitter(), transform_crop(), transform_five_crop(), transform_grayscale(), transform_hflip(), transform_linear_transformation(), transform_normalize(), transform_pad(), transform_perspective(), transform_random_affine(), transform_random_apply(), transform_random_choice(), transform_random_crop(), transform_random_erasing(), transform_random_grayscale(), transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

---

transform_crop *Crop the given image at specified location and output size*

Description

Crop the given image at specified location and output size

Usage

```
transform_crop(img, top, left, height, width)
```

Arguments

img	A magick-image, array or torch_tensor.
top	(int): Vertical component of the top left corner of the crop box.
left	(int): Horizontal component of the top left corner of the crop box.
height	(int): Height of the crop box.
width	(int): Width of the crop box.

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_center_crop(), transform_color_jitter(), transform_convert_image_dtype(), transform_five_crop(), transform_grayscale(), transform_hflip(), transform_linear_transformation(), transform_normalize(), transform_pad(), transform_perspective(), transform_random_affine(), transform_random_apply(), transform_random_choice(), transform_random_crop(), transform_random_erasing(), transform_random_grayscale(), transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

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transform_five_crop *Crop image into four corners and a central crop*

Description

Crop the given image into four corners and the central crop. This transform returns a tuple of images and there may be a mismatch in the number of inputs and targets your Dataset returns.

Usage

```
transform_five_crop(img, size)
```

Arguments

img	A magick-image, array or torch_tensor.
size	(sequence or int): Desired output size. If size is a sequence like (h, w), output size will be matched to this. If size is an int, smaller edge of the image will be matched to this number. i.e, if height > width, then image will be rescaled to (size * height / width, size).

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_center_crop(), transform_color_jitter(), transform_convert_image_dtype(), transform_crop(), transform_grayscale(), transform_hflip(), transform_linear_transformation(), transform_normalize(), transform_pad(), transform_perspective(), transform_random_affine(), transform_random_apply(), transform_random_choice(), transform_random_crop(), transform_random_erasing(), transform_random_grayscale(), transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

transform_grayscale *Convert image to grayscale*

Description

Convert image to grayscale

Usage

```
transform_grayscale(img, num_output_channels)
```

Arguments

img	A magick-image, array or torch_tensor.
num_output_channels	(int): (1 or 3) number of channels desired for output image

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_center_crop(), transform_color_jitter(), transform_convert_image_dtype(), transform_crop(), transform_five_crop(), transform_hflip(), transform_linear_transformation(), transform_normalize(), transform_pad(), transform_perspective(), transform_random_affine(), transform_random_apply(), transform_random_choice(), transform_random_crop(), transform_random_erasing(), transform_random_grayscale(), transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

transform_hflip *Horizontally flip a PIL Image or Tensor*

Description

Horizontally flip a PIL Image or Tensor

Usage

```
transform_hflip(img)
```

Arguments

img	A magick-image, array or torch_tensor.

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_center_crop(), transform_color_jitter(), transform_convert_image_dtype(), transform_crop(), transform_five_crop(), transform_grayscale(), transform_linear_transformation(), transform_normalize(), transform_pad(), transform_perspective(), transform_random_affine(), transform_random_apply(), transform_random_choice(), transform_random_crop(), transform_random_erasing(), transform_random_grayscale(), transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

---

transform_linear_transformation

Transform a tensor image with a square transformation matrix and a mean_vector computed offline

---

Description

Given transformation_matrix and mean_vector, will flatten the torch_tensor and subtract mean_vector from it which is then followed by computing the dot product with the transformation matrix and then reshaping the tensor to its original shape.

Usage

```
transform_linear_transformation(img, transformation_matrix, mean_vector)
```

Arguments

img	A magick-image, array or torch_tensor.
transformation_matrix	(Tensor): tensor [D x D], D = C x H x W.
mean_vector	(Tensor): tensor D, D = C x H x W.

Applications

whitening transformation: Suppose X is a column vector zero-centered data. Then compute the data covariance matrix [D x D] with torch.mm(X.t(), X), perform SVD on this matrix and pass it as transformation_matrix.

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_center_crop(), transform_color_jitter(), transform_convert_image_dtype(), transform_crop(), transform_five_crop(), transform_grayscale(), transform_hflip(), transform_normalize(), transform_pad(), transform_perspective(

transform_random_affine(), transform_random_apply(), transform_random_choice(), transform_random_crop(), transform_random_erasing(), transform_random_grayscale(), transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

`transform_normalize` *Normalize a tensor image with mean and standard deviation*

Description

Given mean: (mean[1],...,mean[n]) and std: (std[1],..,std[n]) for `n` channels, this transform will normalize each channel of the input `torch_tensor` i.e., `output[channel] = (input[channel] -mean[channel]) / std[channel]`

Usage

```
transform_normalize(img, mean, std, inplace = FALSE)
```

Arguments

`img`	A `magick-image`, `array` or `torch_tensor`.
`mean`	(sequence): Sequence of means for each channel.
`std`	(sequence): Sequence of standard deviations for each channel.
`inplace`	(bool,optional): Bool to make this operation in-place.

Note

This transform acts out of place, i.e., it does not mutate the input tensor.

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_center_crop(), transform_color_jitter(), transform_convert_image_dtype(), transform_crop(), transform_five_crop(), transform_grayscale(), transform_hflip(), transform_linear_transformation(), transform_pad(), transform_perspective(), transform_random_affine(), transform_random_apply(), transform_random_choice(), transform_random_crop(), transform_random_erasing(), transform_random_grayscale(), transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

transform_pad *Pad the given image on all sides with the given "pad" value*

Description

The image can be a Magick Image or a torch Tensor, in which case it is expected to have [..., H, W] shape, where ... means an arbitrary number of leading dimensions.

Usage

```
transform_pad(img, padding, fill = 0, padding_mode = "constant")
```

Arguments

img	A magick-image, array or torch_tensor.
padding	(int or tuple or list): Padding on each border. If a single int is provided this is used to pad all borders. If tuple of length 2 is provided this is the padding on left/right and top/bottom respectively. If a tuple of length 4 is provided this is the padding for the left, right, top and bottom borders respectively.
fill	(int or str or tuple): Pixel fill value for constant fill. Default is 0. If a tuple of length 3, it is used to fill R, G, B channels respectively. This value is only used when the padding_mode is constant. Only int value is supported for Tensors.
padding_mode	Type of padding. Should be: constant, edge, reflect or symmetric. Default is constant. Mode symmetric is not yet supported for Tensor inputs. • constant: pads with a constant value, this value is specified with fill • edge: pads with the last value on the edge of the image • reflect: pads with reflection of image (without repeating the last value on the edge) padding [1, 2, 3, 4] with 2 elements on both sides in reflect mode will result in [3, 2, 1, 2, 3, 4, 3, 2] • symmetric: pads with reflection of image (repeating the last value on the edge) padding [1, 2, 3, 4] with 2 elements on both sides in symmetric mode will result in [2, 1, 1, 2, 3, 4, 4, 3]

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_center_crop(), transform_color_jitter(), transform_convert_image_dtype(), transform_crop(), transform_five_crop(), transform_grayscale(), transform_hflip(), transform_linear_transformation(), transform_normalize(), transform_perspective(), transform_random_affine(), transform_random_apply(), transform_random_choice(), transform_random_crop(), transform_random_erasing(), transform_random_grayscale(), transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

`transform_perspective` *Perspective transformation of an image*

Description

Perspective transformation of an image

Usage

```
transform_perspective(
  img,
  startpoints,
  endpoints,
  interpolation = 2,
  fill = NULL
)
```

Arguments

`img`	A `magick-image`, `array` or `torch_tensor`.
`startpoints`	(list of list of ints): List containing four lists of two integers corresponding to four corners [top-left, top-right, bottom-right, bottom-left] of the original image.
`endpoints`	(list of list of ints): List containing four lists of two integers corresponding to four corners [top-left, top-right, bottom-right, bottom-left] of the transformed image.
`interpolation`	(int, optional) Desired interpolation. An integer `0` = `nearest`, `2` = `bilinear`, and `3` = `bicubic` or a name from `magick::filter_types()`.
`fill`	(int or str or tuple): Pixel fill value for constant fill. Default is 0. If a tuple of length 3, it is used to fill R, G, B channels respectively. This value is only used when the padding_mode is constant. Only int value is supported for Tensors.

See Also

Other transforms: `transform_adjust_brightness()`, `transform_adjust_contrast()`, `transform_adjust_gamma()`, `transform_adjust_hue()`, `transform_adjust_saturation()`, `transform_affine()`, `transform_center_crop()`, `transform_color_jitter()`, `transform_convert_image_dtype()`, `transform_crop()`, `transform_five_crop()`, `transform_grayscale()`, `transform_hflip()`, `transform_linear_transformation()`, `transform_normalize()`, `transform_pad()`, `transform_random_affine()`, `transform_random_apply()`, `transform_random_choice()`, `transform_random_crop()`, `transform_random_erasing()`, `transform_random_grayscale()`, `transform_random_horizontal_flip()`, `transform_random_order()`, `transform_random_perspective()`, `transform_random_resized_crop()`, `transform_random_rotation()`, `transform_random_vertical_flip()`, `transform_resized_crop()`, `transform_resize()`, `transform_rgb_to_grayscale()`, `transform_rotate()`, `transform_ten_crop()`, `transform_to_tensor()`, `transform_vflip()`

`transform_random_affine` *Random affine transformation of the image keeping center invariant*

Description

Random affine transformation of the image keeping center invariant

Usage

```
transform_random_affine(
  img,
  degrees,
  translate = NULL,
  scale = NULL,
  shear = NULL,
  resample = 0,
  fillcolor = 0
)
```

Arguments

`img`	A `magick-image`, `array` or `torch_tensor`.
`degrees`	(sequence or float or int): Range of degrees to select from. If degrees is a number instead of sequence like (min, max), the range of degrees will be (-degrees, +degrees).
`translate`	(tuple, optional): tuple of maximum absolute fraction for horizontal and vertical translations. For example translate=(a, b), then horizontal shift is randomly sampled in the range -img_width * a < dx < img_width * a and vertical shift is randomly sampled in the range -img_height * b < dy < img_height * b. Will not translate by default.
`scale`	(tuple, optional): scaling factor interval, e.g (a, b), then scale is randomly sampled from the range a <= scale <= b. Will keep original scale by default.
`shear`	(sequence or float or int, optional): Range of degrees to select from. If shear is a number, a shear parallel to the x axis in the range (-shear, +shear) will be applied. Else if shear is a tuple or list of 2 values a shear parallel to the x axis in the range (shear[1], shear[2]) will be applied. Else if shear is a tuple or list of 4 values, a x-axis shear in (shear[1], shear[2]) and y-axis shear in (shear[3], shear[4]) will be applied. Will not apply shear by default.
`resample`	(int, optional): An optional resampling filter.
`fillcolor`	(tuple or int): Optional fill color (Tuple for RGB Image and int for grayscale) for the area outside the transform in the output image (Pillow>=5.0.0). This option is not supported for Tensor input. Fill value for the area outside the transform in the output image is always 0.

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_center_crop(), transform_color_jitter(), transform_convert_image_dtype(), transform_crop(), transform_five_crop(), transform_grayscale(), transform_hflip(), transform_linear_transformation(), transform_normalize(), transform_pad(), transform_perspective(), transform_random_apply(), transform_random_choice(), transform_random_crop(), transform_random_erasing(), transform_random_grayscale(), transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

---

transform_random_apply

Apply a list of transformations randomly with a given probability

---

Description

Apply a list of transformations randomly with a given probability

Usage

```
transform_random_apply(img, transforms, p = 0.5)
```

Arguments

img	A magick-image, array or torch_tensor.
transforms	(list or tuple): list of transformations.
p	(float): probability.

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_center_crop(), transform_color_jitter(), transform_convert_image_dtype(), transform_crop(), transform_five_crop(), transform_grayscale(), transform_hflip(), transform_linear_transformation(), transform_normalize(), transform_pad(), transform_perspective(), transform_random_affine(), transform_random_choice(), transform_random_crop(), transform_random_erasing(), transform_random_grayscale(), transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

transform_random_choice *Apply single transformation randomly picked from a list*

Description

Apply single transformation randomly picked from a list

Usage

```
transform_random_choice(img, transforms)
```

Arguments

img	A magick-image, array or torch_tensor.
transforms	(list or tuple): list of transformations.

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_center_crop(), transform_color_jitter(), transform_convert_image_dtype(), transform_crop(), transform_five_crop(), transform_grayscale(), transform_hflip(), transform_linear_transformation(), transform_normalize(), transform_pad(), transform_perspective(), transform_random_affine(), transform_random_apply(), transform_random_crop(), transform_random_erasing(), transform_random_grayscale(), transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

transform_random_crop *Crop the given image at a random location*

Description

The image can be a Magick Image or a Tensor, in which case it is expected to have [..., H, W] shape, where ... means an arbitrary number of leading dimensions.

Usage

```
transform_random_crop(
  img,
  size,
  padding = NULL,
  pad_if_needed = FALSE,
```

```
  fill = 0,
  padding_mode = "constant"
)
```

Arguments

img	A magick-image, array or torch_tensor.
size	(sequence or int): Desired output size. If size is a sequence like (h, w), output size will be matched to this. If size is an int, smaller edge of the image will be matched to this number. i.e, if height > width, then image will be rescaled to (size * height / width, size).
padding	(int or tuple or list): Padding on each border. If a single int is provided this is used to pad all borders. If tuple of length 2 is provided this is the padding on left/right and top/bottom respectively. If a tuple of length 4 is provided this is the padding for the left, right, top and bottom borders respectively.
pad_if_needed	(boolean): It will pad the image if smaller than the desired size to avoid raising an exception. Since cropping is done after padding, the padding seems to be done at a random offset.
fill	(int or str or tuple): Pixel fill value for constant fill. Default is 0. If a tuple of length 3, it is used to fill R, G, B channels respectively. This value is only used when the padding_mode is constant. Only int value is supported for Tensors.
padding_mode	Type of padding. Should be: constant, edge, reflect or symmetric. Default is constant. Mode symmetric is not yet supported for Tensor inputs. • constant: pads with a constant value, this value is specified with fill • edge: pads with the last value on the edge of the image • reflect: pads with reflection of image (without repeating the last value on the edge) padding [1, 2, 3, 4] with 2 elements on both sides in reflect mode will result in [3, 2, 1, 2, 3, 4, 3, 2] • symmetric: pads with reflection of image (repeating the last value on the edge) padding [1, 2, 3, 4] with 2 elements on both sides in symmetric mode will result in [2, 1, 1, 2, 3, 4, 4, 3]

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_center_crop(), transform_color_jitter(), transform_convert_image_dtype(), transform_crop(), transform_five_crop(), transform_grayscale(), transform_hflip(), transform_linear_transformation(), transform_normalize(), transform_pad(), transform_perspective(), transform_random_affine(), transform_random_apply(), transform_random_choice(), transform_random_erasing(), transform_random_grayscale(), transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

transform_random_erasing *Randomly selects a rectangular region in an image and erases its pixel values*

Description

'Random Erasing Data Augmentation' by Zhong *et al.* See https://arxiv.org/pdf/1708.04896.pdf

Usage

```
transform_random_erasing(
  img,
  p = 0.5,
  scale = c(0.02, 0.33),
  ratio = c(0.3, 3.3),
  value = 0,
  inplace = FALSE
)
```

Arguments

img	A magick-image, array or torch_tensor.
p	probability that the random erasing operation will be performed.
scale	range of proportion of erased area against input image.
ratio	range of aspect ratio of erased area.
value	erasing value. Default is 0. If a single int, it is used to erase all pixels. If a tuple of length 3, it is used to erase R, G, B channels respectively. If a str of 'random', erasing each pixel with random values.
inplace	boolean to make this transform inplace. Default set to FALSE.

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_center_crop(), transform_color_jitter(), transform_convert_image_dtype(), transform_crop(), transform_five_crop(), transform_grayscale(), transform_hflip(), transform_linear_transformation(), transform_normalize(), transform_pad(), transform_perspective(), transform_random_affine(), transform_random_apply(), transform_random_choice(), transform_random_crop(), transform_random_grayscale(), transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

transform_random_grayscale

Randomly convert image to grayscale with a given probability

Description

Convert image to grayscale with a probability of p.

Usage

```
transform_random_grayscale(img, p = 0.1)
```

Arguments

img	A magick-image, array or torch_tensor.
p	(float): probability that image should be converted to grayscale (default 0.1).

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_center_crop(), transform_color_jitter(), transform_convert_image_dtype(), transform_crop(), transform_five_crop(), transform_grayscale(), transform_hflip(), transform_linear_transformation(), transform_normalize(), transform_pad(), transform_perspective(), transform_random_affine(), transform_random_apply(), transform_random_choice(), transform_random_crop(), transform_random_erasing(), transform_random_horizo transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

transform_random_horizontal_flip

Horizontally flip an image randomly with a given probability

Description

Horizontally flip an image randomly with a given probability. The image can be a Magick Image or a torch Tensor, in which case it is expected to have [..., H, W] shape, where ... means an arbitrary number of leading dimensions

Usage

```
transform_random_horizontal_flip(img, p = 0.5)
```

Arguments

img	A magick-image, array or torch_tensor.
p	(float): probability of the image being flipped. Default value is 0.5

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_center_crop(), transform_color_jitter(), transform_convert_image_dtype(), transform_crop(), transform_five_crop(), transform_grayscale(), transform_hflip(), transform_linear_transformation(), transform_normalize(), transform_pad(), transform_perspective(), transform_random_affine(), transform_random_apply(), transform_random_choice(), transform_random_crop(), transform_random_erasing(), transform_random_grayso transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

---

transform_random_order

Apply a list of transformations in a random order

Description

Apply a list of transformations in a random order

Usage

```
transform_random_order(img, transforms)
```

Arguments

img	A magick-image, array or torch_tensor.
transforms	(list or tuple): list of transformations.

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_center_crop(), transform_color_jitter(), transform_convert_image_dtype(), transform_crop(), transform_five_crop(), transform_grayscale(), transform_hflip(), transform_linear_transformation(), transform_normalize(), transform_pad(), transform_perspective(), transform_random_affine(), transform_random_apply(), transform_random_choice(), transform_random_crop(), transform_random_erasing(), transform_random_grayso transform_random_horizontal_flip(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

`transform_random_perspective` *Random perspective transformation of an image with a given probability*

Description

Performs a random perspective transformation of the given image with a given probability

Usage

```
transform_random_perspective(
  img,
  distortion_scale = 0.5,
  p = 0.5,
  interpolation = 2,
  fill = 0
)
```

Arguments

`img`	A `magick-image`, `array` or `torch_tensor`.
`distortion_scale`	(float): argument to control the degree of distortion and ranges from 0 to 1. Default is 0.5.
`p`	(float): probability of the image being transformed. Default is 0.5.
`interpolation`	(int, optional) Desired interpolation. An integer `0` = `nearest`, `2` = `bilinear`, and `3` = `bicubic` or a name from `magick::filter_types()`.
`fill`	(int or str or tuple): Pixel fill value for constant fill. Default is 0. If a tuple of length 3, it is used to fill R, G, B channels respectively. This value is only used when the padding_mode is constant. Only int value is supported for Tensors.

See Also

Other transforms: `transform_adjust_brightness()`, `transform_adjust_contrast()`, `transform_adjust_gamma()`, `transform_adjust_hue()`, `transform_adjust_saturation()`, `transform_affine()`, `transform_center_crop()`, `transform_color_jitter()`, `transform_convert_image_dtype()`, `transform_crop()`, `transform_five_crop()`, `transform_grayscale()`, `transform_hflip()`, `transform_linear_transformation()`, `transform_normalize()`, `transform_pad()`, `transform_perspective()`, `transform_random_affine()`, `transform_random_apply()`, `transform_random_choice()`, `transform_random_crop()`, `transform_random_erasing()`, `transform_random_grayscale()`, `transform_random_horizontal_flip()`, `transform_random_order()`, `transform_random_resized_crop()`, `transform_random_rotation()`, `transform_random_vertical_flip()`, `transform_resized_crop()`, `transform_resize()`, `transform_rgb_to_grayscale()`, `transform_rotate()`, `transform_ten_crop()`, `transform_to_tensor()`, `transform_vflip()`

`transform_random_resized_crop` *Crop image to random size and aspect ratio*

Description

Crop the given image to a random size and aspect ratio. The image can be a Magick Image or a Tensor, in which case it is expected to have [..., H, W] shape, where ... means an arbitrary number of leading dimensions

Usage

```
transform_random_resized_crop(
  img,
  size,
  scale = c(0.08, 1),
  ratio = c(3/4, 4/3),
  interpolation = 2
)
```

Arguments

`img`	A `magick-image`, `array` or `torch_tensor`.
`size`	(sequence or int): Desired output size. If size is a sequence like (h, w), output size will be matched to this. If size is an int, smaller edge of the image will be matched to this number. i.e, if height > width, then image will be rescaled to (size * height / width, size).
`scale`	(tuple of float): range of size of the origin size cropped
`ratio`	(tuple of float): range of aspect ratio of the origin aspect ratio cropped.
`interpolation`	(int, optional) Desired interpolation. An integer `0` = `nearest`, `2` = `bilinear`, and `3` = `bicubic` or a name from `magick::filter_types()`.

Details

A crop of random size (default: of 0.08 to 1.0) of the original size and a random aspect ratio (default: of 3/4 to 4/3) of the original aspect ratio is made. This crop is finally resized to given size. This is popularly used to train the Inception networks.

See Also

Other transforms: `transform_adjust_brightness()`, `transform_adjust_contrast()`, `transform_adjust_gamma()`, `transform_adjust_hue()`, `transform_adjust_saturation()`, `transform_affine()`, `transform_center_crop()`, `transform_color_jitter()`, `transform_convert_image_dtype()`, `transform_crop()`, `transform_five_crop()`, `transform_grayscale()`, `transform_hflip()`, `transform_linear_transformation()`, `transform_normalize()`, `transform_pad()`, `transform_perspective()`, `transform_random_affine()`, `transform_random_apply()`, `transform_random_choice()`, `transform_random_crop()`, `transform_random_erasing()`, `transform_random_grays`

transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

---

transform_random_rotation *Rotate the image by angle*

Description

Rotate the image by angle

Usage

```
transform_random_rotation(
  img,
  degrees,
  resample = FALSE,
  expand = FALSE,
  center = NULL,
  fill = NULL
)
```

Arguments

img	A magick-image, array or torch_tensor.
degrees	(sequence or float or int): Range of degrees to select from. If degrees is a number instead of sequence like (min, max), the range of degrees will be (-degrees, +degrees).
resample	(int, optional): An optional resampling filter.
expand	(bool, optional): Optional expansion flag. If true, expands the output to make it large enough to hold the entire rotated image. If false or omitted, make the output image the same size as the input image. Note that the expand flag assumes rotation around the center and no translation.
center	(list or tuple, optional): Optional center of rotation, (x, y). Origin is the upper left corner. Default is the center of the image.
fill	(n-tuple or int or float): Pixel fill value for area outside the rotated image. If int or float, the value is used for all bands respectively. Defaults to 0 for all bands. This option is only available for Pillow>=5.2.0. This option is not supported for Tensor input. Fill value for the area outside the transform in the output image is always 0.

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_center_crop(), transform_color_jitter(), transform_convert_image_dtype(), transform_crop(), transform_five_crop(), transform_grayscale(), transform_hflip(), transform_linear_transformation(), transform_normalize(), transform_pad(), transform_perspective(), transform_random_affine(), transform_random_apply(), transform_random_choice(), transform_random_crop(), transform_random_erasing(), transform_random_grayso transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

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transform_random_vertical_flip

Vertically flip an image randomly with a given probability

Description

The image can be a PIL Image or a torch Tensor, in which case it is expected to have [..., H, W] shape, where ... means an arbitrary number of leading dimensions

Usage

```
transform_random_vertical_flip(img, p = 0.5)
```

Arguments

img	A magick-image, array or torch_tensor.
p	(float): probability of the image being flipped. Default value is 0.5

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_center_crop(), transform_color_jitter(), transform_convert_image_dtype(), transform_crop(), transform_five_crop(), transform_grayscale(), transform_hflip(), transform_linear_transformation(), transform_normalize(), transform_pad(), transform_perspective(), transform_random_affine(), transform_random_apply(), transform_random_choice(), transform_random_crop(), transform_random_erasing(), transform_random_grayso transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

transform_resize *Resize the input image to the given size*

Description

The image can be a Magic Image or a torch Tensor, in which case it is expected to have [..., H, W] shape, where ... means an arbitrary number of leading dimensions

Usage

```
transform_resize(img, size, interpolation = 2)
```

Arguments

img	A magick-image, array or torch_tensor.
size	(sequence or int): Desired output size. If size is a sequence like (h, w), output size will be matched to this. If size is an int, smaller edge of the image will be matched to this number. i.e, if height > width, then image will be rescaled to (size * height / width, size).
interpolation	(int, optional) Desired interpolation. An integer 0 = nearest, 2 = bilinear, and 3 = bicubic or a name from magick::filter_types().

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_center_crop(), transform_color_jitter(), transform_convert_image_dtype(), transform_crop(), transform_five_crop(), transform_grayscale(), transform_hflip(), transform_linear_transformation(), transform_normalize(), transform_pad(), transform_perspective(), transform_random_affine(), transform_random_apply(), transform_random_choice(), transform_random_crop(), transform_random_erasing(), transform_random_grays transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

transform_resized_crop

Crop an image and resize it to a desired size

Description

Crop an image and resize it to a desired size

Usage

```
transform_resized_crop(img, top, left, height, width, size, interpolation = 2)
```

Arguments

img	A magick-image, array or torch_tensor.
top	(int): Vertical component of the top left corner of the crop box.
left	(int): Horizontal component of the top left corner of the crop box.
height	(int): Height of the crop box.
width	(int): Width of the crop box.
size	(sequence or int): Desired output size. If size is a sequence like (h, w), output size will be matched to this. If size is an int, smaller edge of the image will be matched to this number. i.e, if height > width, then image will be rescaled to (size * height / width, size).
interpolation	(int, optional) Desired interpolation. An integer 0 = nearest, 2 = bilinear, and 3 = bicubic or a name from magick::filter_types().

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_center_crop(), transform_color_jitter(), transform_convert_image_dtype(), transform_crop(), transform_five_crop(), transform_grayscale(), transform_hflip(), transform_linear_transformation(), transform_normalize(), transform_pad(), transform_perspective(), transform_random_affine(), transform_random_apply(), transform_random_choice(), transform_random_crop(), transform_random_erasing(), transform_random_grays transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

---

transform_rgb_to_grayscale

Convert RGB Image Tensor to Grayscale

Description

For RGB to Grayscale conversion, ITU-R 601-2 luma transform is performed which is L = R * 0.2989 + G * 0.5870 + B * 0.1140

Usage

```
transform_rgb_to_grayscale(img)
```

Arguments

img	A magick-image, array or torch_tensor.

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_center_crop(), transform_color_jitter(), transform_convert_image_dtype(), transform_crop(), transform_five_crop(), transform_grayscale(), transform_hflip(), transform_linear_transformation(), transform_normalize(), transform_pad(), transform_perspective(), transform_random_affine(), transform_random_apply(), transform_random_choice(), transform_random_crop(), transform_random_erasing(), transform_random_grayscale(), transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rotate(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

`transform_rotate` *Angular rotation of an image*

Description

Angular rotation of an image

Usage

```
transform_rotate(
  img,
  angle,
  resample = 0,
  expand = FALSE,
  center = NULL,
  fill = NULL
)
```

Arguments

`img`	A `magick-image`, `array` or `torch_tensor`.
`angle`	(float or int): rotation angle value in degrees, counter-clockwise.
`resample`	(int, optional): An optional resampling filter.
`expand`	(bool, optional): Optional expansion flag. If true, expands the output to make it large enough to hold the entire rotated image. If false or omitted, make the output image the same size as the input image. Note that the expand flag assumes rotation around the center and no translation.
`center`	(list or tuple, optional): Optional center of rotation, (x, y). Origin is the upper left corner. Default is the center of the image.
`fill`	(n-tuple or int or float): Pixel fill value for area outside the rotated image. If int or float, the value is used for all bands respectively. Defaults to 0 for all bands. This option is only available for Pillow>=5.2.0. This option is not supported for Tensor input. Fill value for the area outside the transform in the output image is always 0.

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_center_crop(), transform_color_jitter(), transform_convert_image_dtype(), transform_crop(), transform_five_crop(), transform_grayscale(), transform_hflip(), transform_linear_transformation(), transform_normalize(), transform_pad(), transform_perspective(), transform_random_affine(), transform_random_apply(), transform_random_choice(), transform_random_crop(), transform_random_erasing(), transform_random_grayso transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_ten_crop(), transform_to_tensor(), transform_vflip()

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transform_ten_crop *Crop an image and the flipped image each into four corners and a central crop*

Description

Crop the given image into four corners and the central crop, plus the flipped version of these (horizontal flipping is used by default). This transform returns a tuple of images and there may be a mismatch in the number of inputs and targets your Dataset returns.

Usage

```
transform_ten_crop(img, size, vertical_flip = FALSE)
```

Arguments

img	A magick-image, array or torch_tensor.
size	(sequence or int): Desired output size. If size is a sequence like (h, w), output size will be matched to this. If size is an int, smaller edge of the image will be matched to this number. i.e, if height > width, then image will be rescaled to (size * height / width, size).
vertical_flip	(bool): Use vertical flipping instead of horizontal

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_center_crop(), transform_color_jitter(), transform_convert_image_dtype(), transform_crop(), transform_five_crop(), transform_grayscale(), transform_hflip(), transform_linear_transformation(), transform_normalize(), transform_pad(), transform_perspective(), transform_random_affine(), transform_random_apply(), transform_random_choice(), transform_random_crop(), transform_random_erasing(), transform_random_grayso transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_to_tensor(), transform_vflip()

transform_to_tensor *Convert an image to a tensor*

Description

Converts a Magick Image or array (H x W x C) in the range [0, 255] to a `torch_tensor` of shape (C x H x W) in the range [0.0, 1.0]. In the other cases, tensors are returned without scaling.

Usage

```
transform_to_tensor(img)
```

Arguments

`img`	A `magick-image`, `array` or `torch_tensor`.

Note

Because the input image is scaled to [0.0, 1.0], this transformation should not be used when transforming target image masks.

See Also

Other transforms: `transform_adjust_brightness()`, `transform_adjust_contrast()`, `transform_adjust_gamma()`, `transform_adjust_hue()`, `transform_adjust_saturation()`, `transform_affine()`, `transform_center_crop()`, `transform_color_jitter()`, `transform_convert_image_dtype()`, `transform_crop()`, `transform_five_crop()`, `transform_grayscale()`, `transform_hflip()`, `transform_linear_transformation()`, `transform_normalize()`, `transform_pad()`, `transform_perspective()`, `transform_random_affine()`, `transform_random_apply()`, `transform_random_choice()`, `transform_random_crop()`, `transform_random_erasing()`, `transform_random_grayso`
`transform_random_horizontal_flip()`, `transform_random_order()`, `transform_random_perspective()`, `transform_random_resized_crop()`, `transform_random_rotation()`, `transform_random_vertical_flip()`, `transform_resized_crop()`, `transform_resize()`, `transform_rgb_to_grayscale()`, `transform_rotate()`, `transform_ten_crop()`, `transform_vflip()`

transform_vflip *Vertically flip a PIL Image or Tensor*

Description

Vertically flip a PIL Image or Tensor

Usage

```
transform_vflip(img)
```

Arguments

img	A magick-image, array or torch_tensor.

See Also

Other transforms: transform_adjust_brightness(), transform_adjust_contrast(), transform_adjust_gamma(), transform_adjust_hue(), transform_adjust_saturation(), transform_affine(), transform_center_crop(), transform_color_jitter(), transform_convert_image_dtype(), transform_crop(), transform_five_crop(), transform_grayscale(), transform_hflip(), transform_linear_transformation(), transform_normalize(), transform_pad(), transform_perspective(), transform_random_affine(), transform_random_apply(), transform_random_choice(), transform_random_crop(), transform_random_erasing(), transform_random_grayso transform_random_horizontal_flip(), transform_random_order(), transform_random_perspective(), transform_random_resized_crop(), transform_random_rotation(), transform_random_vertical_flip(), transform_resized_crop(), transform_resize(), transform_rgb_to_grayscale(), transform_rotate(), transform_ten_crop(), transform_to_tensor()

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vision_make_grid *A simplified version of torchvision.utils.make_grid*

Description

Arranges a batch of (image) tensors in a grid, with optional padding between images. Expects a 4d mini-batch tensor of shape (B x C x H x W).

Usage

```
vision_make_grid(
  tensor,
  scale = TRUE,
  num_rows = 8,
  padding = 2,
  pad_value = 0
)
```

Arguments

tensor	tensor to arrange in grid.
scale	whether to normalize (min-max-scale) the input tensor.
num_rows	number of rows making up the grid (default 8).
padding	amount of padding between batch images (default 2).
pad_value	pixel value to use for padding.

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