

Package ‘rembg’

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Type Package

Title Remove Image Backgrounds with Pre-Trained Segmentation Models

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Description Remove the background from an image using pre-trained deep learning segmentation models ('U-2-Net', 'ISNet', 'BiRefNet' and others) run through the 'ONNX' Runtime via the 'onnxr' package. Given an image, a model predicts a foreground alpha matte which is composited into a cutout with a transparent (or solid-colour) background; optional closed-form alpha matting (ported from 'pymatting') refines soft edges. An R port of the Python 'rembg' package (<<https://github.com/danielgatis/rembg>>). Models are downloaded on first use and cached in a per-user cache directory.

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URL <https://github.com/cornball-ai/rembg>

BugReports <https://github.com/cornball-ai/rembg/issues>

Imports onnxr, jpeg, png, Matrix, tools, utils

Suggests tinytest, openssl

Encoding UTF-8

RoxygenNote 7.3.2

NeedsCompilation no

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model_home	<i>Directory where downloaded models are cached</i>
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Description

Models are cached in `tools::R_user_dir("rembg", "cache")`, the standard per-package cache location. Set the `U2NET_HOME` environment variable to override it, for example to `~/u2net` to share the cache with the Python *rembg* package.

Usage

```
model_home()
```

Value

A file path (character scalar). The directory is not created.

Examples

```
model_home()
```

new_session	<i>Create a background-removal session</i>
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Description

Loads a segmentation model (downloading it on first use) and returns a session object that `[rembg()]` can reuse across many images. Building the session once and passing it to `[rembg()]` avoids re-loading the model each call.

Usage

```
new_session(model = "u2net", backend = c("cpu", "cuda", "coreml"),
            model_path = NULL, size = NULL, mean = NULL, std = NULL, ...)
```

Arguments

model	Model name; see [rembg_models()]. Defaults to "u2net". The "u2net_custom", "dis_custom" and "ben_custom" presets run your own local .onnx (via model_path) through a fixed preprocessing profile.
backend	ONNX Runtime execution backend passed to [onnxr::onnx_model()]: "cpu" (default), "cuda" (NVIDIA GPU, needs a CUDA runtime build), or "coreml" (macOS).
model_path	Optional path to a local .onnx file to run instead of a downloaded model (bring-your-own-model). Required for the *_custom presets; when set, model selects the preprocessing profile.
size	Input size (pixels) for a custom model_path; defaults to the profile of model (320 for a bare model_path).
mean	Length-3 per-channel normalisation mean for a custom model_path; defaults to the profile of model.
std	Length-3 per-channel normalisation standard deviation for a custom model_path; defaults to the profile of model.
...	Reserved for future use.

Value

An object of class "rembg_session".

See Also

[rembg()], [rembg_models()]

Examples

```
# interactive() guard: new_session() downloads the model on first use
if (interactive() && onnxr::onnx_is_installed()) {
  sess <- new_session("u2netp")
  sess
  # bring your own model:
  # new_session("u2net_custom", model_path = "~/u2net/my_model.onnx")
}
```

rembg

Remove the background from an image

Description

Runs a segmentation model to predict a foreground alpha matte and composites the result into a cutout with a transparent (or solid-colour) background.

Usage

```
rembg(input, model = "u2net", session = NULL, only_mask = FALSE,
      post_process_mask = FALSE, alpha_matting = FALSE,
      alpha_matting_foreground_threshold = 240,
      alpha_matting_background_threshold = 10, alpha_matting_erode_size = 10,
      cloth_category = NULL, points = NULL, labels = NULL, bgcolor = NULL,
      out = NULL, output = c("array", "raw"), ...)
```

Arguments

input	The image to process: a file path (PNG or JPEG), a raw vector of encoded PNG/JPEG bytes, or a numeric [h,w] / [h,w,c] array in [0,1] (or 0-255).
model	Model name to use when session is not supplied; see [rembg_models()]. Defaults to "u2net".
session	An [rembg_session] from [new_session()]. If NULL, one is created for model. Pass a session to reuse a loaded model across calls.
only_mask	If TRUE, return the predicted mask instead of a cutout.
post_process_mask	If TRUE, clean the mask with a morphological opening + gaussian blur + threshold before compositing.
alpha_matting	If TRUE, refine the cutout edges with closed-form alpha matting (soft hair/fur edges). Slower, and requires the Matrix package. Falls back to the plain cutout if matting fails.
alpha_matting_foreground_threshold	Mask values (0-255 domain) above this are treated as definite foreground in the matting trimap. Default 240.
alpha_matting_background_threshold	Mask values (0-255 domain) below this are treated as definite background in the matting trimap. Default 10.
alpha_matting_erode_size	Pixels by which the trimap foreground and background regions are eroded, leaving an unknown band for matting to solve. Default 10.
cloth_category	For the "u2net_cloth_seg" model only: which garment(s) to segment, one or more of "upper", "lower", "full". NULL (default) returns all three, stacked vertically.
points	For the "sam" model only: point prompt(s) as a length-2 c(x, y) vector or an N x 2 matrix of (x, y) pixel coordinates in the input image. Defaults to the image centre.
labels	For the "sam" model only: one label per point, 1 for foreground or 0 for background. Defaults to all foreground.
bgcolor	Optional background colour to composite the cutout onto, as a length-3 (RGB) or length-4 (RGBA) numeric vector in [0,1] or 0-255.
out	Optional output file path. If given, the result is written there as a PNG (in addition to being returned).

output	In-memory return type: "array" (default) for a numeric array in $[0,1]$, or "raw" for PNG-encoded bytes.
...	Passed to <code>[new_session()]</code> when session is NULL.

Value

Depending on output: an $[h,w,4]$ RGBA array (or $[h,w]$ mask if `only_mask`) in $[0,1]$, or a raw vector of PNG bytes. If `out` is set, the PNG is also written to that path.

See Also

`[new_session()]`, `[rembg_models()]`

Examples

```
# interactive() guard: rembg() downloads the model on first use
if (interactive() && onnxr::onnx_is_installed()) {
  cutout <- rembg(system.file("extdata", "example.jpg", package = "rembg"))
  dim(cutout)
}
```

rembg_models

Available background-removal models

Description

Returns the names of the segmentation models that `[new_session()]` and `[rembg()]` can use. Models are downloaded on first use.

Usage

```
rembg_models()
```

Value

A character vector of model names.

Examples

```
rembg_models()
```

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