

Resize TIFF Images with Pixel Size

Introduction

TIFFPixelResizer is a versatile image processing tool designed to efficiently resize TIFF images to specific pixel dimensions. This repository provides a user-friendly command-line interface and library that allows you to adjust the dimensions of TIFF images while preserving their quality and aspect ratio.

Workflow Diagram

- Given in the [end](#) of documentation

Resolution

Resolution refers to the level of detail in an image or video, which is determined by the number of pixels in the [width x height] dimensions.

Unit: Pixels (px)

Pixel Size

Pixel Size indicates the resolution of an image, representing how many meters are covered by each pixel in the image.

Unit: Meter per pixel (m/px) or (mpp)

Image Density

Image Density refers to the amount of information contained within a specific area or volume of an image. This can be expressed using either Pixels per inch (PPI) or Dots per inch (DPI) measurements.

Scaling Factor

A Scaling Factor is a constant used to resize images by multiplying or dividing their size or dimensions.

Requirements

- Conda (Package and environment management system)
- Python = 3.7.7 (Versatile high-level programming language)
- OpenCV (Open Computer Vision Library)
- GDAL (Geospatial Data Abstraction Library)

Create Conda Environment

```
conda env create -f environment.yml
```

Activate the Environment

```
conda activate gdal
```

Usage

```
python setup.py [inputImg] [pixelSize]
```

Example

```
python setup.py img.tif 0.5
```

- *Output (converted) image will be saved in the same input path*

Snippets

Extracting Image Pixel Size from Input Image

```
dst = gdal.Open(input_img)
dstt = dst.GetGeoTransform()
dsmppx = dstt[1] * 100000
input_mppx = round(dsmppx, 2)
```

Updating New Pixel Size (meter per pixel)

```
new_x_mpp = x_mpp * (1/scaling_factor)
new_y_mpp = y_mpp * (1/scaling_factor)
geo_transform = list(geo_transform)
geo_transform[1] = new_x_mpp
geo_transform[5] = new_y_mpp
```

- *Scaling factor calculation is shown in the [workflow diagram](#)*

Set geolocation back to a resized tif image

```
ds = gdal.Open(output_img, gdal.GA_Update)
ds.SetGeoTransform(tuple(geo_transform))
ds.SetProjection(projection)
ds = None
```

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Feel free to contribute to this documentation by creating pull requests or raising issues.

Workflow Diagram

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