

LAMPIRAN



Lampiran 1 Code Program Untuk Akuisisi Data

```
var longitude = 101.567013;
var latitude = 13.719774;
var point = ee.Geometry.Point([longitude, latitude]);

var dataset = ee.ImageCollection("COPERNICUS/S2")
  .filterBounds(point)
  .filterDate('2022-06-01', '2022-12-31')
  .filter(ee.Filter.lte('CLOUDY_PIXEL_PERCENTAGE', 10))
  .sort('CLOUDY_PIXEL_PERCENTAGE', false)
  .limit(1);

var image = dataset.first();

var visualization = {
  bands: ['B4', 'B3', 'B2'],
  min: 0,
  max: 3000,
};

Map.centerObject(point, 14);
Map.addLayer(image, visualization, 'Sentinel-2 RGB');

Export.image.toDrive({
  image: image.visualize(visualization),
  description: 'Eucalyptus_12',
  scale: 10,
  region: point.buffer(320).bounds(),
  fileFormat: 'GeoTIFF',
});
```



Lampiran 2 Code Program Untuk *Augmentasi* Data

```
import os
import glob
import numpy as np
import rasterio
import albumentations as A

def read_rgb_tiff(image_path):
    with rasterio.open(image_path) as src:
        rgb_bands = src.read([1, 2, 3])
        profile = src.profile

    profile.update({
        'count': 3,
        'photometric': 'RGB'})
    return rgb_bands, profile

def save_rgb_tiff(image, profile, output_path):
    with rasterio.open(output_path, 'w', **profile) as dst:
        dst.write(image)

def resize_rgb_tiff(image, new_height, new_width):
    resized_image = np.zeros((3, new_height, new_width),
        dtype=image.dtype)
    resize_transform = A.Resize(height=new_height,
        width=new_width, interpolation=1)
    for band in range(3):
        result = resize_transform(image=image[band])
        resized_image[band] = result['image']
    return resized_image

augment_counter = 1

def augment_rgb_tiff(image, transform, profile, output_dir,
    num_augmented=7):
    global augment_counter
    for _ in range(num_augmented):
        augmented_image = np.zeros_like(image)
        for band in range(3):
            augmented_band =
transform(image=image[band]) ['image']
            augmented_image[band] = augmented_band

        os.makedirs(output_dir, exist_ok=True)
```

```

        output_path = os.path.join(output_dir,
f"Rubber_{augment_counter:03d}.tif")
        save_rgb_tiff(augmented_image, profile, output_path)
        print(f"Augmented image saved: {output_path}")

    augment_counter += 1

def augment_sentinel_rgb_tiff_from_folder(input_folder,
output_folder, new_height, new_width, num_augmented=7):
    global augment_counter
    tiff_files = glob.glob(os.path.join(input_folder,
"*.tif"))

    if not tiff_files:
        print("No TIFF files found in the input folder.")
        return

    augmentation = A.Compose([
        A.HorizontalFlip(p=0.5),
        A.ShiftScaleRotate(
            shift_limit=0.1,
            scale_limit=0.2,
            rotate_limit=45, p=0.7)])

    for tiff_file in tiff_files:
        print(f"Processing file: {tiff_file}")
        image, profile = read_rgb_tiff(tiff_file)

        resized_image = resize_rgb_tiff(image, new_height,
new_width)

        profile.update({
            'height': new_height,
            'width': new_width
        })

        os.makedirs(output_folder, exist_ok=True)
        original_output_path = os.path.join(output_folder,
f"Rubber_{augment_counter:03d}.tif")
        save_rgb_tiff(resized_image, profile,
original_output_path)
        print(f"Original resized image saved:
{original_output_path}")
        augment_counter += 1

```

```
    augment_rgb_tiff(resized_image, augmentation, profile,  
output_folder, num_augmented=num_augmented)
```

```
input_folder_path = "/content/drive/MyDrive/TESIS/DATASET 80-  
20/TRAIN/RUBBER_3"  
output_folder_path = "/content/drive/MyDrive/TESIS/DATASET 80-  
20/TRAIN_AUG/Rubber_3"
```

```
new_width = 65  
new_height = 65  
num_augmented_per_image = 7
```

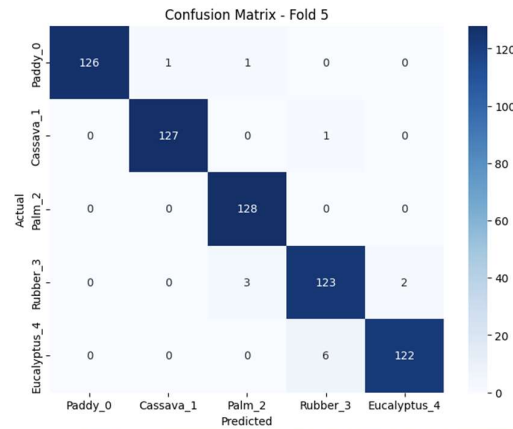
```
augment_sentinel_rgb_tiff_from_folder(input_folder_path,  
output_folder_path, new_height, new_width,  
num_augmented=num_augmented_per_image)
```



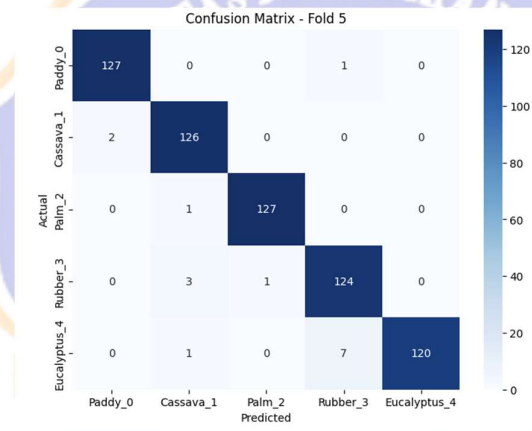
Lampiran 3 *Confusion Matrix* Tiap Fold dengan Akurasi Terbaik Tiap Skenario

Pada Arsitektur VGG-16

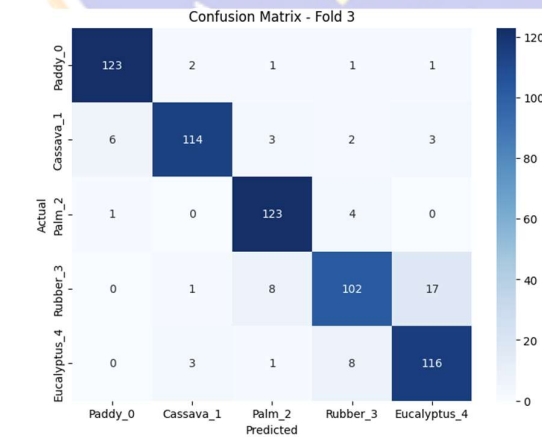
Skenario 1



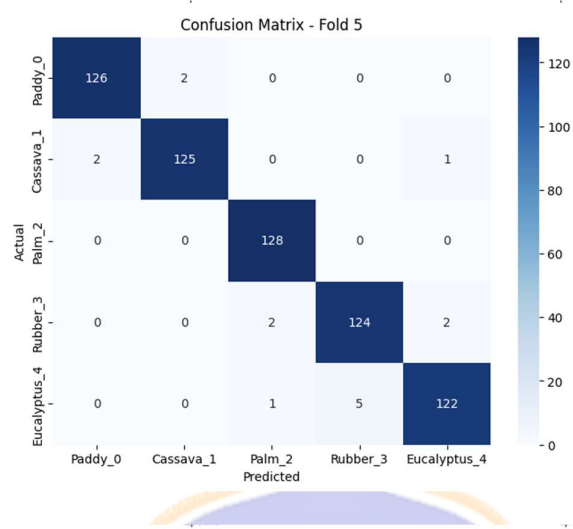
Skenario 2



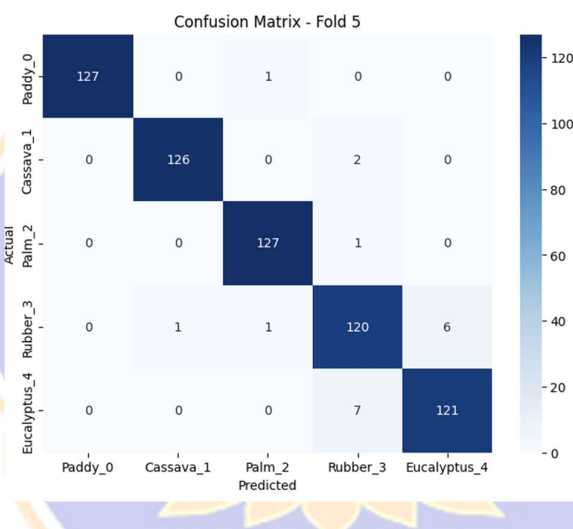
Skenario 3



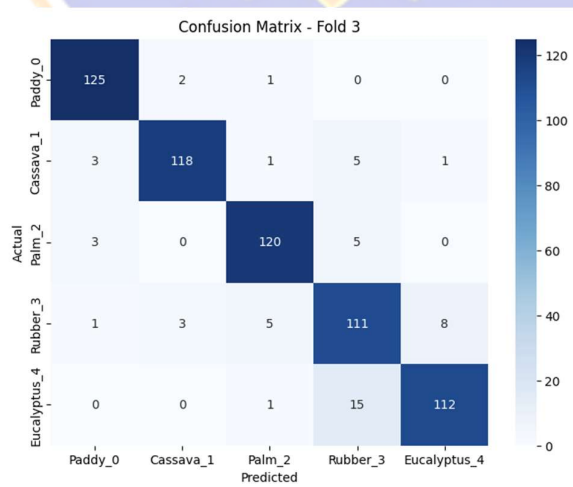
Skenario 4



Skenario 5



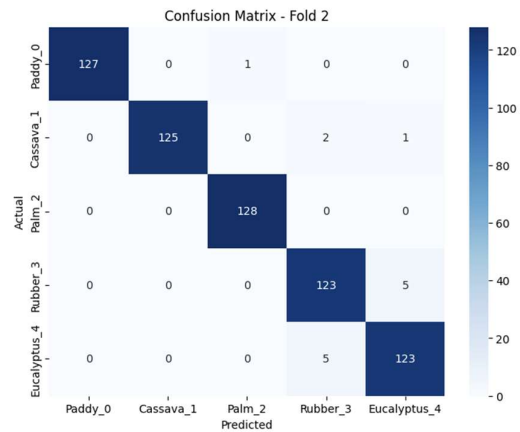
Skenario 6



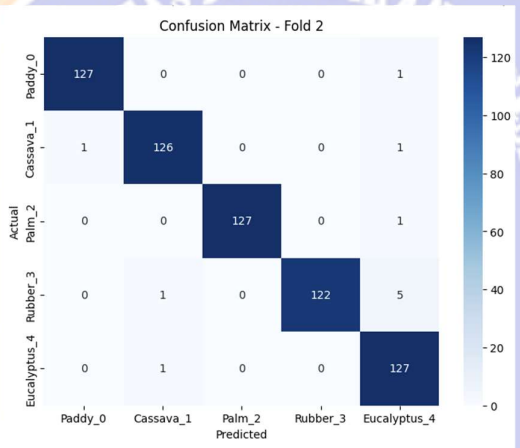
Lampiran 4 *Confusion Matrix* Tiap Fold dengan Akurasi Terbaik Tiap Skenario

Pada Arsitektur ResNet-50

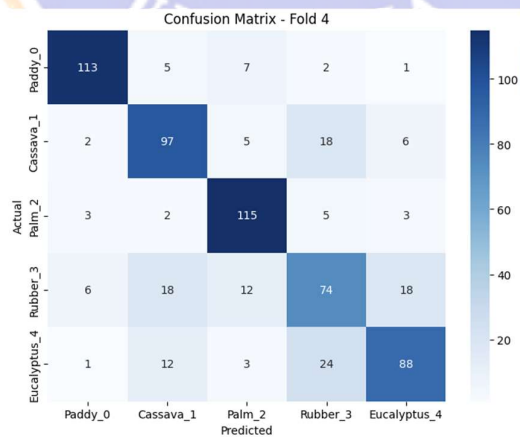
Skenario 1



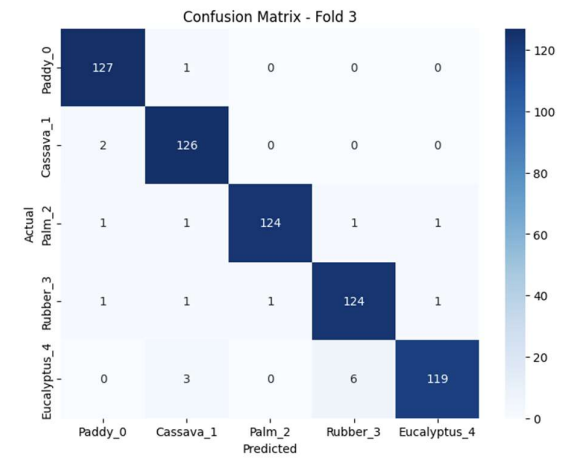
Skenario 2



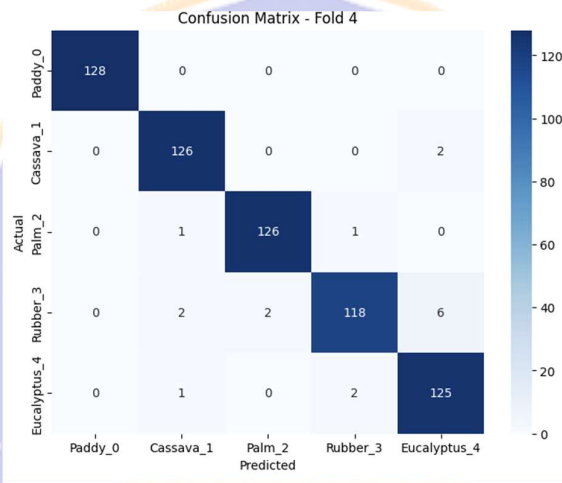
Skenario 3



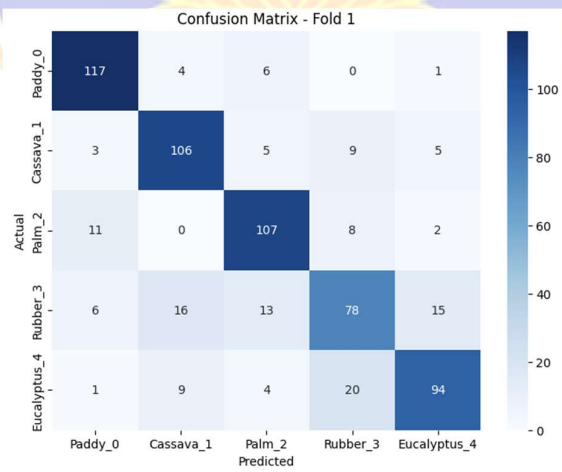
Skenario 4



Skenario 5



Skenario 6



RIWAYAT HIDUP



Anak Agung Candra Widyaningsih, lahir di Kukuh, 13 Maret 1996. Penulis adalah anak kedua dari dua bersaudara dari pasangan I Gusti Bagus Suryawan dan Ida Ayu Rai Swandewi serta merupakan istri dari I Nyoman Saputra Wahyu Wijaya. Penulis berasal dari Bali dan berkebangsaan

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