

Additional file 1

Data formats of the 3D rosebush models

We provide the 11 models in the ROSE-X dataset in five different forms. The details about the file formats are as follows:

- 1) The raw X-ray image stacks, where the original X-ray images of the rosebushes are stored. The file format is 3D TIFF where multiple images are stored as a stack. The bit depth is 16. The list of the files is:

S268650.tiff
S268660.tiff
S270230.tiff
S270240.tiff
S270250.tiff
S271780.tiff
S271790.tiff
S271800.tiff
S273080.tiff
S273090.tiff
S273110.tiff

- 2) A pair of image stacks for each model for the voxels of the shoot, the pot and the tag. The binary image stacks are provided as 3D TIFF files, with bit depth 1. The voxels with value 1 indicate the voxels on the shoot of the rosebush, the pot and the tag. The voxels with value 0 indicate the thresholded background voxels. The list of the files for the binary TIFF stacks is:

S268650_binary.tiff
S268660_binary.tiff
S270230_binary.tiff
S270240_binary.tiff
S270250_binary.tiff
S271780_binary.tiff
S271790_binary.tiff
S271800_binary.tiff
S273080_binary.tiff
S273090_binary.tiff
S273110_binary.tiff

The labels for the rosebush models are provided as 3D TIFF files, with bit depth 8. The values of the voxels correspond to the following labels:

- 0 → Background
- 1 → Leaf
- 2 → Stem/branch
- 3 → Flower
- 4 → Pot
- 5 → Tag

The list of the files for the labels is:

S268650_labels.tiff
S268660_labels.tiff
S270230_labels.tiff
S270240_labels.tiff
S270250_labels.tiff
S271780_labels.tiff

S271790_labels.tiff
S271800_labels.tiff
S273080_labels.tiff
S273090_labels.tiff
S273110_labels.tiff

- 3) A pair of image stacks for each model for the voxels only on the surface of the plant shoot. The voxels that are not on the surface of the shoot are set to zero. The voxels corresponding to pot and the tag are also set to zero.
- The binary image stacks are provided as 3D TIFF files, with bit depth 1. The voxels with value 1 indicate the voxels on the surface of the shoot of the rosebush. The rest of the voxels are set to zero. The list of the files for the binary TIFF stacks is:

S268650_shoot_surface_binary.tiff
S268660_shoot_surface_binary.tiff
S270230_shoot_surface_binary.tiff
S270240_shoot_surface_binary.tiff
S270250_shoot_surface_binary.tiff
S271780_shoot_surface_binary.tiff
S271790_shoot_surface_binary.tiff
S271800_shoot_surface_binary.tiff
S273080_shoot_surface_binary.tiff
S273090_shoot_surface_binary.tiff
S273110_shoot_surface_binary.tiff

The labels for the surface of the shoot are provided as 3D TIFF files, with bit depth 8. The values of the voxels correspond to the following labels:

0 → Background

1 → Leaf

2 → Stem/branch

The list of the files for the labels is:

S268650_shoot_surface_labels.tiff
S268660_shoot_surface_labels.tiff
S270230_shoot_surface_labels.tiff
S270240_shoot_surface_labels.tiff
S270250_shoot_surface_labels.tiff
S271780_shoot_surface_labels.tiff
S271790_shoot_surface_labels.tiff
S271800_shoot_surface_labels.tiff
S273080_shoot_surface_labels.tiff
S273090_shoot_surface_labels.tiff
S273110_shoot_surface_labels.tiff

- 4) A point cloud for each model for the points corresponding to the shoot, the pot and the tag. The point clouds are provided in PLY format. The color assigned to each point indicates the label of the point:

green [0 1 0] → Leaf

red [1 0 0] → Stem/branch

blue [0 0 1] → Flower

yellow [1 1 0] → Pot

cyan [0 1 1] → Tag

S268650_pointCloud_labels.ply
S268660_pointCloud_labels.ply
S270230_pointCloud_labels.ply
S270240_pointCloud_labels.ply
S270250_pointCloud_labels.ply
S271780_pointCloud_labels.ply

S271790_pointCloud_labels.ply
S271800_pointCloud_labels.ply
S273080_pointCloud_labels.ply
S273090_pointCloud_labels.ply
S273110_pointCloud_labels.ply

- 5) A point cloud for each model for the points corresponding to the points on the surface of the plant shoot.

The point clouds are provided in PLY format. The color assigned to each point indicates the label of the point:

green [0 1 0] → Leaf

red [1 0 0] → Stem/branch

blue [0 0 1] → Flower

S268650_pointCloud_shoot_surface_labels.ply
S268660_pointCloud_shoot_surface_labels.ply
S270230_pointCloud_shoot_surface_labels.ply
S270240_pointCloud_shoot_surface_labels.ply
S270250_pointCloud_shoot_surface_labels.ply
S271780_pointCloud_shoot_surface_labels.ply
S271790_pointCloud_shoot_surface_labels.ply
S271800_pointCloud_shoot_surface_labels.ply
S273080_pointCloud_shoot_surface_labels.ply
S273090_pointCloud_shoot_surface_labels.ply
S273110_pointCloud_shoot_surface_labels.ply

The 3D TIFF files can be read and visualized using ImageJ.

The PLY files can be visualized using MeshLab.