3D PRINTING DEFECT DETECTION REPORT

Input data

- **Input image:**

  Name: 3d_object_with_reference.png

  Size: (2048, 1537, 3) (height, width, channels) pixels.

- **Input Gcode:**

  Name: 1_layer_grid.gcode

- **Input reference object width:**

  23.21 millimeters

- **Input metadata:**

  No input metadata was inserted

Impresion defects

- **Pixels per metric:**

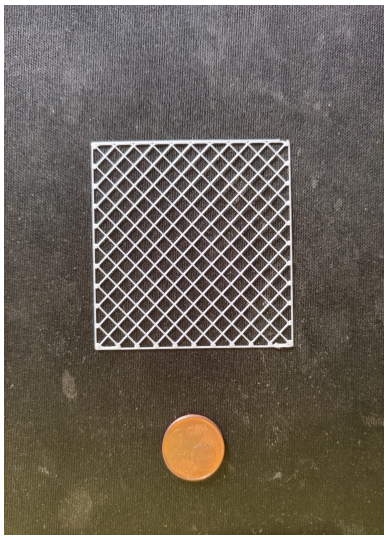
  246.67751104149266 pixels per 23.21 millimeters

- **Structural similarity index measure max score:**

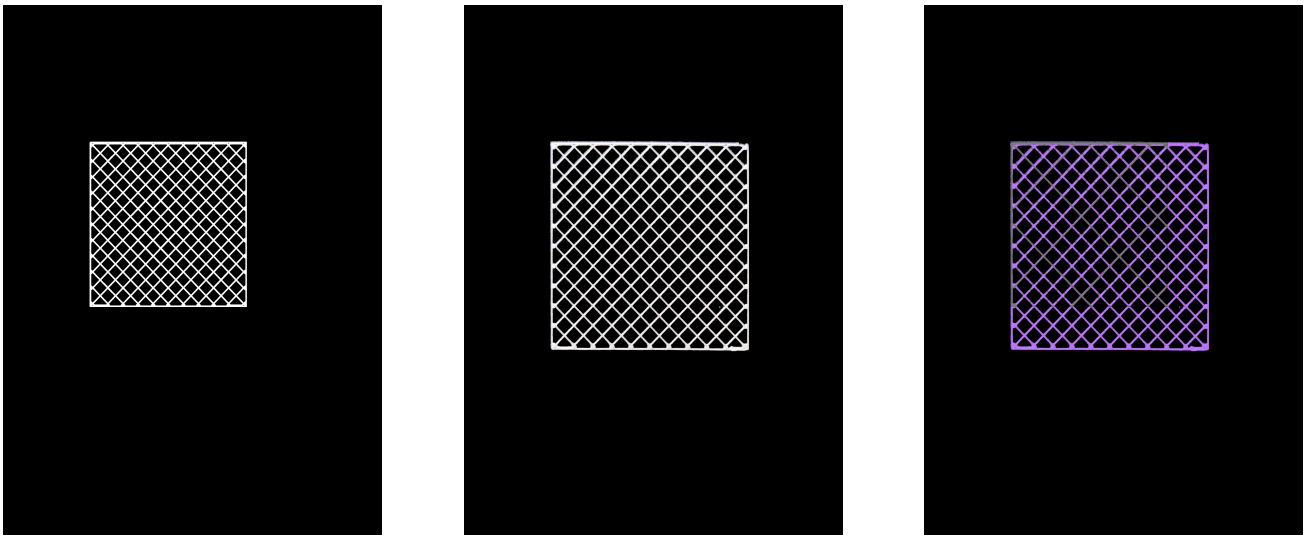
  8.537E-1

- **Impresion total error:**

  1.463E-1



Original image, size: (2048, 1537, 3) (height, width, channels) pixels.



[Left] Perfect model, size: (2048, 1537, 3) (height, width, channels) pixels.

[Middle] Masked 3d printed object, size: (2048, 1537, 3) (height, width, channels) pixels.

[Right] Masked 3d printed object with defects, size (2048, 1537, 3) (height, width, channels) pixels.

Classification

· **Train and test images and labels lenght:**

- Train images: Using pretrained model
- Train labels: Using pretrained model
- Test images: 50
- Test labels: 50

· **Train and test pair images lenght:**

- Pair train images: Using pretrained model
- Pair test images: Using pretrained model

· **Model name:**

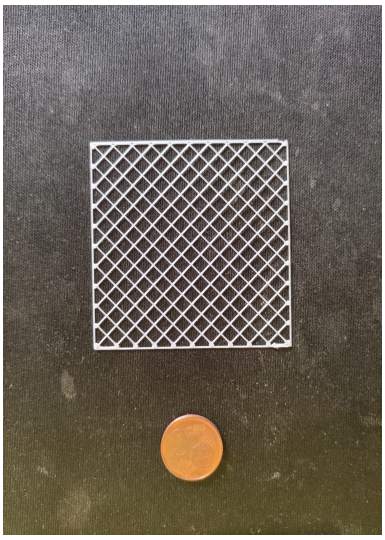
siamese_neural_network_model.keras

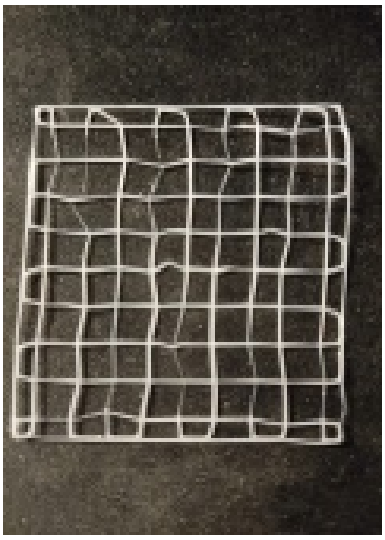
· **Model history:**

Using pretrained model

· **Defect classification:**

- Max similarity prediction: 75.232 %
- Type of defect: Bad material adhesion





[Left] Oringal image, size: (2048, 1537, 3) (height, width, channels) pixels.

[Right] Test image, size: (159, 120, 3) (height, width, channels) pixels.

· **Recomendations:**

- The print platform is not level.
- The Z-offset between the print platform and the extruder has not been correctly adjusted and it's too high.
- The layer prints too fast.
- The temperature or cooling setting is not correct.

- The printing platform:

  Plastics adhere differently to each material.

  Different surfaces can be used for extrusion materials.

  BuildTak for PLA or a treated glass heated surface for ABS.

- Brims and Rafts:

  Your piece may be small and not have enough contact surface.

  You can try using 'BRIM' generating material perimeters around

  the basis of the original design.

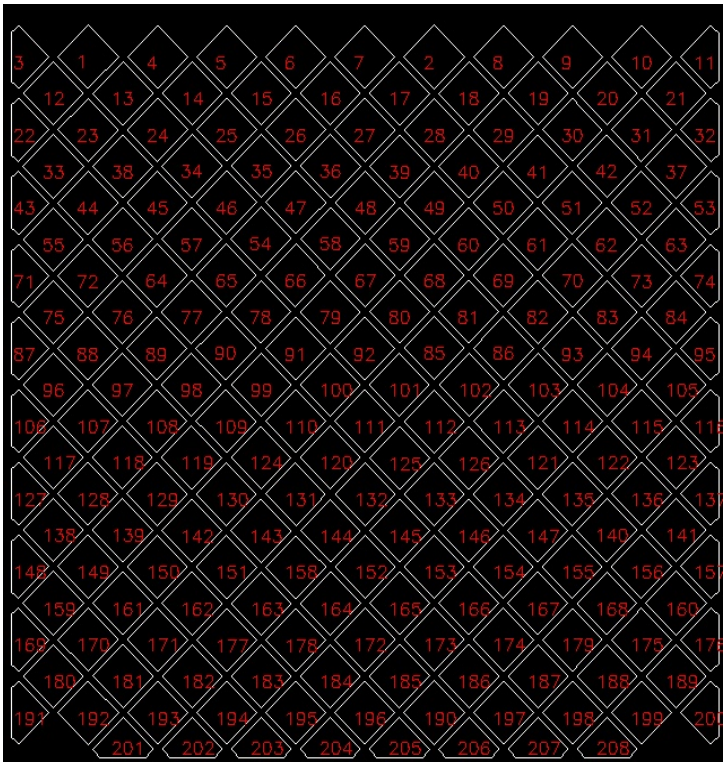
  Or use 'RAFT' to create a horizontal lattice between the base of the 3D

  printer and the part.

Internal areas

· **Structural similarity index measure max score:**

9.978E-1



· **List of areas (mm2):**

[1] 12.7238	[17] 12.6223	[33] 12.865	[49] 12.3885	[65] 12.3885	[81] 12.3885
[2] 12.865	[18] 12.6223	[34] 12.6223	[50] 12.3885	[66] 12.3267	[82] 12.6223
[3] 8.8855	[19] 12.3885	[35] 12.3885	[51] 12.3885	[67] 12.3885	[83] 12.3885
[4] 12.3885	[20] 12.3885	[36] 12.6223	[52] 12.6223	[68] 12.3885	[84] 12.3885
[5] 12.3885	[21] 12.3885	[37] 12.865	[53] 9.3134	[69] 12.3885	[85] 12.3885
[6] 12.3885	[22] 8.9428	[38] 12.3885	[54] 12.6223	[70] 12.6223	[86] 12.5606
[7] 12.3885	[23] 12.49	[39] 12.3885	[55] 12.3885	[71] 8.8855	[87] 8.8855
[8] 12.3885	[24] 12.6223	[40] 12.3885	[56] 12.6223	[72] 12.3885	[88] 12.3885
[9] 12.3885	[25] 12.3885	[41] 12.3885	[57] 12.3885	[73] 12.3885	[89] 12.3885
[10] 12.3885	[26] 12.3885	[42] 12.1547	[58] 12.1547	[74] 9.2473	[90] 12.4194
[11] 9.2473	[27] 12.6223	[43] 8.9428	[59] 12.3885	[75] 12.3885	[91] 12.3885
[12] 12.3885	[28] 12.3885	[44] 12.6223	[60] 12.3885	[76] 12.3885	[92] 12.3885
[13] 12.6223	[29] 12.6223	[45] 12.3885	[61] 12.3885	[77] 12.6223	[93] 12.3885
[14] 12.3885	[30] 12.1856	[46] 12.6223	[62] 12.6223	[78] 12.1547	[94] 12.3885
[15] 12.3885	[31] 12.4194	[47] 12.437	[63] 12.3885	[79] 12.3885	[95] 9.2473
[16] 12.3885	[32] 9.3134	[48] 12.3885	[64] 12.6223	[80] 12.3885	[96] 12.3885

[97] 12.3885 [134] 12.3885 [171] 12.6223 [208] 9.2473
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[99] 12.3885 [136] 12.3885 [173] 12.3885
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[101] 12.3885 [138] 12.3885 [175] 12.4194
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[107] 12.3885 [144] 12.1547 [181] 12.6223
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[129] 12.6223 [166] 12.3885 [203] 9.2473
[130] 12.3885 [167] 12.3885 [204] 9.2473
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[132] 12.3885 [169] 8.9428 [206] 9.3134
[133] 12.3885 [170] 12.49 [207] 9.2473