Part 1: Appendix of the repairment results of VG1

P *means the distance error values calculated based on all areas.* ***P†*** *means the distance error values calculated based on denoised areas.* ***T*** *means the distance error values calculated based on*

Supplementary Material of Detailed Comparison of Error Distributions Across AMs, Point Clouds, and Surfaces based on VG1

	Sample	*Case 01 Left*	*Case 01 Right*	*Case 02 Left*	*Case 02 Right*	*Case 03 Left*	*Case 03 Right*	*Case 04 Left*	*Case 04 Right*
	Defect (%)	27.11	21.42	21.1	32.4	24.87	28.4	31.02	32.83
	Mean ***P*** (mm)	0.45 ± 0.31	0.38 ± 0.24	0.37 ± 0.32	0.75 ± 0.52	0.39 ± 0.28	0.46 ± 0.27	0.60 ± 0.53	0.61 ± 0.39
	Mean ***P†*** (mm)	0.40 ± 0.32	0.37 ± 0.29	0.33 ± 0.27	0.71 ± 0.37	0.29 ± 0.20	0.45 ± 0.25	0.35 ± 0.22	0.37 ± 0.28
	Mean ***T*** (mm)	0.64 ± 0.43	0.61 ± 0.56	0.88 ± 0.53	0.80 ± 0.78	0.71 ± 0.74	0.85 ± 0.71	0.81 ± 0.68	0.78 ± 0.62
	Mean ***S*** (mm)	0.75 ± 0.61	0.55 ± 0.32	0.71 ± 0.52	0.78 ± 0.50	0.85 ± 0.55	0.72 ± 0.57	0.90 ± 0.69	0.68 ± 0.46
	Time Consumption (s)	67	48	44	54	52	73	58	48
	Sample	Case 05 Left	Case 05 Right	Case 06 Left	Case 06 Right	Case 07 Left	Case 07 Right	Case 08 Left	Case 08 Right
	Defect (%)	32.36	26.44	30.7	26.47	23.22	32.61	23.23	21.39
	Mean ***P*** (mm)	0.68 ± 0.54	0.59 ± 0.44	0.34 ± 0.24	0.47 ± 0.30	0.51 ± 0.37	0.57 ± 0.35	0.57 ± 0.35	0.55 ± 0.35
	Mean ***P†*** (mm)	0.31 ± 0.22	0.41 ± 0.27	0.46 ± 0.31	0.54 ± 0.29	0.48 ± 0.31	0.54 ± 0.30	0.40 ± 0.26	0.53 ± 0.34
	Mean ***T*** (mm)	0.65 ± 0.60	0.73 ± 0.54	0.70 ± 0.66	0.75 ± 0.55	0.76 ± 0.50	0.62 ± 0.45	0.75 ± 0.67	0.69 ± 0.59
	Mean ***S*** (mm)	0.80 ± 0.59	0.60 ± 0.33	0.83 ± 0.44	0.62 ± 0.47	0.54 ± 0.38	0.63 ± 0.52	0.86 ± 0.42	0.63 ± 0.42
Defect: 27.47 ± 4.33% L:R = 20:20 M:F = None Age: None ***P***: 0.49 ± 0.36 ***P†***: 0.42 ± 0.31 ***T***: 0.65 ± 0.48 ***S***: 0.61 ± 0.43 *Time*: 56.10 ± 8.91	Time Consumption (s)	67	53	57	65	43	40	53	70
	Sample	Case 09 Left	Case 09 Right	Case 10 Left	Case 10 Right	Case 11 Left	Case 11 Right	Case 12 Left	Case 12 Right
	Defect (%)	21.15	22.15	32.69	27.22	30.25	32.72	29.69	34.6
	Mean ***P*** (mm)	0.61 ± 0.56	0.67 ± 0.46	0.64 ± 0.39	0.67 ± 0.35	0.40 ± 0.31	0.51 ± 0.39	0.69 ± 0.48	0.76 ± 0.41
	Mean ***P†*** (mm)	0.39 ± 0.27	0.42 ± 0.32	0.62 ± 0.44	0.68 ± 0.34	0.36 ± 0.29	0.34 ± 0.24	0.40 ± 0.23	0.59 ± 0.27
	Mean ***T*** (mm)	0.75 ± 0.67	0.76 ± 0.63	0.85 ± 0.54	0.62 ± 0.55	0.77 ± 0.69	0.66 ± 0.52	0.57 ± 0.47	0.73 ± 0.32
	Mean ***S*** (mm)	0.68 ± 0.46	0.67 ± 0.45	0.66 ± 0.35	0.53 ± 0.35	0.40 ± 0.29	0.80 ± 0.62	0.79 ± 0.67	0.85 ± 0.66
	Time Consumption (s)	65	56	60	60	59	47	60	46
	Sample	Case 13 Left	Case 13 Right	Case 14 Left	Case 14 Right	Case 15 Left	Case 15 Right	Case 16 Left	Case 16 Right
	Defect (%)	22.43	20.77	21.7	28.17	29.22	21.89	28.37	29.74
	Mean ***P*** (mm)	0.42 ± 0.27	0.39 ± 0.28	0.45 ± 0.25	0.69 ± 0.32	0.78 ± 0.40	0.48 ± 0.32	0.50 ± 0.32	0.55 ± 0.47
	Mean ***P†*** (mm)	0.50 ± 0.30	0.33 ± 0.29	0.60 ± 0.33	0.52 ± 0.30	0.55 ± 0.39	0.42 ± 0.32	0.43 ± 0.24	0.55 ± 0.37
	Mean ***T*** (mm)	0.71 ± 0.53	0.82 ± 0.51	0.88 ± 0.52	0.82 ± 0.70	0.79 ± 0.56	0.71 ± 0.64	0.73 ± 0.52	0.87 ± 0.59
	Mean ***S*** (mm)	0.63 ± 0.42	0.61 ± 0.42	0.72 ± 0.41	0.55 ± 0.45	0.39 ± 0.30	0.55 ± 0.45	0.72 ± 0.52	0.87 ± 0.61
	Time Consumption (s)	51	75	52	62	52	50	66	54
	Sample	Case 17 Left	Case 17 Right	Case 18 Left	Case 18 Right	Case 19 Left	Case 19 Right	Case 20 Left	Case 20 Right
	Defect (%)	32.14	24.87	32.45	34.57	28.48	28.49	26.94	22.48
	Mean ***P*** (mm)	0.68 ± 0.52	0.59 ± 0.34	0.56 ± 0.35	0.49 ± 0.30	0.46 ± 0.36	0.63 ± 0.38	0.62 ± 0.38	0.46 ± 0.32
	Mean ***P†*** (mm)	0.53 ± 0.51	0.55 ± 0.40	0.48 ± 0.30	0.59 ± 0.39	0.51 ± 0.28	0.30 ± 0.20	0.57 ± 0.22	0.22 ± 0.13
	Mean ***T*** (mm)	0.85 ± 0.61	0.62 ± 0.44	0.72 ± 0.57	0.66 ± 0.38	0.53 ± 0.44	0.50 ± 0.34	0.87 ± 0.49	0.67 ± 0.37
	Mean ***S*** (mm)	0.55 ± 0.45	0.69 ± 0.43	0.50 ± 0.41	0.70 ± 0.53	0.79 ± 0.58	0.58 ± 0.35	0.71 ± 0.57	0.55 ± 0.42
	Time Consumption (s)	46	63	51	72	43	60	46	56

P *means the surface error values calculated based on target defect areas.* ***S*** *means the surface error values calculated based on all areas. And you can find more information in Figure 3-B and its descriptions in manuscript.*

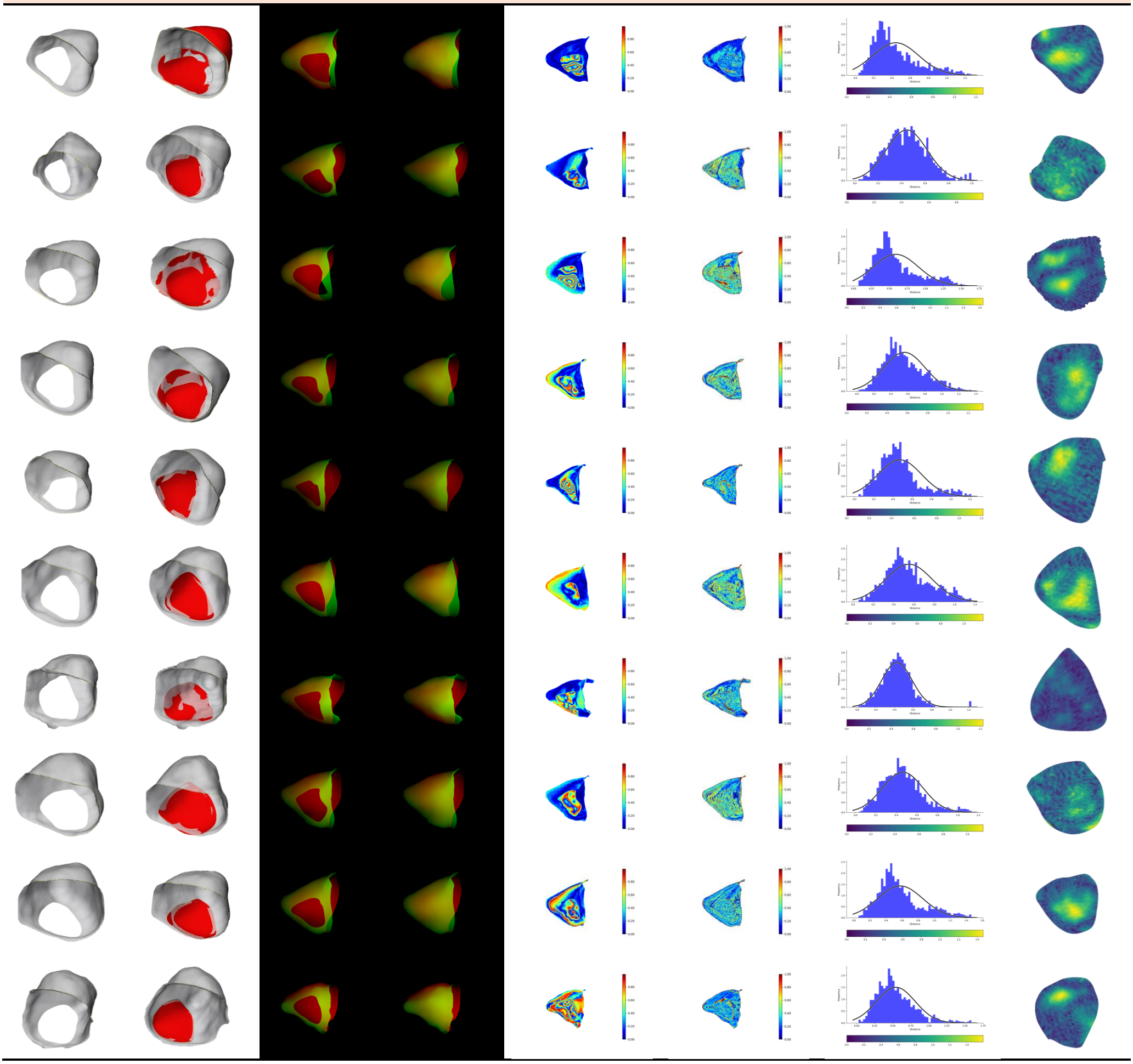
Part 2: Appendix of overall results of clinical evaluation in VG2

Supplementary Material of Reconstruction error analysis based on the clinical cases from Belgium, England, China, And OA Dataset (VG2)						
Caucasoid Clinical Cases (UZ Leuven)						
Defect: 25.01 ± 2.75 % L:R = 6:4 M:F = 5:5 Age: 61.00 ± 18.92 *(15 to 95 years old)* ***P***: 0.38 ± 0.27 ***G***: 0.25 ± 0.19 ***S***: 0.63 ± 0.31 *Time*: 55.00 ± 10.67	*Error Metric*	*Case 01* *28.72%*	*Case 02* *20.83%*	*Case 03* *27.39%*	*Case 04* *22.47%*	*Case 05* *21.675%*
	Mean ***P*** (mm)	0.17 ± 0.14	0.23 ± 0.22	0.31 ± 0.24	0.36 ± 0.27	0.30 ± 0.26
	0|25|50|75|100 %	0.00|0.00|0.12|0.24|0.99	0.00|0.12|0.17|0.36|1.00	0.00|0.12|0.24|0.47|0.95	0.00|0.12|0.29|0.59|0.93	0.00|0.11|0.24|0.47|1.03
	Mean ***G***	0.18 ± 0.13	0.25 ± 0.14	0.33 ± 0.25	0.30 ± 0.22	0.26 ± 0.18
	0|25|50|75|100 %	0.00|0.10|0.15|0.26|0.46	0.00|0.13|0.33|0.64|1.27	0.00|0.13|0.31|0.51|0.82	0.00|0.11|0.27|0.46|0.75	0.00|0.11|0.24|0.40|0.64
	Mean ***S*** (mm)	0.53 ± 0.30	0.56 ± 0.23	0.74 ± 0.38	0.67 ± 0.29	0.56 ± 0.27
	0|25|50|75|100 %	0.00|0.32|0.45|0.68|1.27	0.00|0.38|0.52|0.67|1.00	0.00|0.45|0.69|0.99|1.66	0.00|0.46|0.62|0.85|1.35	0.00|0.38|0.52|0.67|1.21
	Time Consumption	51s	45s	55s	63s	42s
	Error Metric	*Case 06* *25.04%*	*Case 07* *24.91%*	*Case 08* *29.18%*	*Case 09* *26.34%*	*Case 10* *23.56%*
	Mean ***P*** (mm)	0.40 ± 0.26	0.29 ± 0.25	0.27 ± 0.26	0.38 ± 0.30	0.54 ± 0.32
	0|25|50|75|100 %	0.00|0.12|0.35|0.59|1.01	0.00|0.12|0.24|0.47|0.91	0.00|0.11|0.23|0.35|0.99	0.00|0.12|0.29|0.59|0.92	0.00|0.22|0.59|0.82|1.22
	Mean ***G***	0.30 ± 0.21	0.26 ± 0.19	0.29 ± 0.21	0.25 ± 0.18	0.30 ± 0.17
	0|25|50|75|100 %	0.00|0.11|0.26|0.45|0.74	0.00|0.10|0.23|0.40|0.67	0.00|0.10|0.25|0.45|0.74	0.00|0.09|0.23|0.39|0.63	0.00|0.10|0.25|0.37|0.60
	Mean ***S*** (mm)	0.66 ± 0.27	0.51 ± 0.20	0.55 ± 0.24	0.69 ± 0.34	0.65 ± 0.32
	0|25|50|75|100 %	0.00|0.47|0.61|0.83|1.16	0.00|0.39|0.51|0.62|1.23	0.00|0.39|0.53|0.68|1.13	0.00|0.47|0.61|0.83|1.46	0.00|0.43|0.59|0.82|1.59
	Time Consumption	44s	57s	77s	49s	67s
Mongoloid Clinical Cases (Hospital of Stomatology Xi'an Jiao Tong University)						
Defect: 24.90 ± 3.20 % L:R = 5:5 M:F = 4:6 Age: 26.20 ± 7.40 *(14 to 43 years old)* ***P***: 0.40 ± 0.29 ***G***: 0.27 ± 0.21 ***S***: 0.61 ± 0.42 *Time*: 50.60 ± 16.24	*Error Metric*	*Case 01* *23.54%*	*Case 02* *26.74%*	*Case 03* *25.63%*	*Case 04* *27.92%*	*Case 05* *21.65%*
	Mean ***P*** (mm)	0.48 ± 0.27	0.50 ± 0.25	0.32 ± 0.26	0.38 ± 0.21	0.30 ± 0.24
	0|25|50|75|100 %	0.00|0.28|0.47|0.71|0.98	0.00|0.35|0.47|0.71|1.03	0.00|0.12|0.25|0.47|0.97	0.00|0.24|0.35|0.47|1.05	0.00|0.11|0.24|0.47|0.97
	Mean ***G***	0.21 ± 0.15	0.29 ± 0.20	0.27 ± 0.18	0.26 ± 0.18	0.31 ± 0.19
	0|25|50|75|100 %	0.00|0.10|0.19|0.33|0.54	0.00|0.12|0.26|0.45|0.75	0.00|0.10|0.24|0.40|0.66	0.00|0.11|0.24|0.40|0.63	0.00|0.12|0.26|0.43|0.69
	Mean ***S*** (mm)	0.60 ± 0.24	0.72 ± 0.38	0.54 ± 0.28	0.51 ± 0.17	0.61 ± 0.28
	0|25|50|75|100 %	0.00|0.43|0.57|0.73|1.06	0.00|0.46|0.62|0.94|1.50	0.00|0.39|0.53|0.61|1.00	0.00|0.40|0.51|0.63|0.87	0.00|0.44|0.57|0.73|1.25
	Time Consumption	54s	86s	48s	39s	62s
	Error Metric	*Case 06* *28.69%*	*Case 07* *23.47%*	*Case 08* *20.12%*	*Case 09* *21.35%*	*Case 10* *29.88%*
	Mean ***P*** (mm)	0.22 ± 0.21	0.48 ± 0.29	0.42 ± 0.22	0.28 ± 0.26	0.31 ± 0.19
	0|25|50|75|100 %	0.00|0.11|0.12|0.24|0.93	0.00|0.20|0.47|0.70|0.92	0.00|0.24|0.47|0.70|0.93	0.00|0.11|0.24|0.35|0.91	0.00|0.24|0.25|0.35|0.90
	Mean ***G***	0.32 ± 0.23	0.23 ± 0.11	0.27 ± 0.20	0.31 ± 0.23	0.30 ± 0.22
	0|25|50|75|100 %	0.00|0.12|0.29|0.50|0.81	0.00|0.04|0.22|0.32|0.36	0.00|0.10|0.25|0.43|0.71	0.00|0.10|0.27|0.49|0.80	0.00|0.11|0.28|0.48|0.77
	Mean ***S*** (mm)	0.51 ± 0.19	0.58 ± 0.23	0.53 ± 0.19	0.58 ± 0.20	0.70 ± 0.32
	0|25|50|75|100 %	0.00|0.39|0.51|0.63|0.91	0.00|0.43|0.56|0.70|1.03	0.00|0.40|0.52|0.65|0.83	0.00|0.44|0.57|0.70|0.93	0.00|0.52|0.66|0.89|1.31
	Time Consumption	37s	49s	62s	46s	33s
Negroid Clinical Cases (Cases 01-05 are from Belgium & Case 06-10 are from UK)						
Defect: 24.73 ± 2.49 % L:R = 5:5 M:F = 5:5 Age: 40.18 ± 10.81 *(21 to 57 years old)* ***P***: 0.43 ± 0.32 ***G***: 0.29 ± 0.18 ***S***: 0.56 ± 0.38 *Time*: 50.90 ± 9.26	*Error Metric*	*Case 01* *23.24%*	*Case 02* *27.55%*	*Case 03* *24.39%*	*Case 04* *26.87%*	*Case 05* *21.69%*
	Mean ***P*** (mm)	0.44 ± 0.25	0.39 ± 0.27	0.48 ± 0.25	0.43 ± 0.24	0.40 ± 0.24
	0|25|50|75|100 %	0.00|0.24|0.41|0.59|0.93	0.00|0.12|0.29|0.59|0.93	0.00|0.35|0.47|0.71|0.92	0.00|0.24|0.35|0.59|0.92	0.00|0.24|0.35|0.58|0.99
	Mean ***G***	0.35 ± 0.23	0.31 ± 0.23	0.34 ± 0.24	0.34 ± 0.21	0.28 ± 0.20
	0|25|50|75|100 %	0.00|0.13|0.31|0.53|0.83	0.00|0.12|0.29|0.49|0.79	0.00|0.13|0.32|0.54|0.84	0.00|0.12|0.31|0.53|0.84	0.00|0.10|0.25|0.43|0.69
	Mean ***S*** (mm)	0.77 ± 0.34	0.50 ± 0.18	0.70 ± 0.54	0.63 ± 0.27	0.56 ± 0.30
	0|25|50|75|100 %	0.00|0.34|0.51|0.71|1.30	0.00|0.38|0.49|0.62|0.78	0.00|0.47|0.65|1.08|1.57	0.00|0.45|0.61|0.78|1.24	0.00|0.29|0.51|0.66|1.37
	Time Consumption	62s	37s	64s	42s	55s
	Error Metric	*Case 06* *28.35%*	*Case 07* *21.58%*	*Case 08* *21.79%*	*Case 09* *24.63%*	*Case 10* *27.25%*
	Mean ***P*** (mm)	0.35 ± 0.25	0.43 ± 0.30	0.51 ± 0.28	0.40 ± 0.27	0.32 ± 0.23
	0|25|50|75|100 %	0.00|0.11|0.29|0.47|0.92	0.00|0.17|0.35|0.70|0.92	0.00|0.23|0.59|0.70|0.89	0.00|0.17|0.35|0.59|0.89	0.00|0.12|0.29|0.47|0.92
	Mean ***G***	0.33 ± 0.22	0.19 ± 0.13	0.18 ± 0.13	0.33 ± 0.25	0.24 ± 0.17
	0|25|50|75|100 %	0.00|0.14|0.30|0.52|0.80	0.00|0.07|0.17|0.30|0.46	0.00|0.07|0.16|0.28|0.44	0.00|0.10|0.30|0.53|0.85	0.00|0.09|0.22|0.37|0.60
	Mean ***S*** (mm)	0.66 ± 0.32	0.57 ± 0.23	0.60 ± 0.28	0.74 ± 0.44	0.44 ± 0.15
	0|25|50|75|100 %	0.00|0.42|0.61|0.87|1.24	0.00|0.41|0.55|0.71|0.93	0.00|0.41|0.55|0.73|1.16	0.00|0.42|0.60|1.02|1.44	0.00|0.34|0.44|0.54|0.66
	Time Consumption	50s	45s	53s	62s	39s
OA Data from Zenodo, CQ500, MUG500, and Kaggle						
Defect: 26.63 ± 3.63 % L:R = 5:5 M:F = None Age: None ***P***: 0.41 ± 0.28 ***G***: 0.30 ± 0.23 ***S***: 0.58 ± 0.28 *Time*: 56.67 ± 12.01	*Error Metric*	*Case 01[26]* *26.25%*	*Case 02[26]* *21.88%*	*Case 03[27]* *31.06%*	*Case 04[27]* *27.48%*	*Case 05[28]* *31.69%*
	Mean ***P*** (mm)	0.43 ± 0.26	0.39 ± 0.25	0.33 ± 0.18	0.58 ± 0.26	0.37 ± 0.27 duoq
	0|25|50|75|100 %	0.00|0.23|0.46|0.59|0.97	0.00|0.23|0.35|0.58|0.97	0.00|0.24|0.35|0.39|0.91	0.00|0.35|0.59|0.82|0.93	0.00|0.12|0.35|0.55|0.97
	Mean ***G***	0.23 ± 0.17	0.36 ± 0.26	0.30 ± 0.20	0.29 ± 0.22	0.23 ± 0.16
	0|25|50|75|100 %	0.00|0.08|0.21|0.37|0.60	0.00|0.13|0.32|0.56|0.89	0.00|0.12|0.28|0.46|0.71	0.00|0.11|0.27|0.47|0.76	0.00|0.09|0.21|0.35|0.58
	Mean ***S*** (mm)	0.60 ± 0.28	0.70 ± 0.32	0.64 ± 0.28	0.79 ± 0.38	0.46 ± 0.17
	0|25|50|75|100 %	0.00|0.41|0.54|0.74|1.15	0.00|0.46|0.63|0.92|1.22	0.00|0.43|0.60|0.80|1.14	0.00|0.50|0.72|1.01|1.36	0.00|0.34|0.46|0.57|0.71
	Time Consumption	69s	51s	49s	63s	35s
	Error Metric	*Case 06[28]* *20.88%*	*Case 07[29]* *28.65%*	*Case 08[29]* *26.22%*	*Case 09[30]* *29.64%*	*Case 10[30]* *22.51%*
	Mean ***P*** (mm)	0.34 ± 0.22	0.46 ± 0.28	0.54 ± 0.26	0.37 ± 0.27	0.30 ± 0.25
	0|25|50|75|100 %	0.00|0.12|0.35|0.47|0.92	0.00|0.24|0.47|0.71|0.93	0.00|0.35|0.59|0.71|0.97	0.00|0.12|0.35|0.59|0.97	0.00|0.12|0.24|0.47|0.98
	Mean ***G***	0.33 ± 0.24	0.37 ± 0.27	0.15 ± 0.11	0.32 ± 0.23	0.31 ± 0.23
	0|25|50|75|100 %	0.00|0.12|0.31|0.52|0.83	0.00|0.13|0.34|0.58|0.91	0.00|0.05|0.14|0.24|0.38	0.00|0.12|0.28|0.49|0.81	0.00|0.11|0.28|0.49|0.79
	Mean ***S*** (mm)	0.50 ± 0.18	0.48 ± 0.19	0.49 ± 0.16	0.60 ± 0.28	0.54 ± 0.25
	0|25|50|75|100 %	0.00|0.36|0.49|0.61|0.79	0.00|0.33|0.49|0.63|0.74	0.00|0.38|0.48|0.59|0.70	0.00|0.28|0.41|0.55|0.74	0.00|0.35|0.51|0.69|0.97
	Time Consumption	59s	63s	74s	64s	39s

P *means 3D point cloud distance errors.* ***G*** *means 3D gradient changes based on point clouds.* ***S*** *reconstructed surface errors.*

Part 3: Supplementary Material of detailed reconstruction results of the Caucasoid people in VG2

Defect And Repaired Model	Defect and repaired AMs	PCEM*	VGGC*	Surface Error



*: this means: it is not original result form and processed into the form of 2D photo based on projection operations of original calculated error values.

Defect Model is the original input data of our AI and will be processed by the workflow provided by Figure 1-2 in manuscript.

Repaired Model is the final result of our AI. And it would be compared by following scales orderly.

Defected AMs are the direct inputs of our trained AI BAR-Net framework.

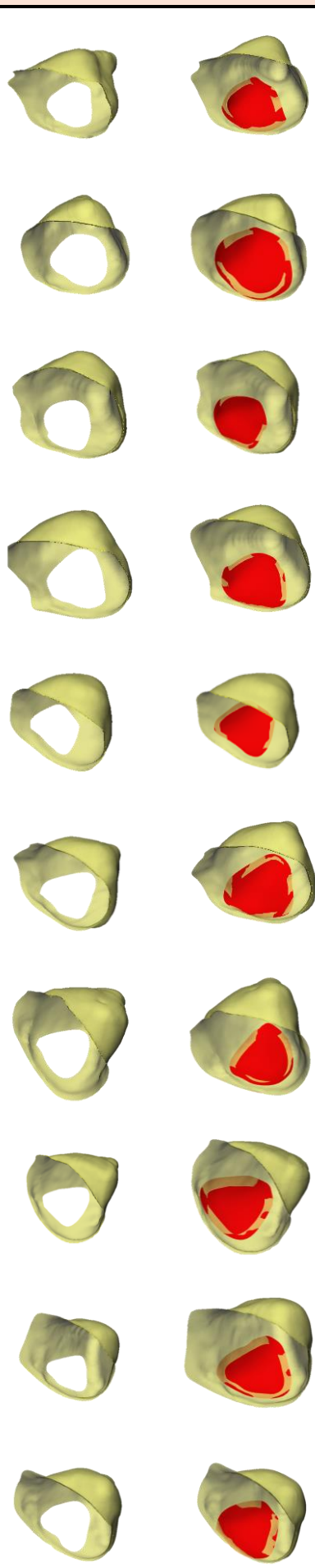
Repaired AMs are the direct outputs of our trained AI BAR-Net framework. And repaired AMs would conducted step 3 in Figure 1 to get its final repaired model.

PCEM represents 3D Point Cloud Error Maps but in a form of 2D photo to provide 3D distance error distribution of pairwise point clouds (repaired and ground truth). Firstly, based on repaired and ground truth p-AMs, pairwise point clouds would be generated orderly and compared by calculating errors point by point. Then, with a color bar, the distances between each point pair would be projected on a 2D photo which is same shape of its P-AM.*

VGGC is similar to PCEM*. However, it calculated gradient change of each point based on K-Nearest Neighbors (KNN) and covariance matrices. And the difference of gradient change at each point would be projected into 2D photos.*

Surface Error Displaying (SE) mean the histogram and normal distribution fitting diagram of distance values calculated based on pairwise reconstructed surfaces. And last column displays its defect area using a color bar shown below of the histogram.

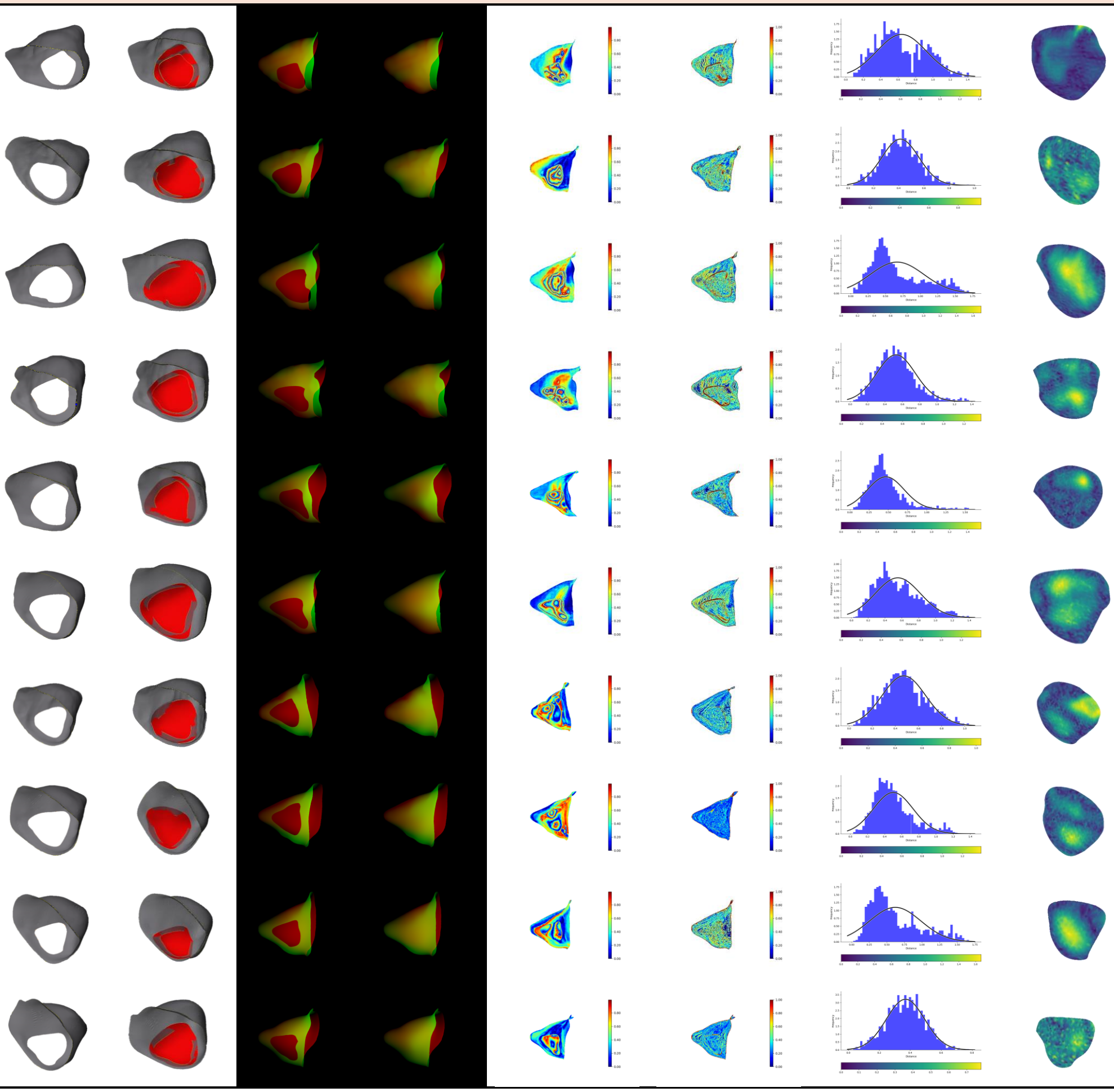
Part 4: Supplementary Material of detailed reconstruction results of the Mongoloid in VG2

Defect And Repaired Model	Defect and repaired AMs	PCEM*	VGGC*	Surface Error
				

*: this means: it is not original result form and processed into the form of 2D photo based on projection operations of original calculated error values.
Defect Model is the original input data of our AI and will be processed by the workflow provided by Figure 1-2 in manuscript.
Repaired Model is the final result of our AI. And it would be compared by following scales orderly.
Defected AMs are the direct inputs of our trained AI BAR-Net framework.
Repaired AMs are the direct outputs of our trained AI BAR-Net framework. And repaired AMs would conducted step 3 in Figure 1 to get its final repaired model.
PCEM represents 3D Point Cloud Error Maps but in a form of 2D photo to provide 3D distance error distribution of pairwise point clouds (repaired and ground truth). Firstly, based on repaired and ground truth p-AMs, pairwise point clouds would be generated orderly and compared by calculating errors point by point. Then, with a color bar, the distances between each point pair would be projected on a 2D photo which is same shape of its P-AM.*
VGGC is similar to PCEM*. However, it calculated gradient change of each point based on K-Nearest Neighbors (KNN) and covariance matrices. And the difference of gradient change at each point would be projected into 2D photos.*
Surface Error Displaying (SE) mean the histogram and normal distribution fitting diagram of distance values calculated based on pairwise reconstructed surfaces. And last column displays its defect area using a color bar shown below of the histogram.

Part 5: Supplementary Material of detailed reconstruction results of the Negroid in VG2

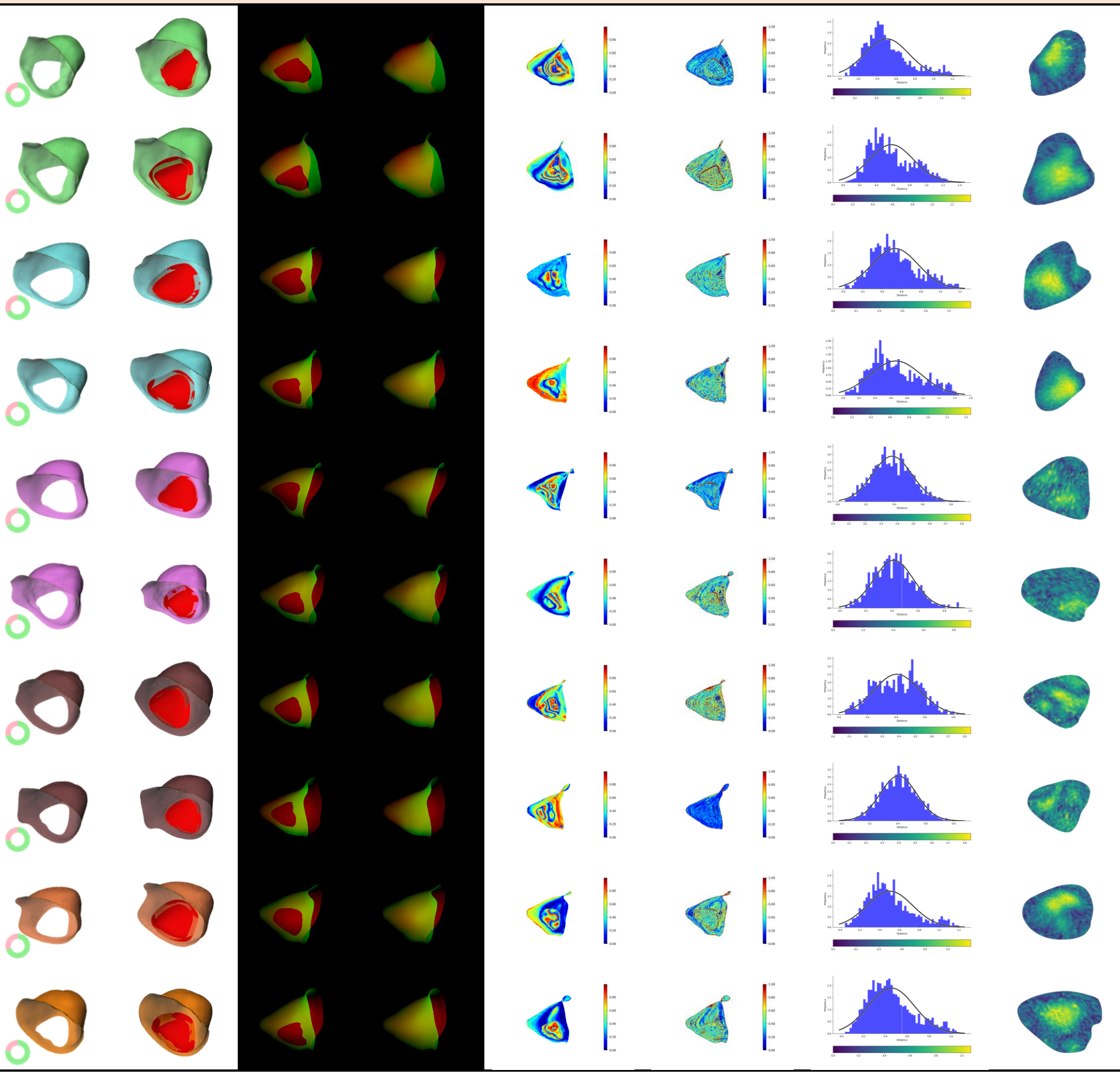
Defect And Repaired Model	Defect and repaired AMs	PCEM*	VGGC*	Surface Error



*: this means: it is not original result form and processed into the form of 2D photo based on projection operations of original calculated error values.
Defect Model is the original input data of our AI and will be processed by the workflow provided by Figure 1-2 in manuscript.
Repaired Model is the final result of our AI. And it would be compared by following scales orderly.
Defected AMs are the direct inputs of our trained AI BAR-Net framework.
Repaired AMs are the direct outputs of our trained AI BAR-Net framework. And repaired AMs would conducted step 3 in Figure 1 to get its final repaired model.
PCEM* represents 3D Point Cloud Error Maps but in a form of 2D photo to provide 3D distance error distribution of pairwise point clouds (repaired and ground truth). Firstly, based on repaired and ground truth p-AMs, pairwise point clouds would be generated orderly and compared by calculating errors point by point. Then, with a color bar, the distances between each point pair would be projected on a 2D photo which is same shape of its P-AM.
VGGC* is similar to PCEM*. However, it calculated gradient change of each point based on K-Nearest Neighbors (KNN) and covariance matrices. And the difference of gradient change at each point would be projected into 2D photos.
Surface Error Displaying (SE) mean the histogram and normal distribution fitting diagram of distance values calculated based on pairwise reconstructed surfaces. And last column displays its defect area using a color bar shown below of the histogram.

Part 6: Supplementary Material of detailed reconstruction results of the OA in VG2

Defect And Repaired Model	Defect and repaired AMs	PCEM*	VGGC*	Surface Error



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