

Points2Surf

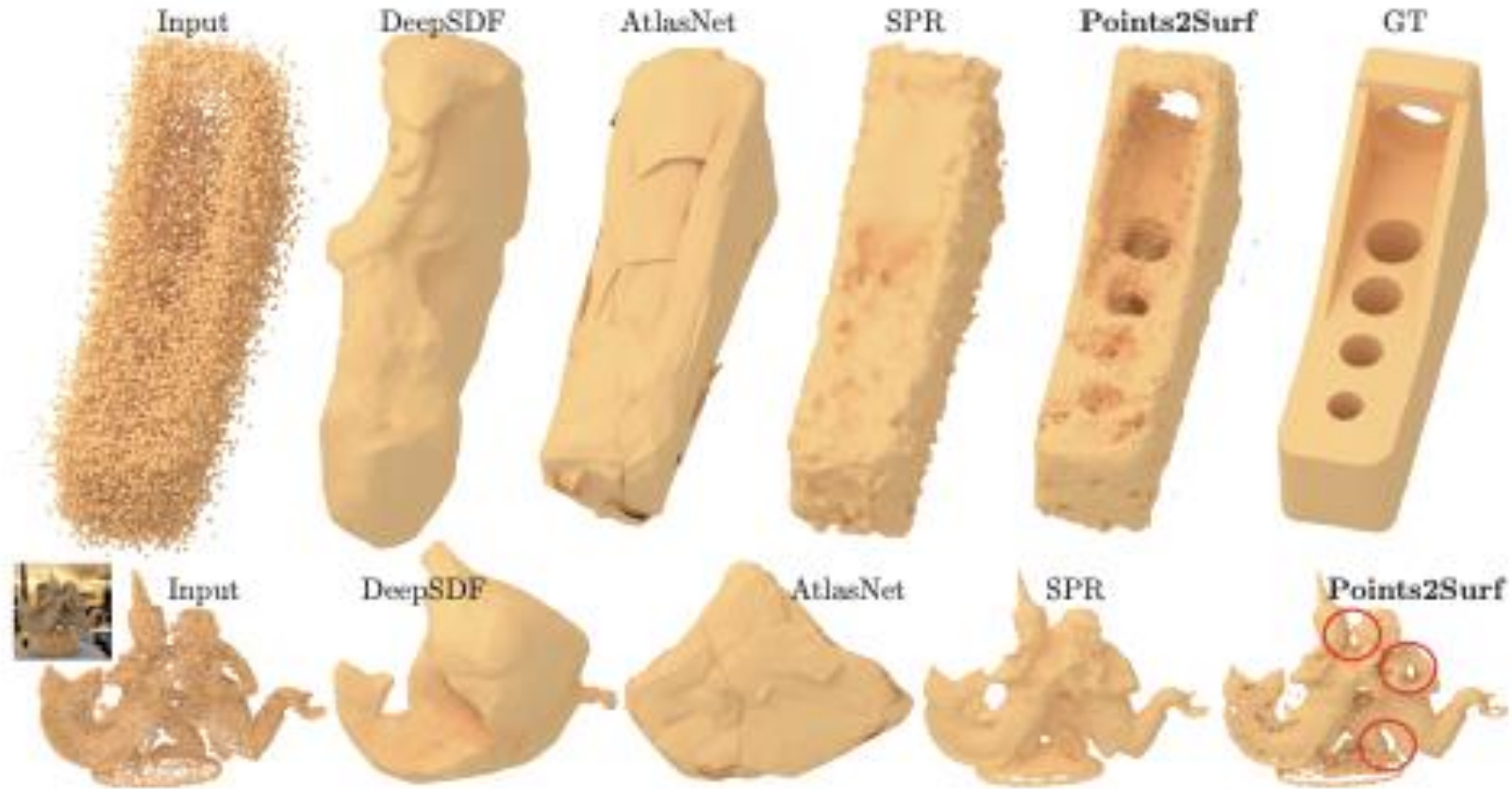
김찬영

2021.05.20



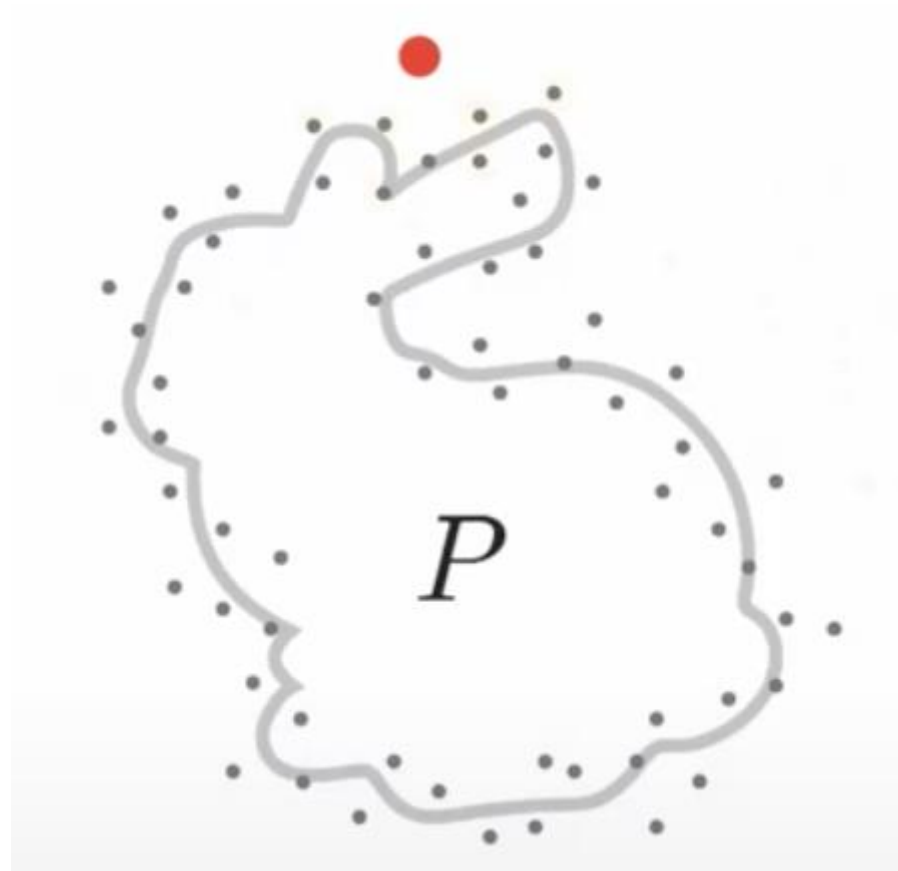
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Points2Surf



Erler, Philipp, et al. "Points2Surf Learning Implicit Surfaces from Point Clouds." *European Conference on Computer Vision*. Springer, Cham, 2020.

Points2Surf, Method

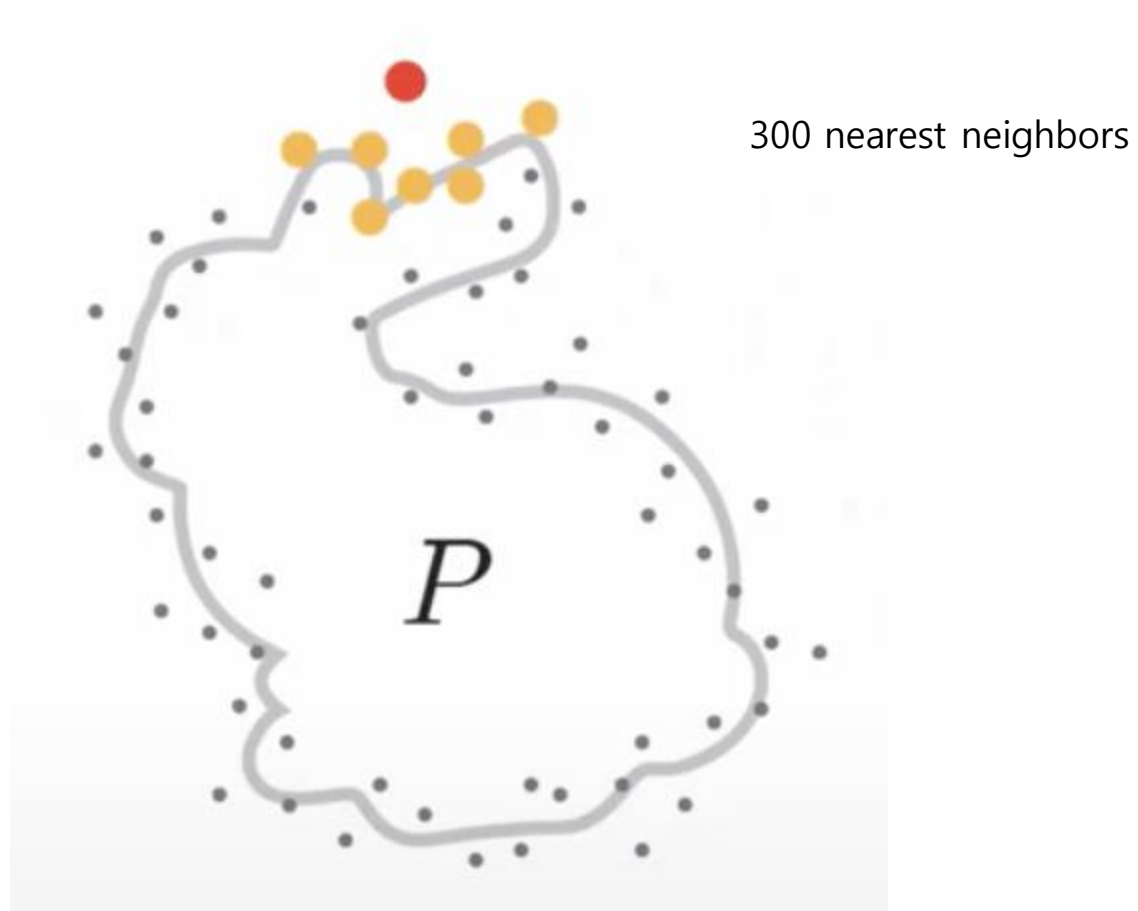


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Points2Surf, Method

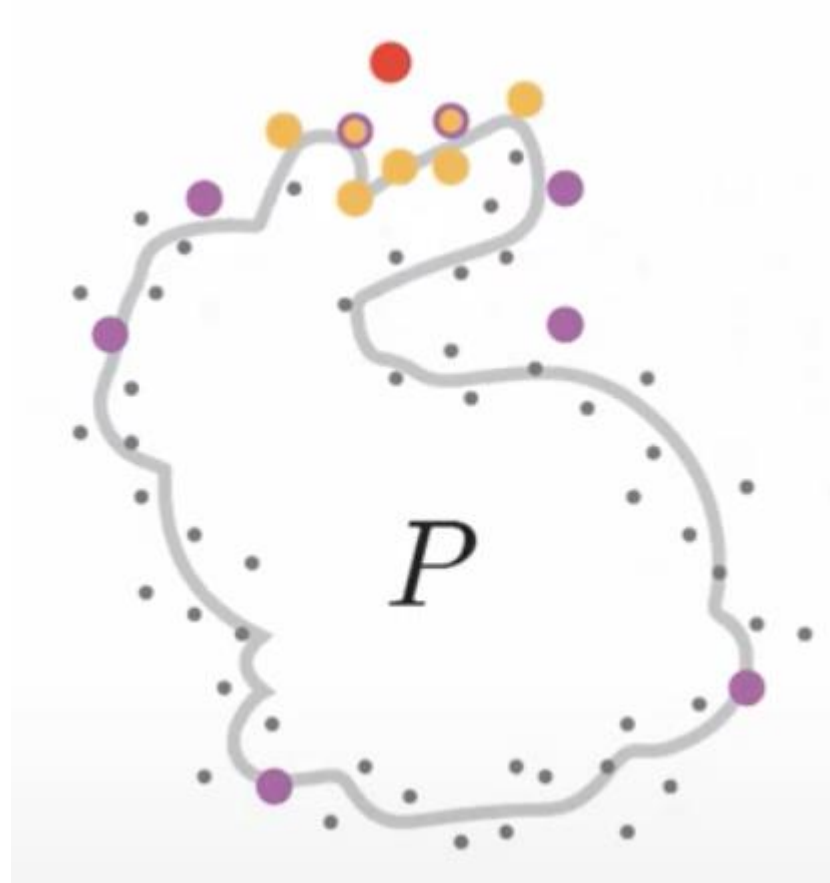


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Points2Surf, Method

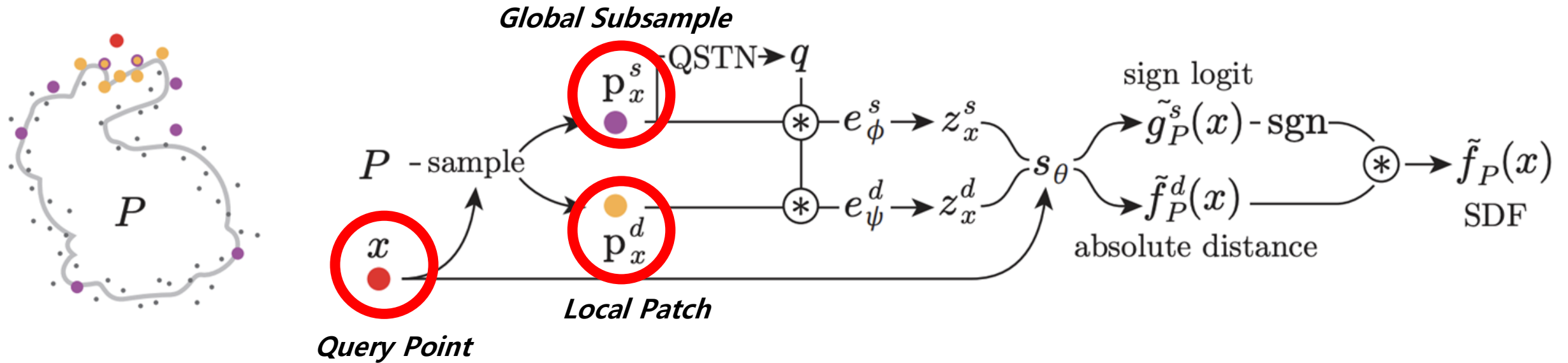


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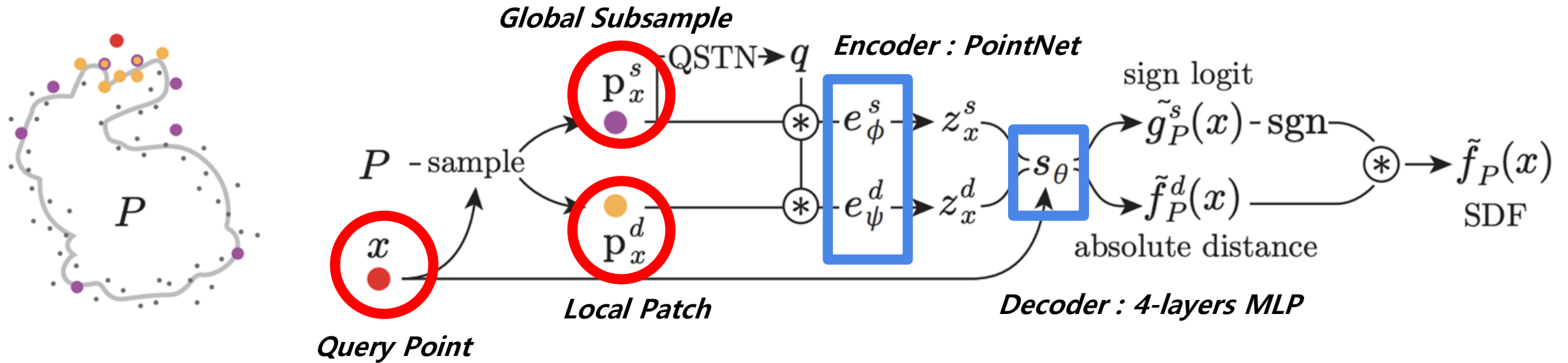


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Points2Surf, Architecture



Points2Surf, Architecture



Points2Surf, Dataset

ABC Dataset

Train: 4950

Validation & Test: 100

Famous Dataset

Thing10k
for Test

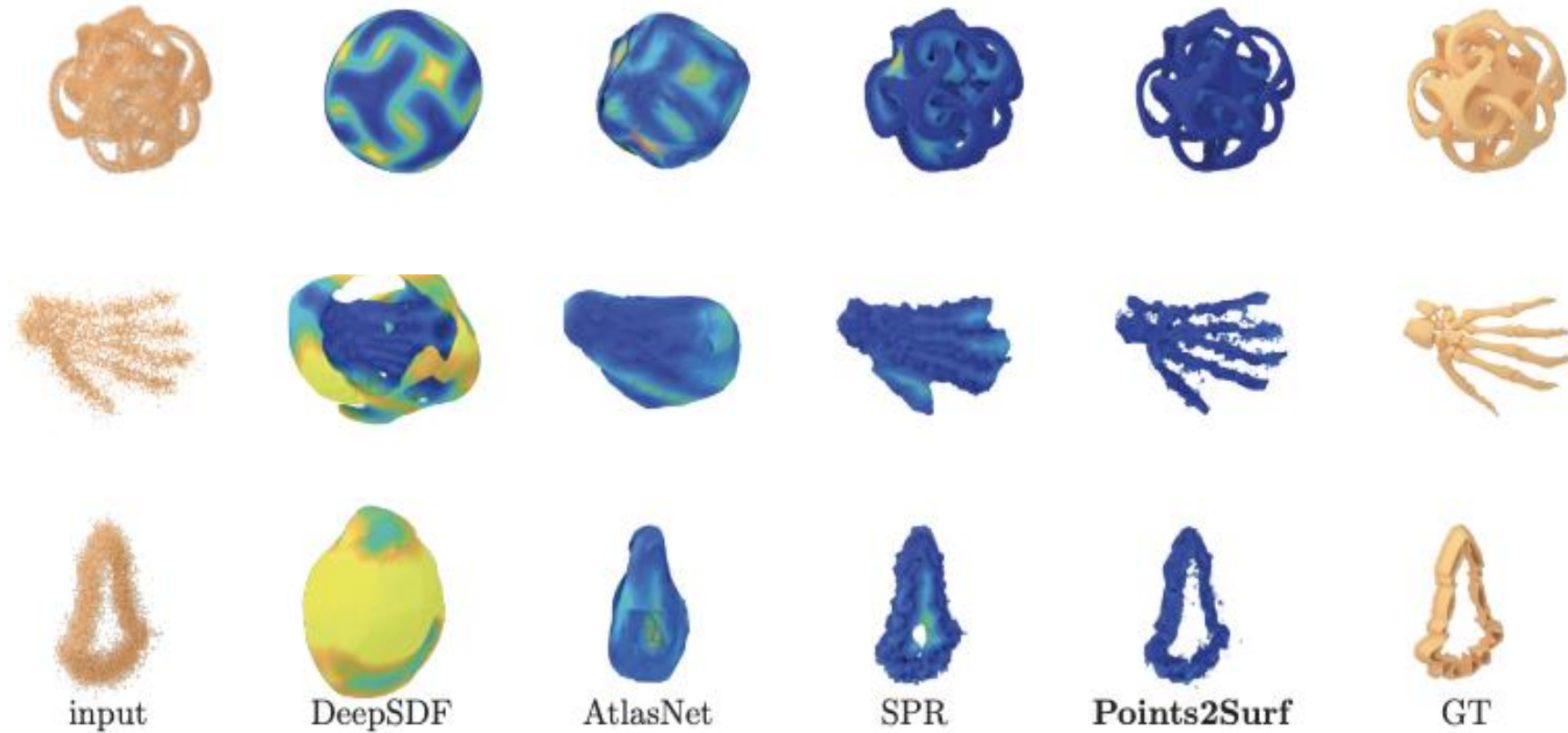


BlenSor ↓

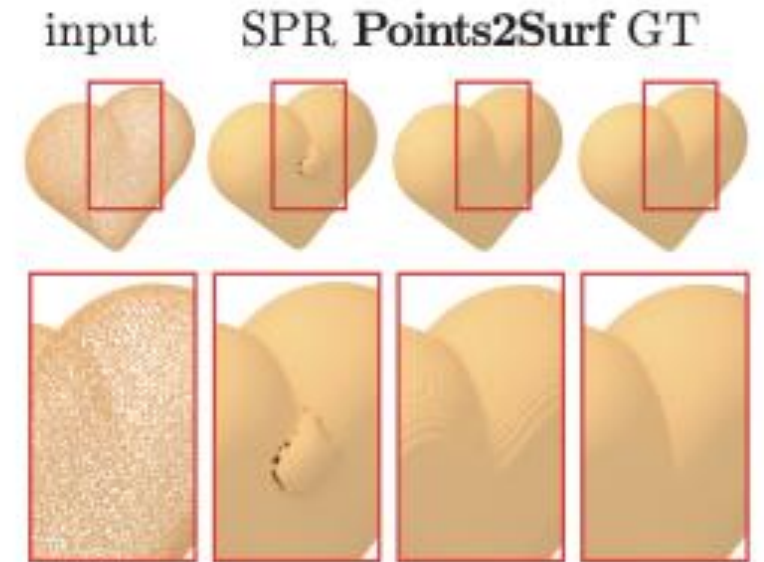
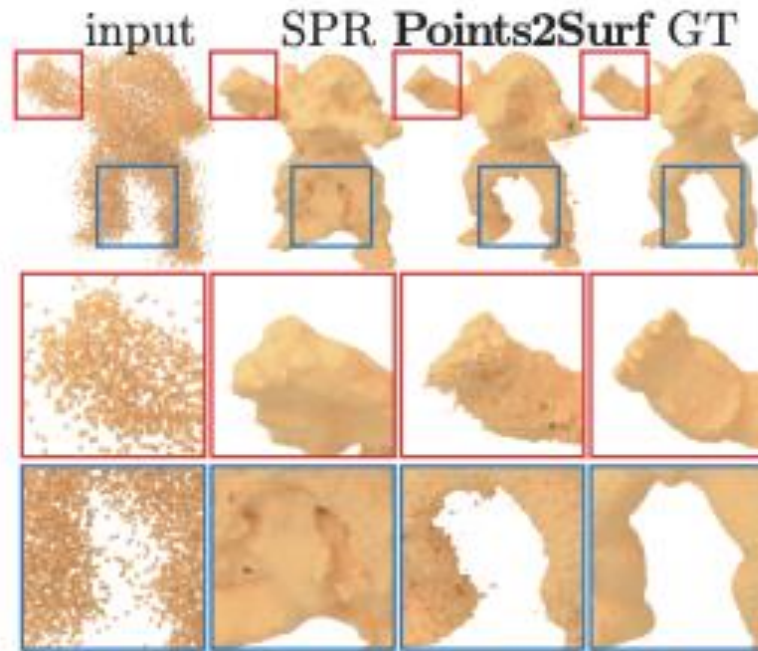
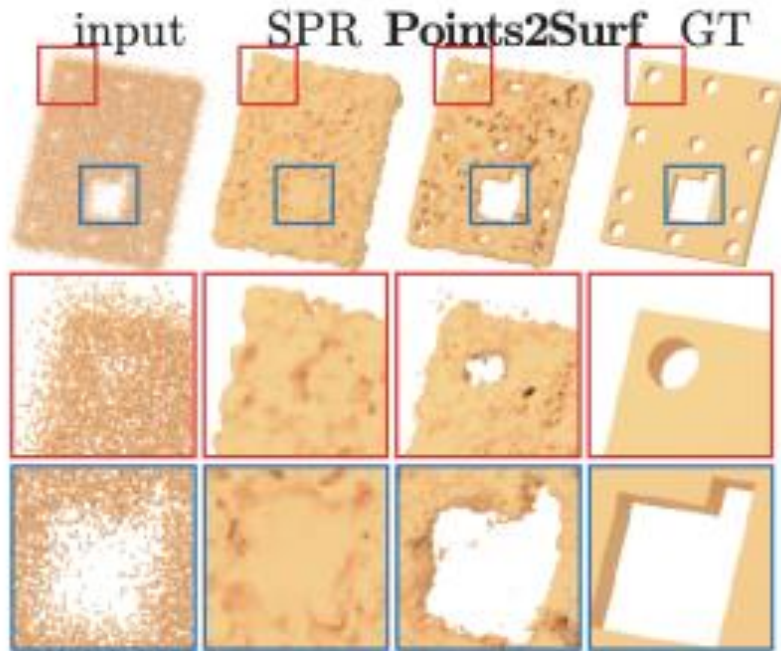


No Noise <-----> Max Noise

Points2Surf, Qualitative Result



Points2Surf, Qualitative Result



Points2Surf, Quantitative Result

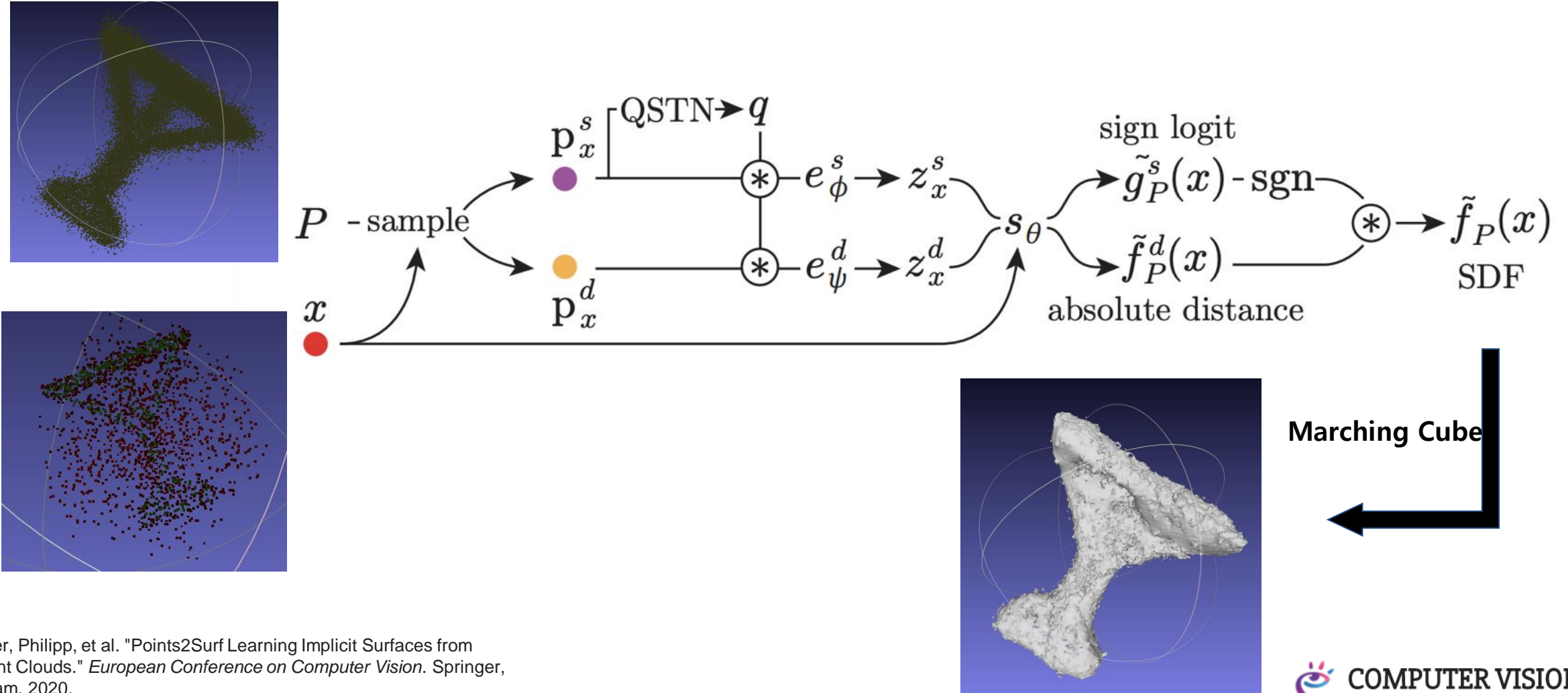
	DeepSDF		AtlasNet		SPR		POINTS2SURF	
	abs.	rel.	abs.	rel.	abs.	rel.	abs.	rel.
ABC no-noise	8.41	4.68	4.69	2.61	2.49	1.39	1.80	1.00
ABC var-noise	12.51	5.86	4.04	1.89	3.29	1.54	2.14	1.00
ABC max-noise	11.34	4.11	4.47	1.62	3.89	1.41	2.76	1.00
FAMOUS no-noise	10.08	7.14	4.69	3.33	1.67	1.18	1.41	1.00
FAMOUS med-noise	9.89	6.57	4.54	3.01	1.80	1.20	1.51	1.00
FAMOUS max-noise	13.17	5.23	4.14	1.64	3.41	1.35	2.52	1.00
FAMOUS sparse	10.41	5.41	4.91	2.55	2.17	1.12	1.93	1.00
FAMOUS dense	9.49	7.15	4.35	3.28	1.60	1.21	1.33	1.00
average	10.66	5.77	4.48	2.49	2.54	1.30	1.92	1.00

	DeepSDF		AtlasNet		SPR		POINTS2SURF	
	abs.	rel.	abs.	rel.	abs.	rel.	abs.	rel.
THINGI10K no-noise	9.16	6.48	5.29	3.74	1.78	1.26	1.41	1.00
THINGI10K med-noise	8.83	5.99	5.19	3.52	1.81	1.23	1.47	1.00
THINGI10K max-noise	12.28	4.68	4.90	1.87	3.23	1.23	2.62	1.00
THINGI10K sparse	9.56	4.54	5.64	2.68	2.35	1.12	2.11	1.00
THINGI10K dense	8.35	6.19	5.02	3.72	1.57	1.16	1.35	1.00
average	9.64	5.58	5.21	3.11	2.15	1.20	1.79	1.00

error metric

$$d_{\text{ch}}(A, B) := \frac{1}{|A|} \sum_{p_i \in A} \min_{p_j \in B} \|p_i - p_j\|_2^2 + \frac{1}{|B|} \sum_{p_j \in B} \min_{p_i \in A} \|p_j - p_i\|_2^2,$$

Points2Surf, Example



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감사합니다.

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