FlowSeek: Optical Flow Made Easy with Depth Foundation Models and Motion Bases

Supplementary Material

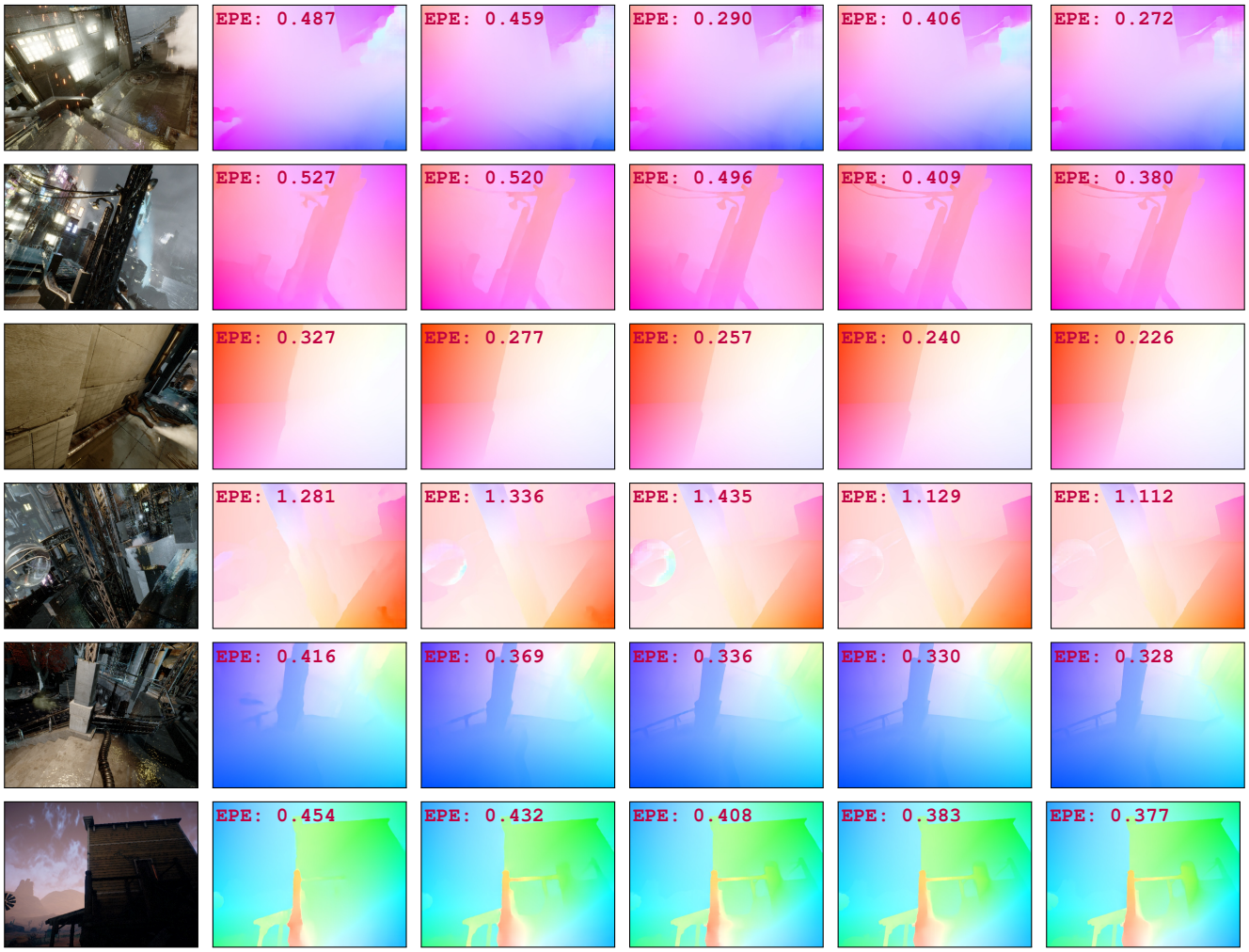

Figure A. **Qualitative results on TartanAir.** From left to right: first frame, flow predicted by SEA-RAFT (S) and ablated versions of FlowSeek (T).

In this document, we report additional qualitative results concerning the experiments reported in the main paper. Specifically, Figures A and B provide a visual comparison between SEA-RAFT (S) and the different versions of FlowSeek (T) ablated in Table 1 of the main paper, respectively on TartanAir and KITTI 2012. Figures C and D show further comparisons between SEA-RAFT (S) and FlowSeek (T), respectively on Sintel and KITTI 2015, while Figure E reports qualitative results on Spring by the same models, trained following "C→T→TSKH" schedule. Table A shows a further, quantitative comparison between SEA-RAFT and FlowSeek variants trained according to "C→T" schedule, highlighting how the former model suffers of generalization issues more severely with respect to ours. This is also shown qualitatively in Figure F, as well as in the teaser in the main paper. Finally, Table B reports detailed results on the LayeredFlow dataset, highlighting how FlowSeek achieves large improvements on most metrics for *Transparent* and *Reflective* regions thanks to the strong priors injected by the depth foundation model. This comes at the expense of some marginal drops on *Diffuse* regions, mostly inherited from the baseline SEA-RAFT models.

Figure B. **Qualitative results on KITTI 2012.** From left to right, on two rows: first frame, flow predicted by SEA-RAFT (S) and ablated versions of FlowSeek (T).

Figure C. **Qualitative results on Sintel.** From left to right: first frame, flow by SEA-RAFT (S) and FlowSeek (T).

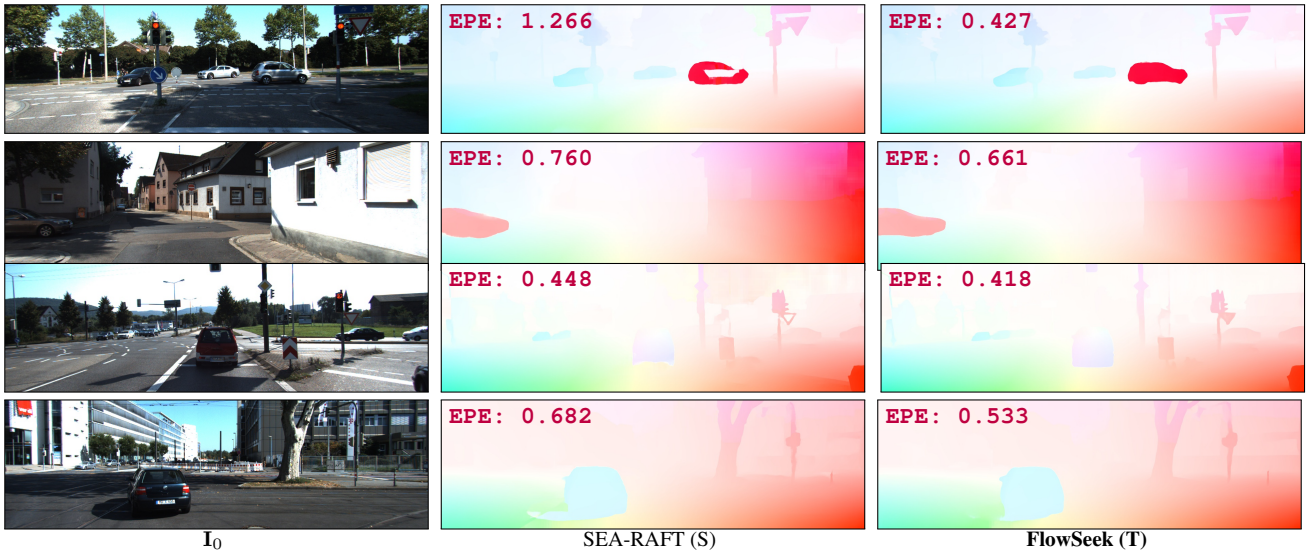

Figure D. **Qualitative results on KITTI 2015.** From left to right: first frame, flow by SEA-RAFT (S) and FlowSeek (T).

Figure E. **Qualitative results on Spring – "C→T→TSKH" schedule after TartanAir pretraining.** From left to right: first frame, flow by SEA-RAFT (S) and FlowSeek (T).

Extra Data	Method	Spring (train)	
		1px↓	EPE↓
Tartan	SEA-RAFT (S)	4.574	0.597
	SEA-RAFT (M)	4.815	0.580
	SEA-RAFT (L)	5.988	0.850
	FlowSeek (T)	4.070	0.416
	FlowSeek (S)	3.999	0.410
	FlowSeek (M)	4.094	0.424
	FlowSeek (L)	4.067	0.422

Extra Data	Method	Spring (train)	
		1px↓	EPE↓
Tartan	SEA-RAFT (S)	4.161	0.410
	SEA-RAFT (M)	3.888	0.406
	SEA-RAFT (L)	3.842	0.426
	FlowSeek (T)	4.111	0.410
	FlowSeek (S)	4.058	0.406
	FlowSeek (M)	3.941	0.419
	FlowSeek (L)	**3.838**	**0.402**

Table A. **Zero-Shot Generalization – Spring.** Models trained with "C → T" (left) and "C → T → TSKH" (right) schedule.

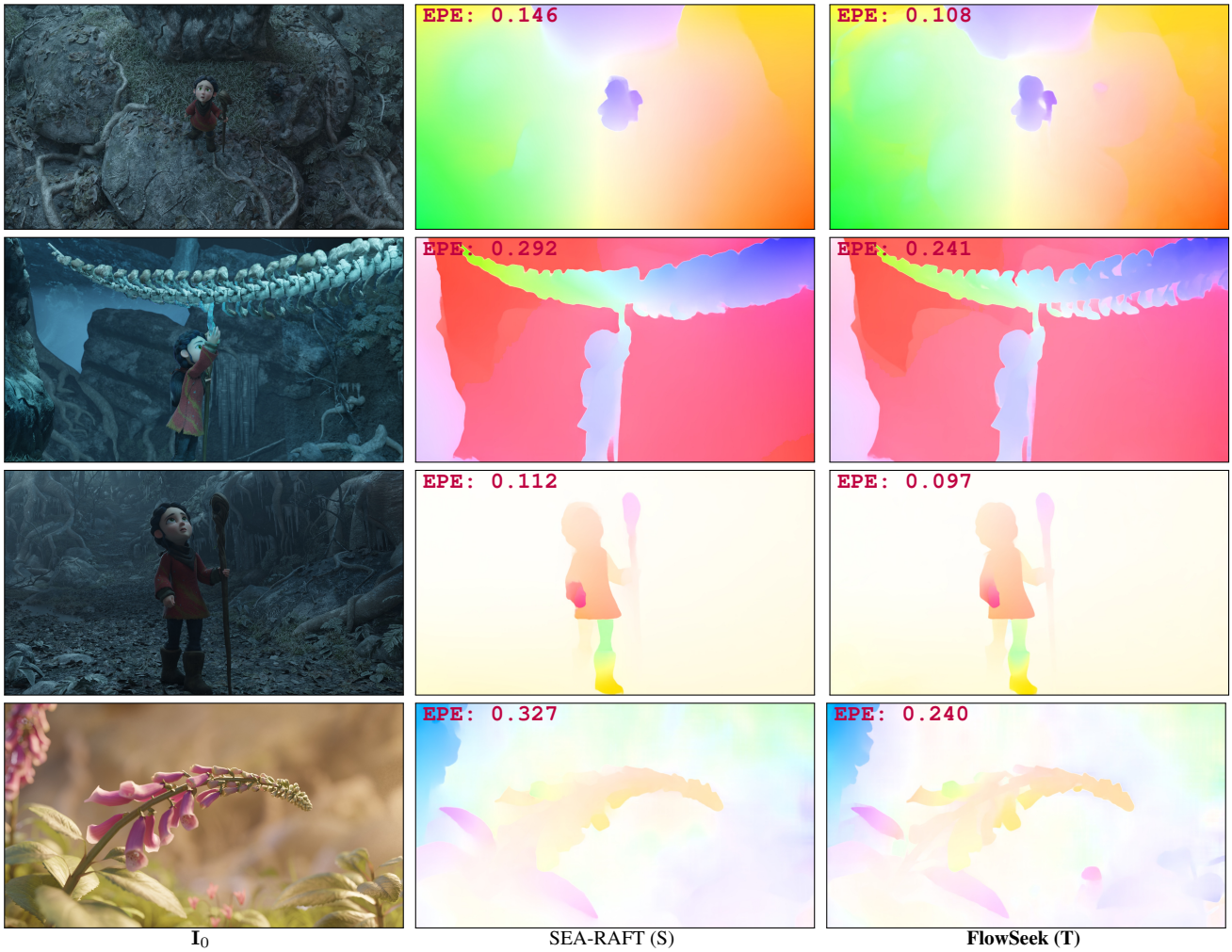

Figure F. **Qualitative results on Spring – "C→T" schedule after TartanAir pretraining.** From left to right: first frame, flow by SEA-RAFT (S) and FlowSeek (T).

Method	All				Transparent				Reflective				Diffuse			
	EPE↓	1px↓	3px↓	5px↓	EPE↓	1px↓	3px↓	5px↓	EPE↓	1px↓	3px↓	5px↓	EPE↓	1px↓	3px↓	5px↓
FlowNet-C	9.71	89.07	61.51	43.93	11.08	89.23	62.43	45.05	6.38	88.25	58.36	40.03	8.53	89.08	54.13	35.35
FlowNet2	10.07	77.56	54.22	42.13	11.46	78.20	56.15	44.38	6.70	75.39	46.69	33.33	7.66	72.44	43.21	29.41
PWC-Net	9.49	74.93	50.47	39.05	10.90	76.47	52.59	41.43	5.99	69.84	42.99	29.82	6.91	61.85	34.77	25.30
GMA	9.77	72.46	46.93	36.97	12.01	75.48	50.07	40.24	4.48	60.85	35.42	24.26	2.26	54.20	25.56	17.98
SKFlow	9.86	72.02	47.44	36.88	12.00	74.90	50.84	40.14	4.78	60.89	35.21	24.40	3.23	54.90	23.23	17.18
CRAFT	10.36	72.34	47.54	37.00	12.65	74.75	50.96	40.47	4.65	64.12	35.10	23.06	3.30	53.08	23.95	18.89
GMFlow	9.09	81.99	51.79	37.75	10.93	83.01	53.87	40.06	5.20	80.02	44.73	28.64	5.01	66.91	35.13	24.79
GMFlow+	9.46	82.71	53.14	39.70	11.31	83.21	54.91	42.10	6.04	81.61	46.57	29.95	5.71	75.97	41.43	27.85
FlowFormer	10.20	73.59	48.97	38.56	12.51	76.91	52.56	42.27	5.00	61.03	36.18	24.76	**2.17**	52.89	22.90	14.12
RAFT	9.38	71.98	46.46	36.15	11.31	**74.65**	49.69	39.34	5.57	61.53	35.73	24.57	2.62	56.72	**19.44**	**14.05**
SEA-RAFT (S)	10.05	71.48	46.90	36.32	12.07	75.80	51.14	40.40	3.59	49.67	24.79	15.48	4.56	55.00	36.77	22.60
SEA-RAFT (M)	10.17	69.73	45.94	34.78	12.33	75.43	50.93	39.20	3.17	40.17	19.17	11.75	3.75	54.90	40.83	24.17
SEA-RAFT (L)	10.99	69.46	45.59	34.78	13.33	75.53	50.55	39.13	3.17	37.99	19.12	11.99	3.69	53.75	38.96	25.52
FlowSeek (T)	9.09	70.82	43.74	32.36	11.31	76.30	49.53	36.96	2.31	42.12	13.49	8.44	2.70	59.06	30.42	20.62
FlowSeek (S)	9.16	69.99	43.67	31.90	11.50	75.96	49.41	36.62	**1.79**	38.44	13.46	**7.38**	2.69	59.69	32.71	20.10
FlowSeek (M)	**8.30**	**68.85**	41.81	32.09	10.17	75.38	47.58	36.74	2.74	35.07	**12.34**	8.27	2.81	**51.15**	23.12	16.98
FlowSeek (L)	**8.30**	68.98	**41.49**	**31.64**	**10.15**	75.56	**46.78**	**36.02**	2.39	**34.49**	14.09	8.90	3.20	54.69	27.50	20.31

Table B. **Zero-shot generalization – LayeredFlow (train) first layer evaluation.** Images are down-sampled by 8.