

Problem & Idea

- Problem**
High-dynamic target cause degraded motion with spatial blur and temporal discontinuity, resulting in discrete spatiotemporal features.
- Idea**
Introducing events to compensate for frames, and exploring a common spatiotemporal fusion.

(a) Problem of high-dynamic optical flow

(b) Direct spatiotemporal fusion

(c) Common spatiotemporal fusion

Common Spatiotemporal Fusion

Visual Boundary Localization

Motion Correlation Fusion

Motivation

- Common Space for Closing Modality Gap**
- Complementary Spatiotemporal Knowledge**

Quantitative and Qualitative Results

- Visual Comparison on Various Dynamic Scenes**
- Quantitative Results on Different Datasets**

Method	ARFlow	Selfflow		RAFT	GMA		E-RAFT	BFlow	ABDA -Flow	ComST -Flow
		-	w/ Deblur		-	w/ Deblur				
Input	Frame	Frame	Frame	Frame	Frame	Frame	Event	Frame-Event	Frame-Event	Frame-Event
Event-KITTI	EPE	33.52	8.03	6.89	0.87	0.79	2.48	0.76	0.75	0.72
F1-all		83.45%	26.13%	23.15%	5.34%	4.85%	9.37%	4.35%	4.27%	3.83%
Slow-DSEC	EPE	14.81	15.46	14.24	0.97	0.93	0.95	0.87	0.63	0.47
F1-all		70.54%	72.27%	71.24%	4.15%	3.78%	3.68%	2.98%	2.04%	1.17%
Fast-DSEC	EPE	15.60	16.16	15.44	1.35	1.24	1.22	0.95	0.87	0.58
F1-all		72.47%	78.07%	71.57%	6.26%	5.12%	4.96%	3.65%	2.89%	1.96%

Ablations and Discussion

- Effectiveness of Common Spatiotemporal Fusion**
- Ablation on Backbone & Fusion**
- Ablation on Fusion Loss**

Flow backbone	Fusion framework	EPE	F1-all
RAFT	w/o Fusion	1.24	5.35%
	w/ Direct Fusion	0.89	3.02%
	w/ Common Fusion	0.60	2.08%
Flow Former	w/o Fusion	1.21	5.09%
	w/ Direct Fusion	0.84	2.74%
	w/ Common Fusion	0.58	1.96%