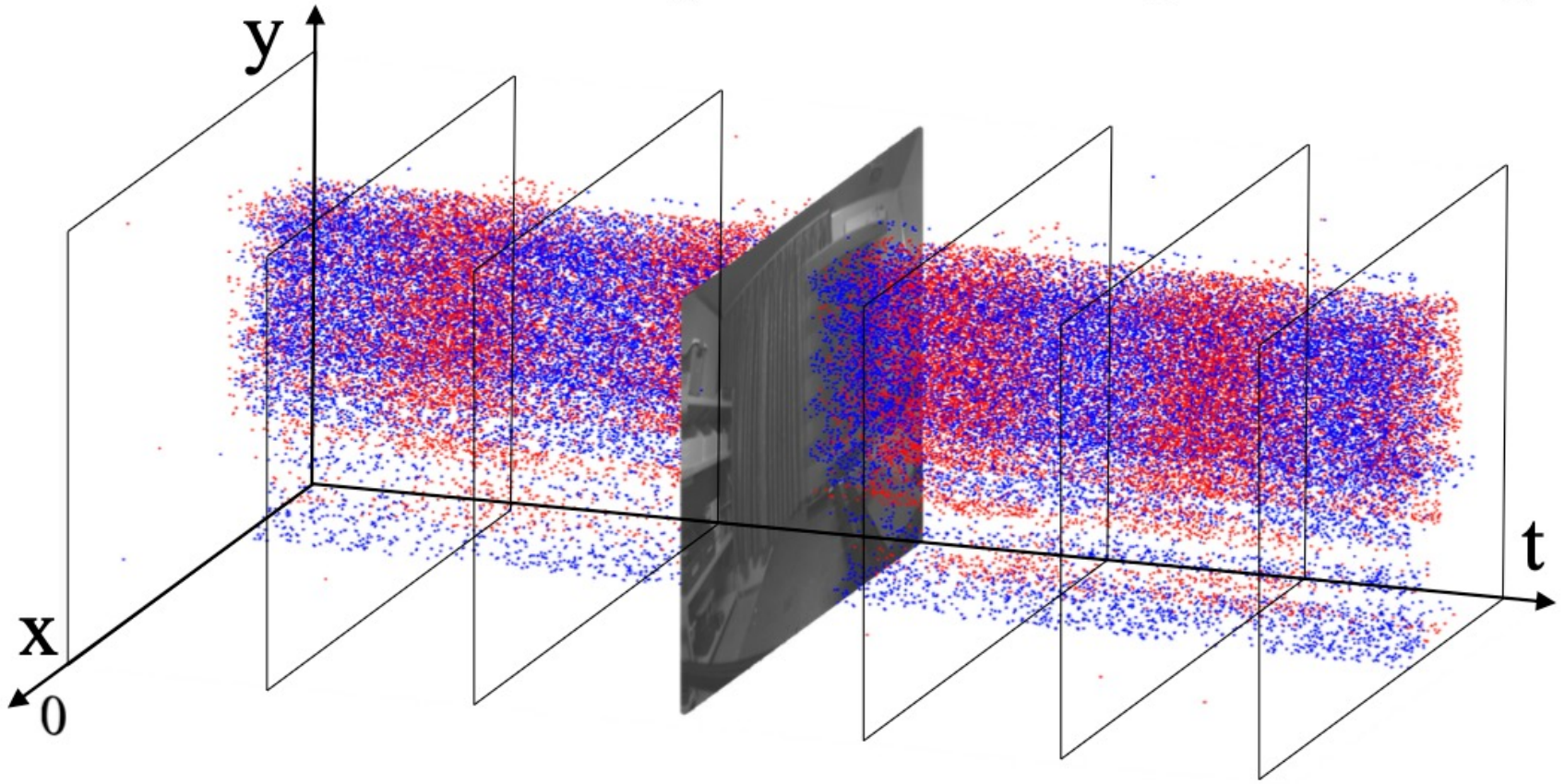
Event-Based Image Deblurring Challenge

NTIRE 2025 & Event-Based Vision Workshop



Event-based Vision 2025
CVPR Nashville JUNE 11-15, 2025

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What is the goal of this challenge?

- To guide the development of **event-based image enhancement.**
- To expand the **event-based vision community**.
- To **accelerate** the **commercialization** of event cameras.

Challenge participation statistics

- **199** participants registered.
- **15** teams successfully submitted valid results.

Datasets

- HighREV[1] dataset is used.
  - Totally 2463 sets of blurring images, events and sharp images.
  - 1771 sets for training.
  - 421 sets for validation.
  - 271 sets for testing.

[1]: Sun, Lei, et al. "Event-based frame interpolation with ad-hoc deblurring." *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*. 2023.

Results

- PSNR are calculated in y channel.
- **Hybrid architectures** demonstrated strong performance.
- **Pretrained weights** matter.
- **Cross-modal fusion** proves beneficial.

Team	Rank	PSNR (primary)	SSIM
IVISLAB	1	42.79	0.9196
MiVideoDeblur	2	42.70	0.9281
404NotFound	3	42.09	0.9300
Give_it_a_try	4	40.37	0.9234
BUPTMM	5	40.21	0.9179
WEI	6	39.46	0.9171
DVS-WHU	7	39.26	0.9101
PixelRevive	8	39.12	0.9112
CHD	9	38.56	0.9055
SMU	10	38.30	0.9047
JNU620	11	37.63	0.9019
colab	12	36.84	0.8962
CMSL	13	31.81	0.8900
KUnet	14	29.42	0.8600
Group10	15	25.93	0.8200

Winner method from IVISLAB

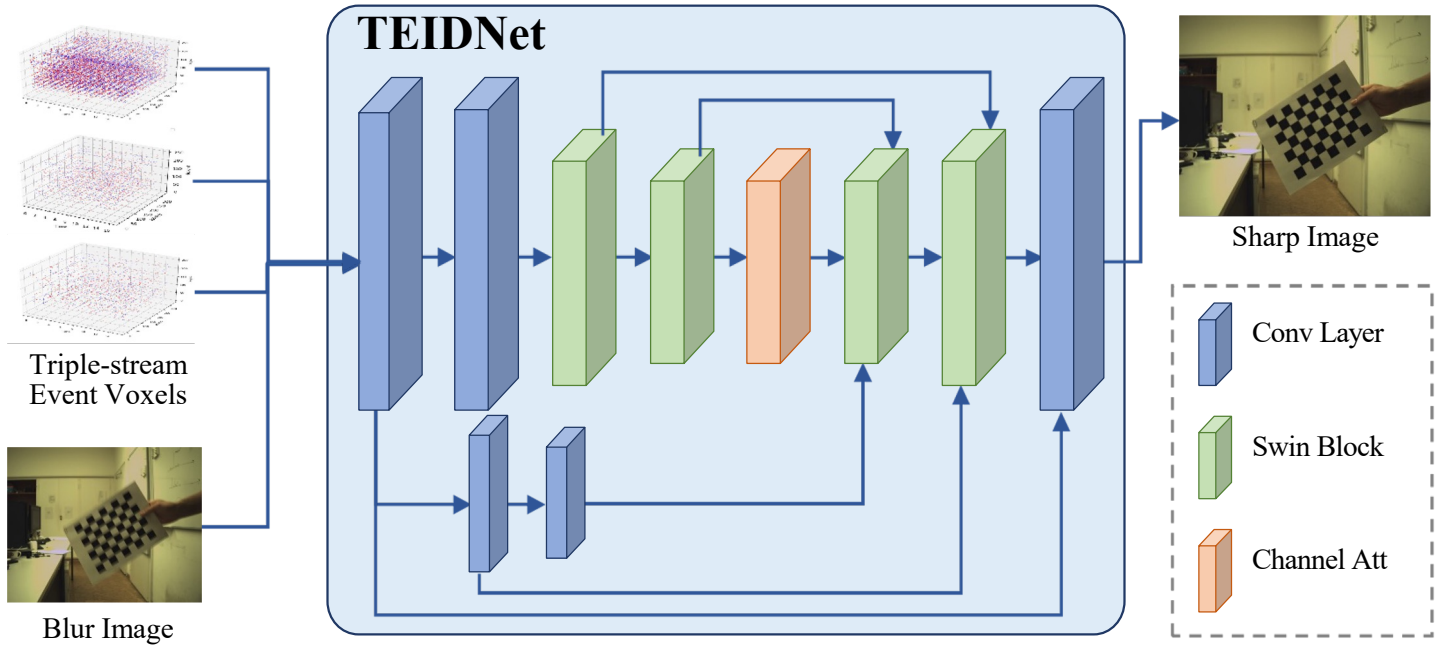
IVISLAB: Triple Event-stream Image Deblurring Network (TEIDNet)

Motivation:

•Existing methods often compress event data into fixed bins, losing valuable details. We believe:

•Large-scale event data is effective for capturing motion dynamics.

•Small-scale event data is essential for capturing fine details like edges.



Approach:

•Event Voxelization at Three Scales: We propose utilizing events at three temporal scales (long, medium, and short) to capture both global motion and fine edge details.

•Dual-Branch Architecture: One branch is dedicated to capturing the global context using Swin Blocks, while another branch focuses on fine-grained details through Convolutional Layers.

Thanks!