



香港大學
THE UNIVERSITY OF HONG KONG

DYNAMIC: Diversely Neuromorphic Adaptive Mechanism for Interactive Creation

Yaping Zhao, Edmund Y. Lam

Background

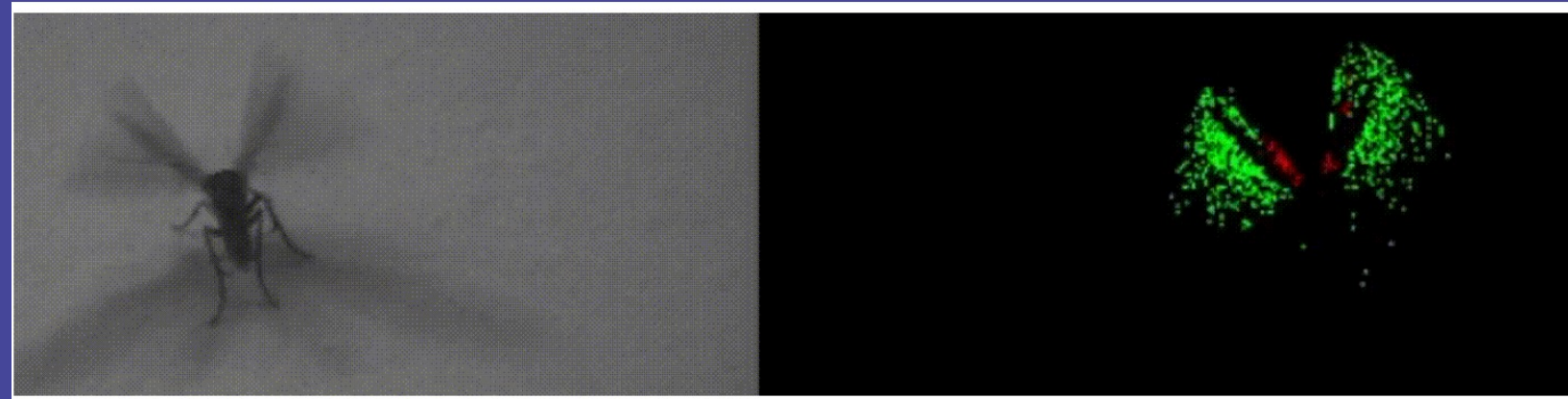


Image source: <https://mpl.sist.shanghaitech.edu.cn/resGeometryForEventCameras.html>

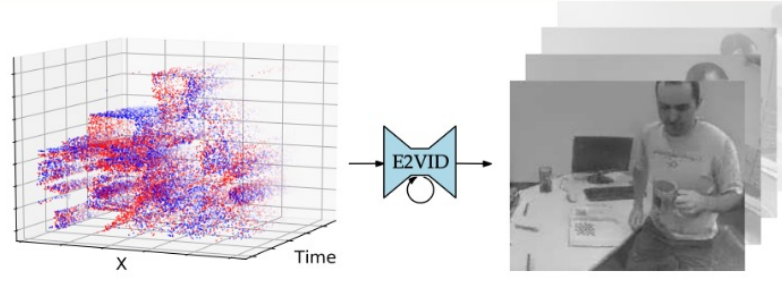
Traditional Camera v.s. Neuromorphic Camera (e.g., event camera)

- | | |
|--|---------------------------------|
| 1. Intuitive and natural visualization | 1. High dynamic range |
| 2. Detailed scene information | 2. Superior temporal resolution |
| 3. Perceptual realism | 3. Low energy consumption |

Motivation

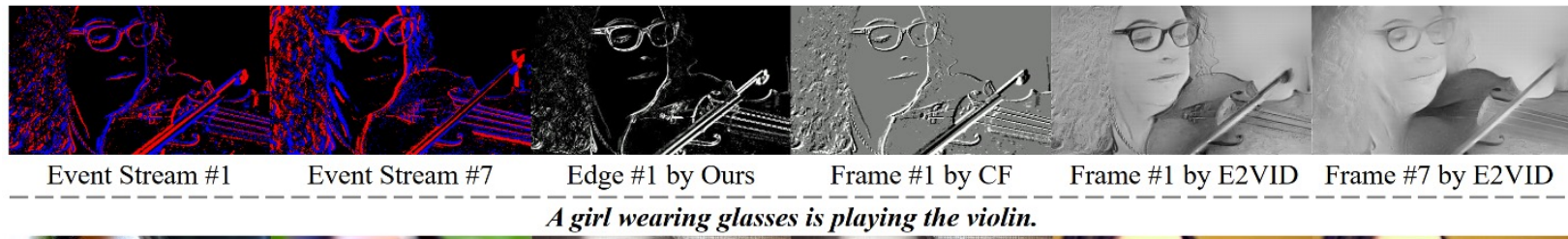
Existing Methods:

- Limited performance
- Ground-truth requirements
- Frame-by-frame synthesis



Our method:

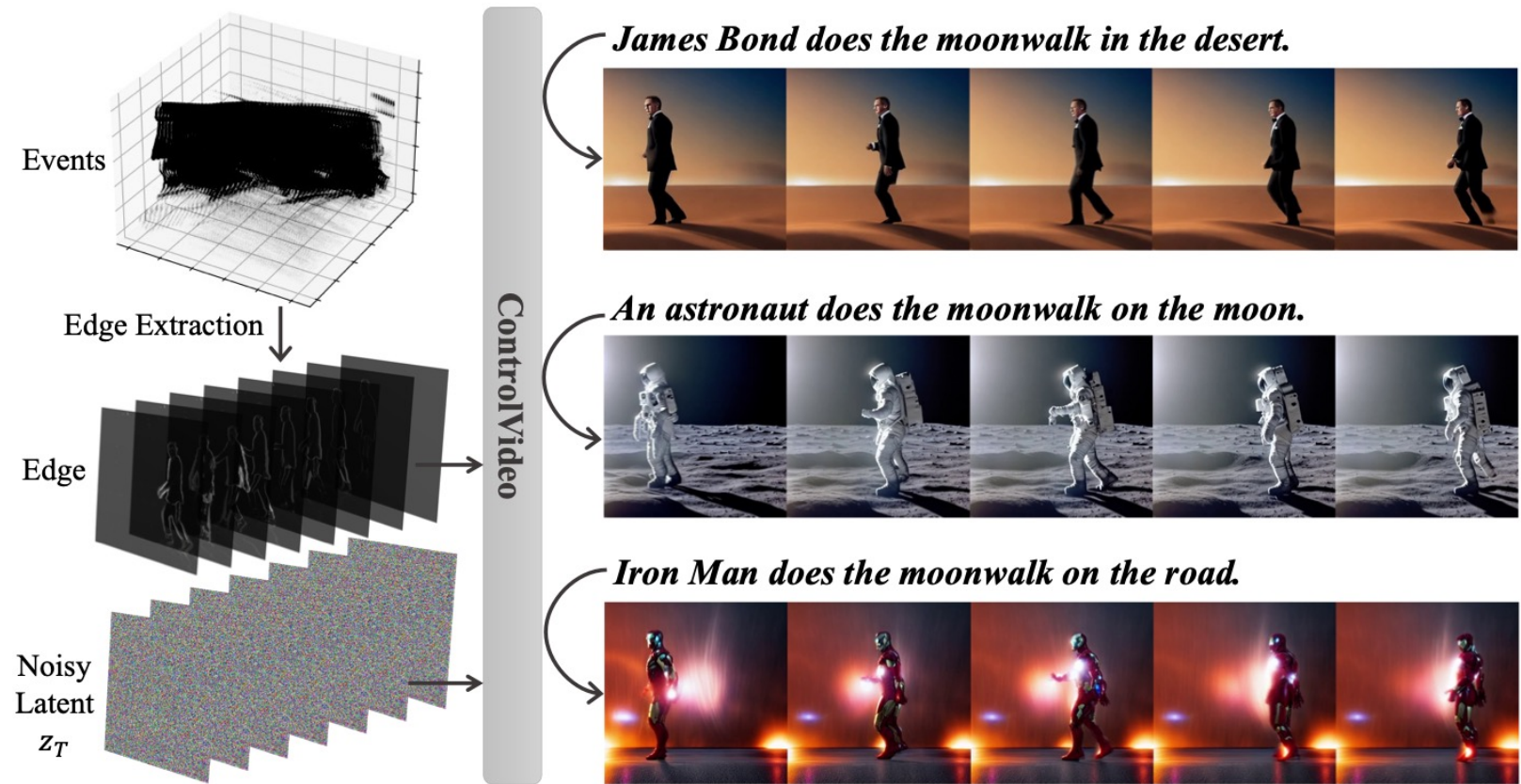
- Superior performance
- Unsupervised (training-free)
- Controllable (text-conditioned)



A girl wearing glasses is playing the violin.

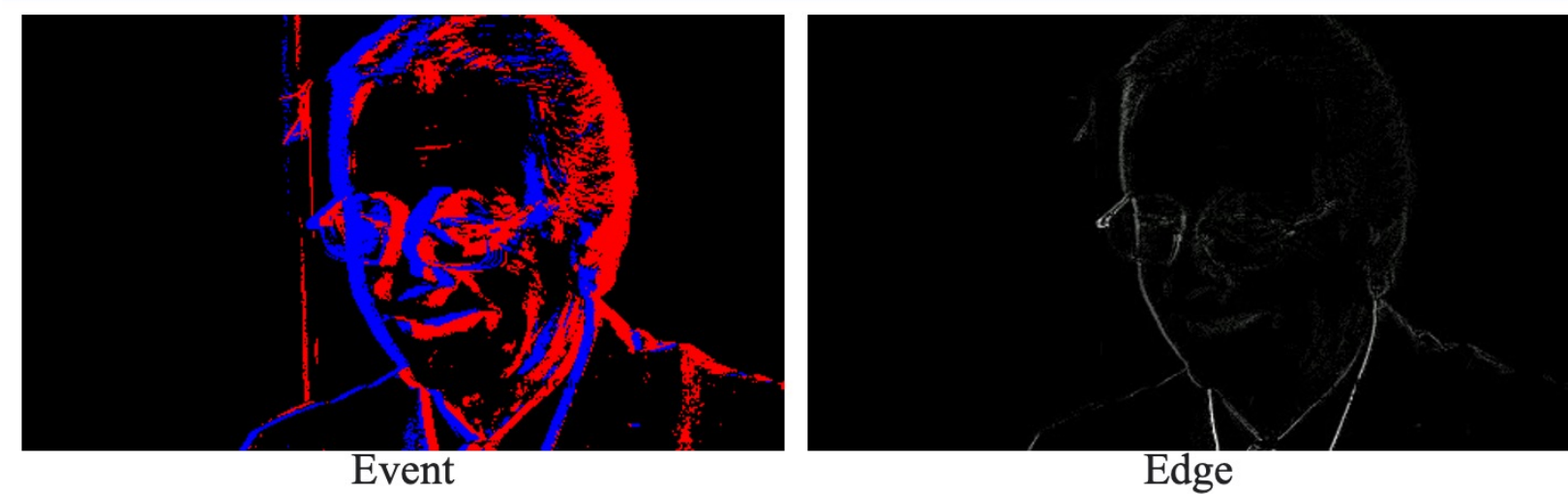


Method



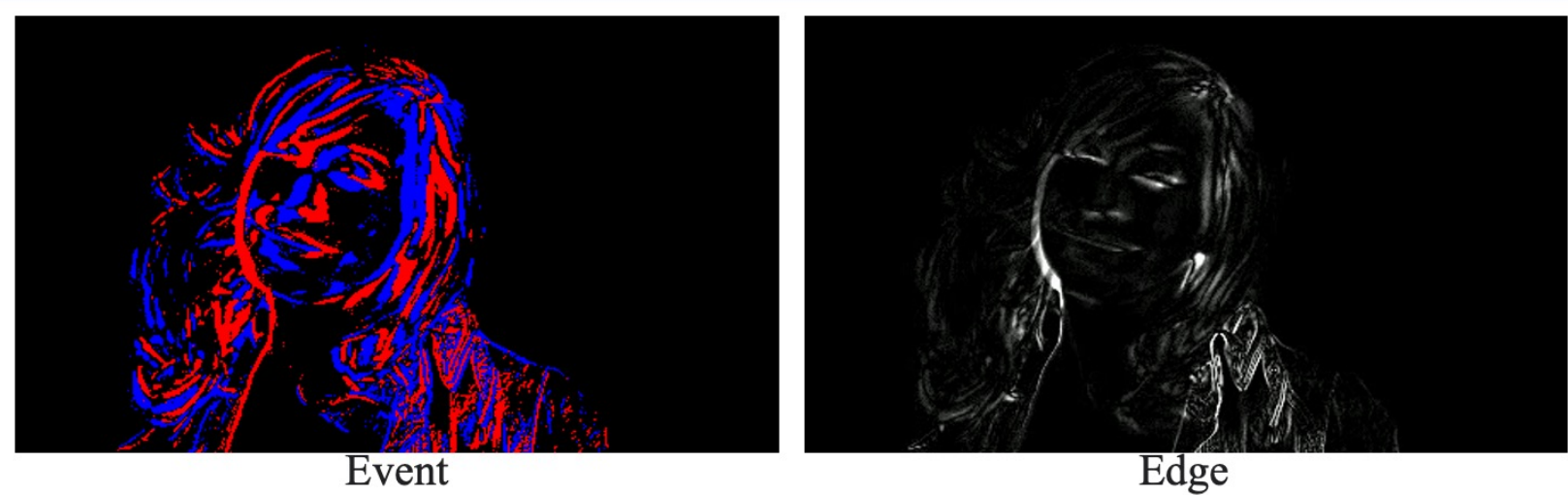
Our project employs neuromorphic cameras to capture high dynamic range, high temporal resolution, yet energy-efficient and sparse event data, enabling interactive and versatile video generation from textual input, allowing users to freely imagine and create the content they desire.

Experiment



Event

Edge



Event

Edge



"An old man wearing a glass, **cartoon.**"

"An old man wearing a glass, **laughing.**"

"An old man wearing a glass, **oil painting.**"



"A girl with golden hair, **crying.**"

A girl with golden hair, **smiling.**"

"A girl with long hair, **movie style.**"

Experiment