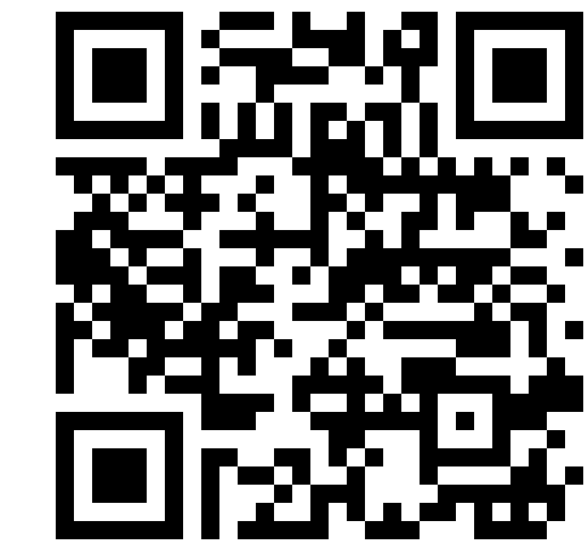




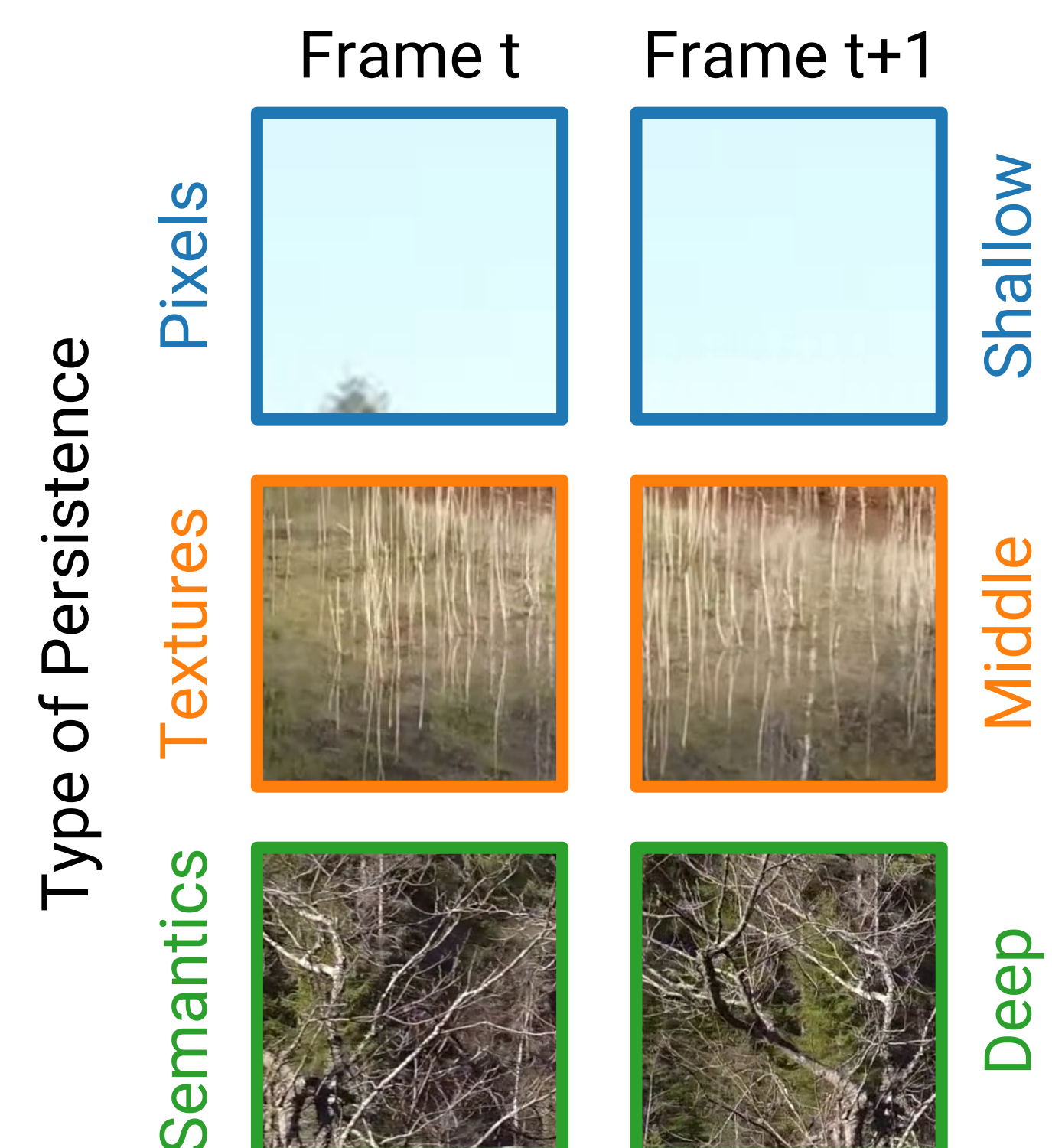
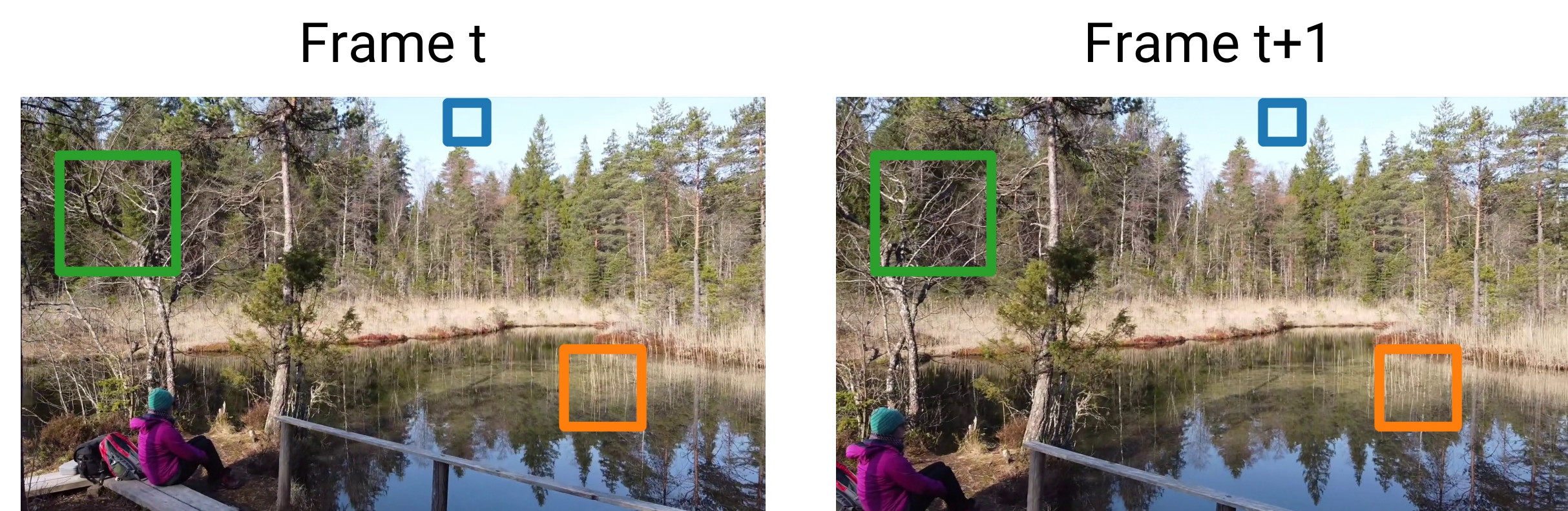
Event Neural Networks

Matthew Dutson, Yin Li, and Mohit Gupta
University of Wisconsin-Madison

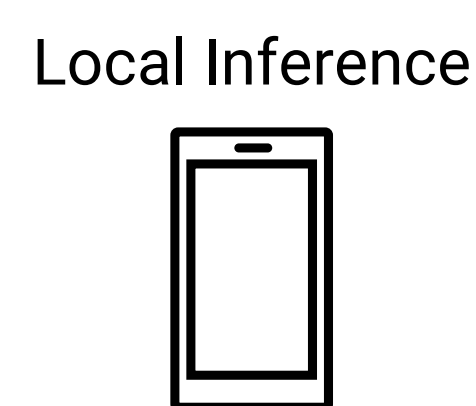
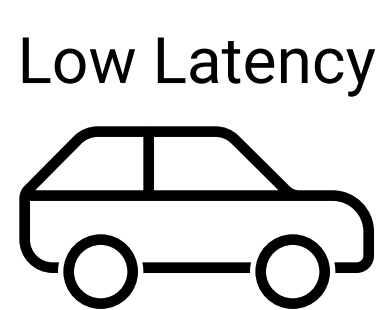
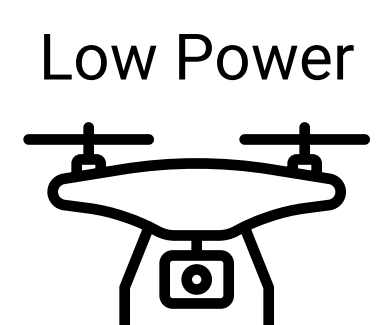
Webpage



Leveraging Visual Persistence

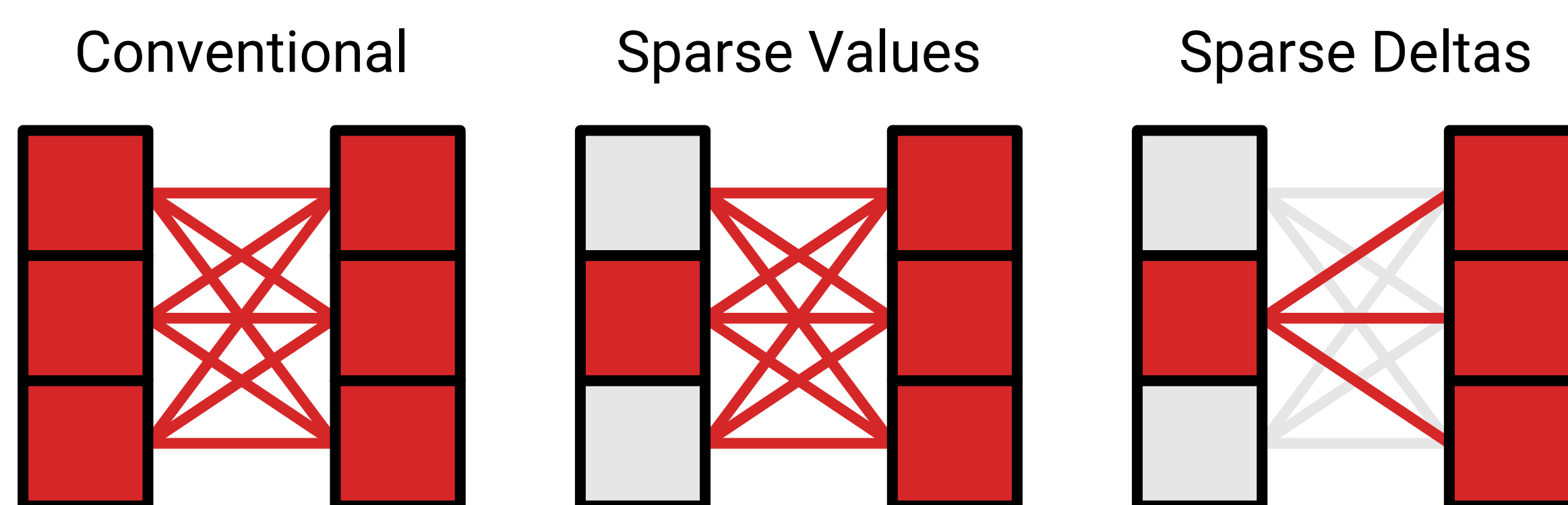


Applications



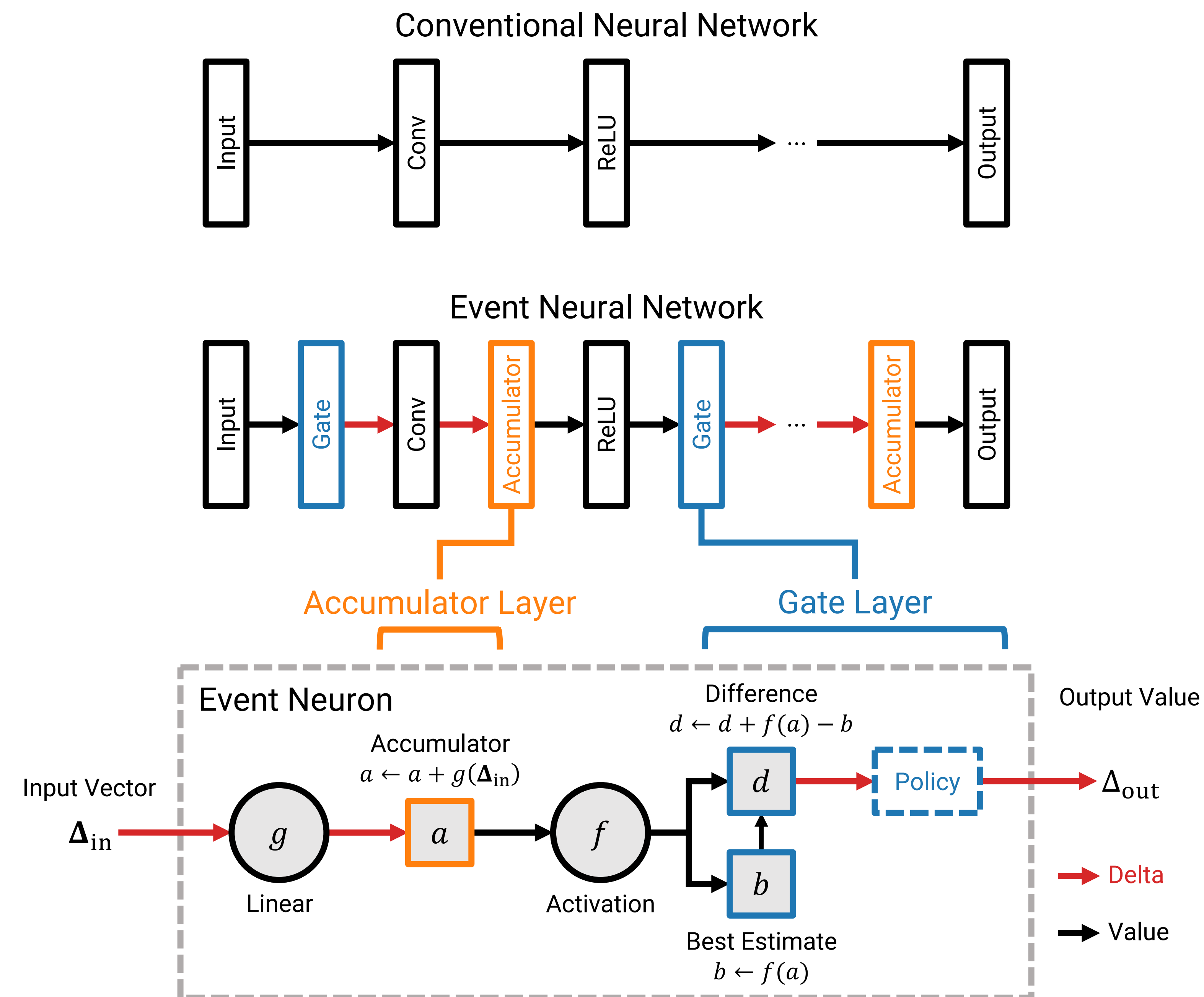
Goal: detect and leverage persistence across many levels of visual complexity.
Avoid wasteful reprocessing of unchanged regions.

Sparse Delta Transmission

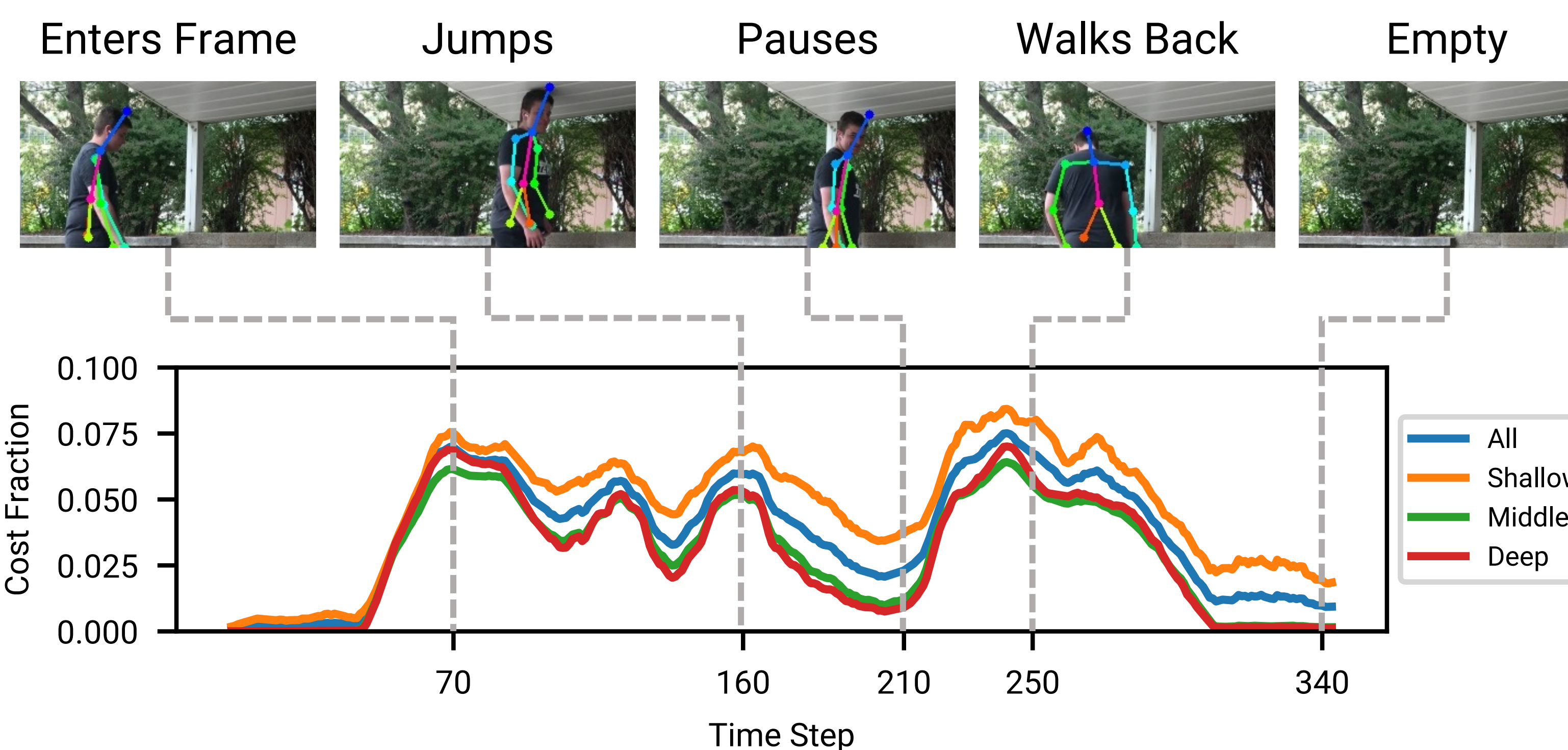


Neurons only transmit when there has been a significant change in their activation.
Transmit deltas to avoid unnecessary downstream computation.
This idea has recently been explored in [1] and [2].

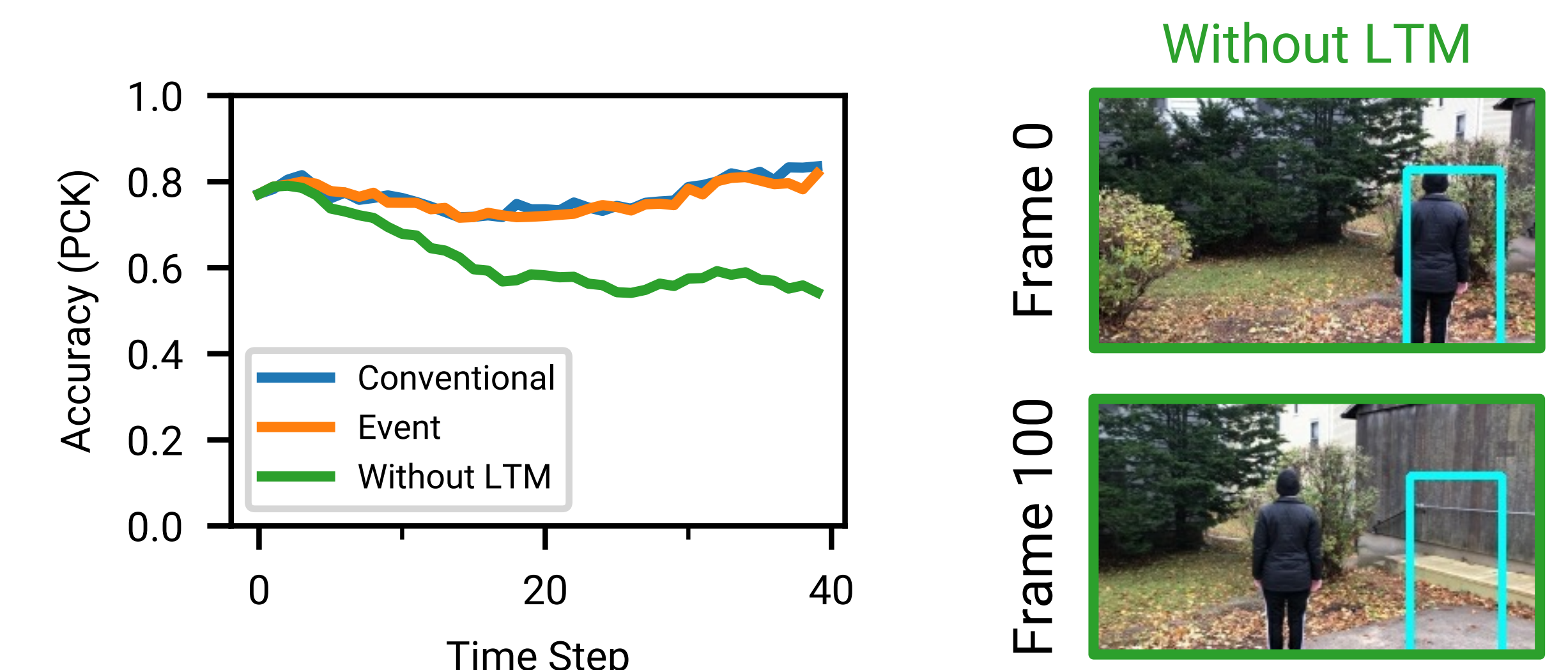
Event Neural Networks



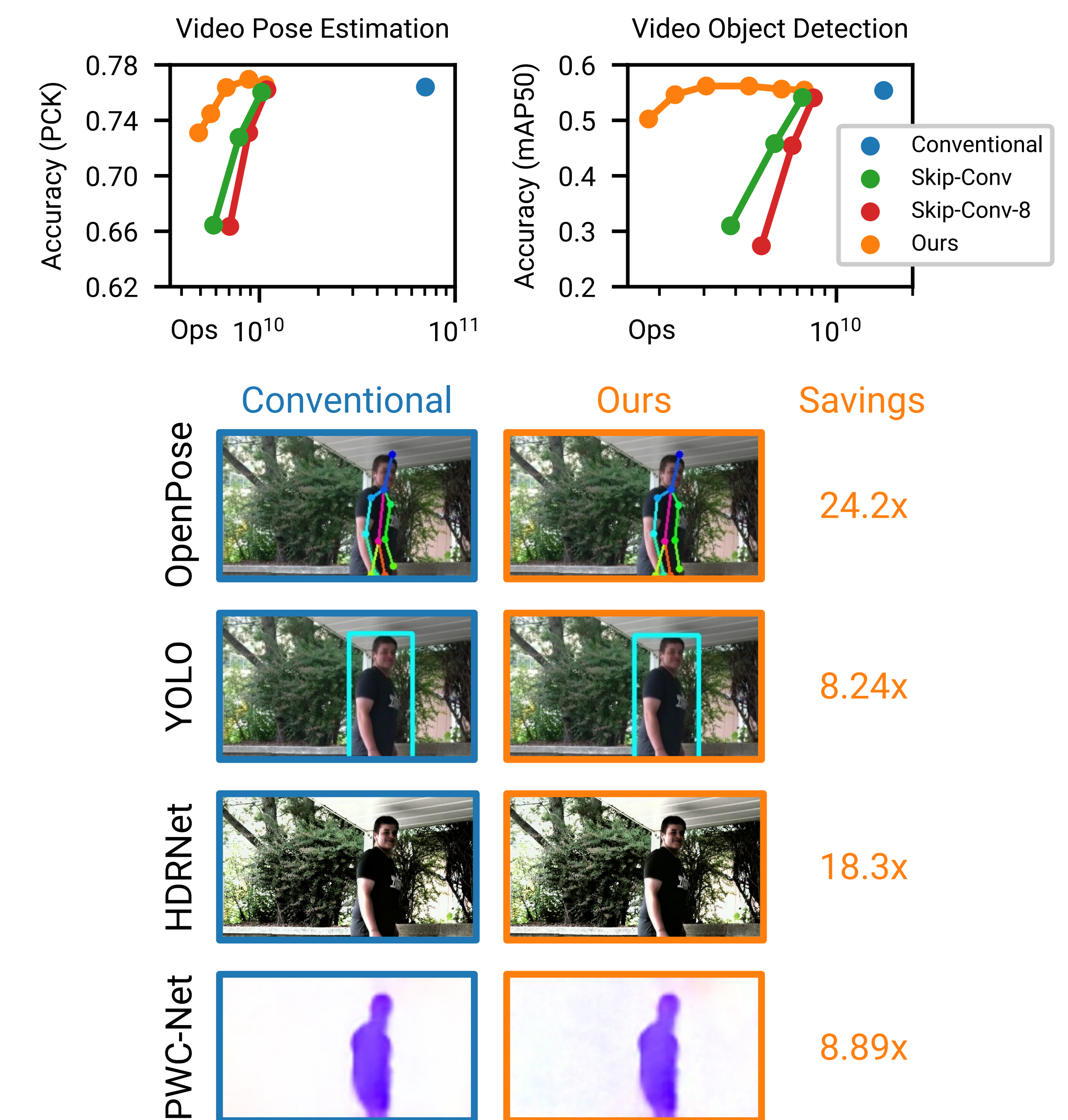
Adaptivity



Long-Term Memory (LTM)



Computation Savings



[1] Habibi et al. Skip-Convolutions for Efficient Video Processing. CVPR 2021.
[2] Parger et al. DeltaCNN: End-to-End CNN Inference of Sparse Frame Differences in Videos. CVPR 2022.