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SkipW: Resource adaptable RNN with strict upper computational limit

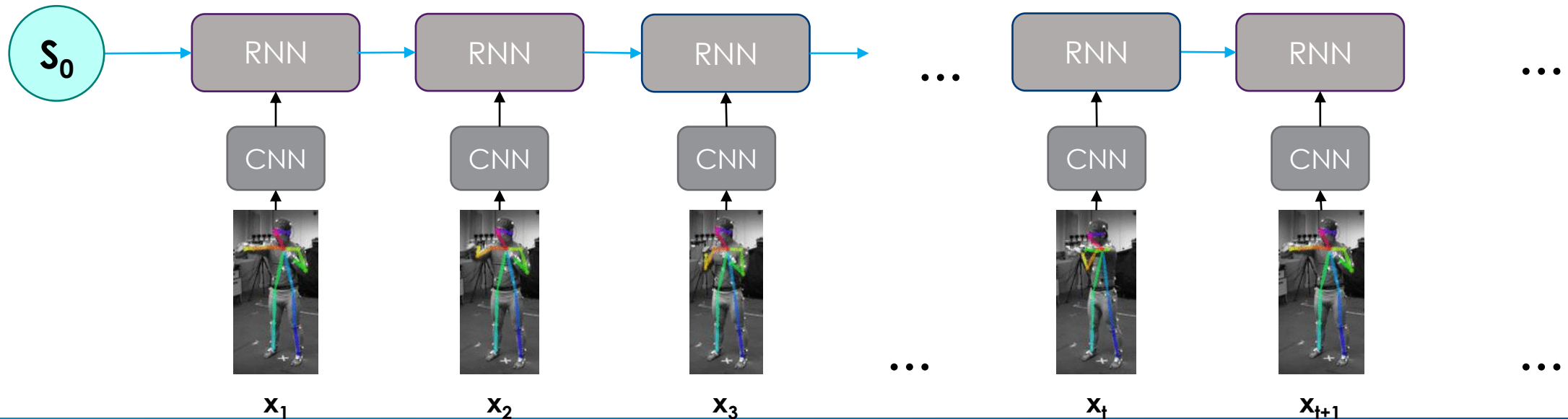
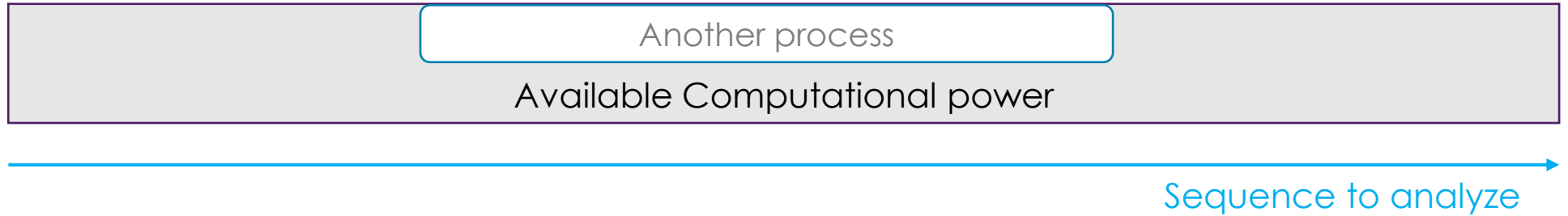
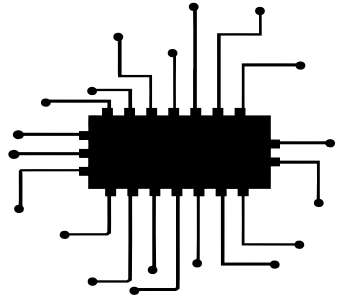
Tsiry Mayet, Anne Lambert, Pascal Le Guyadec, Françoise Le Bolzer & François Schnitzler

ICLR 2021

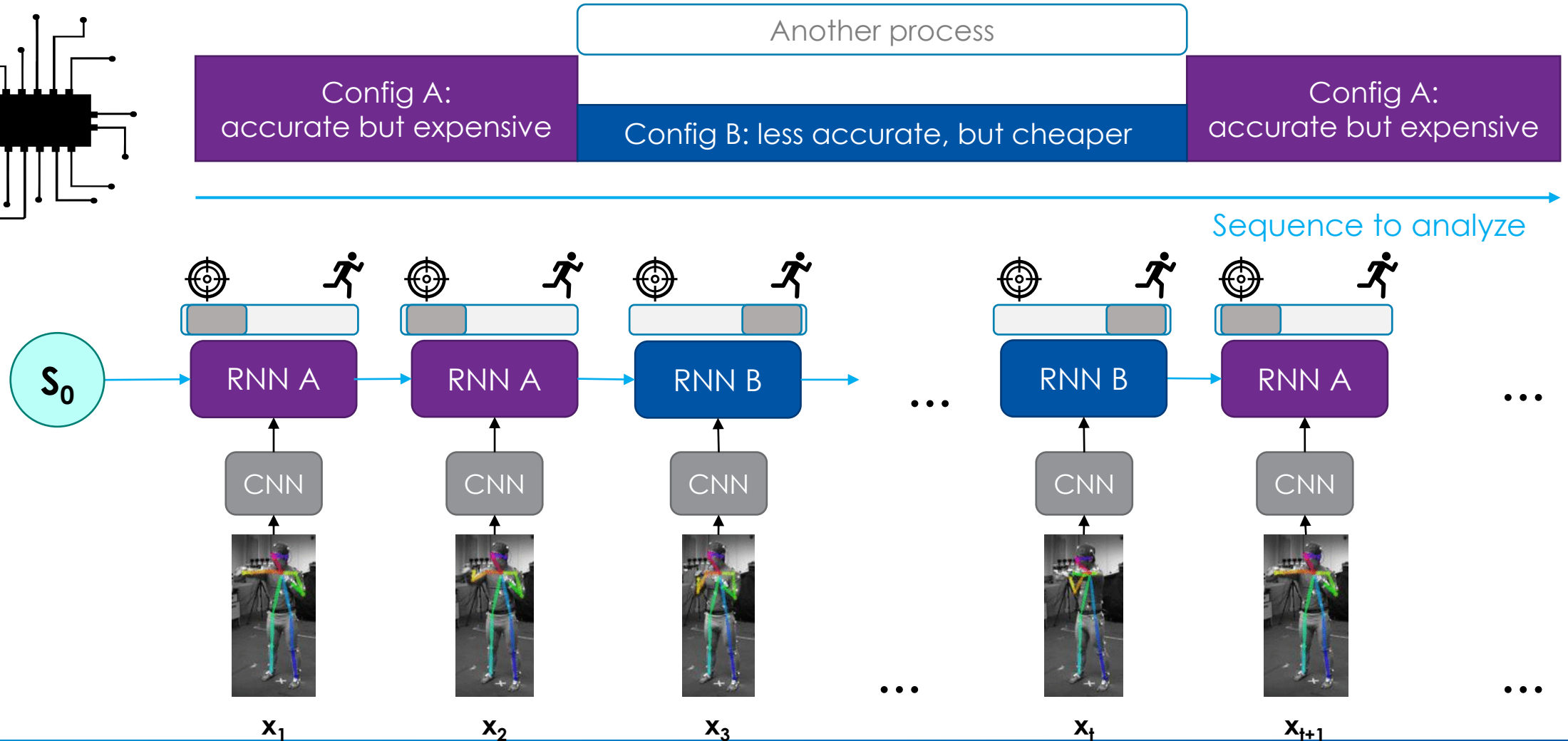
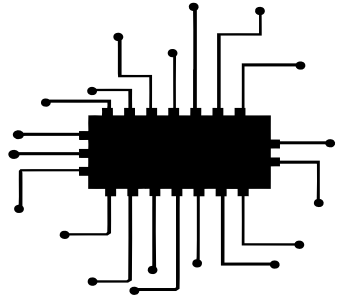


interdigital™

Our problem: Running RNN with varying computational power



Our solution: we trade accuracy for computations



SkipW: Process max K inputs out of L to strictly limit computation

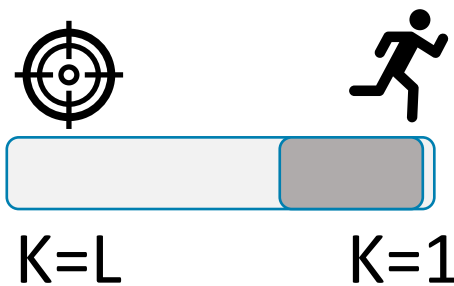
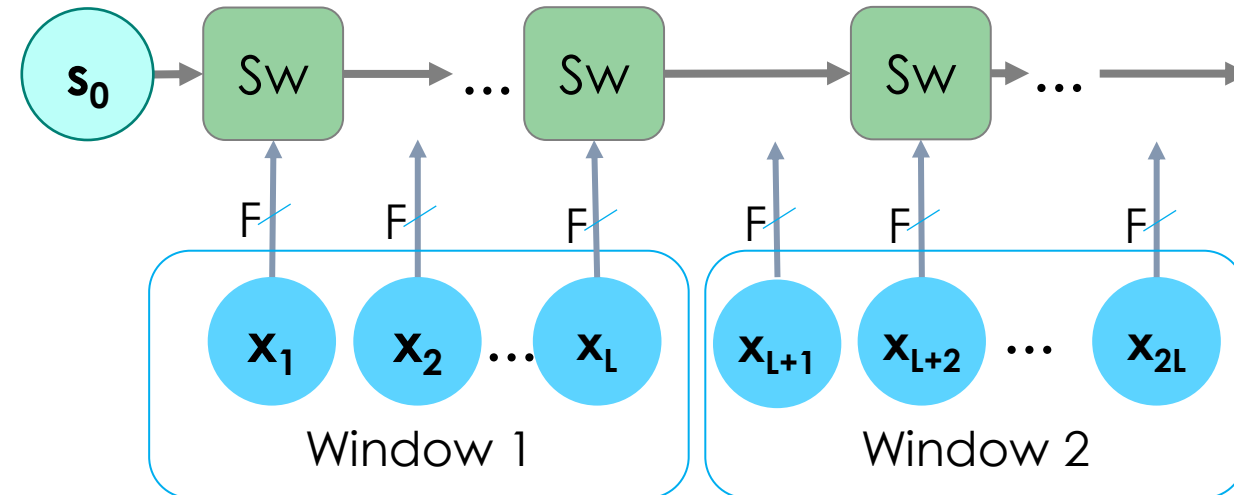
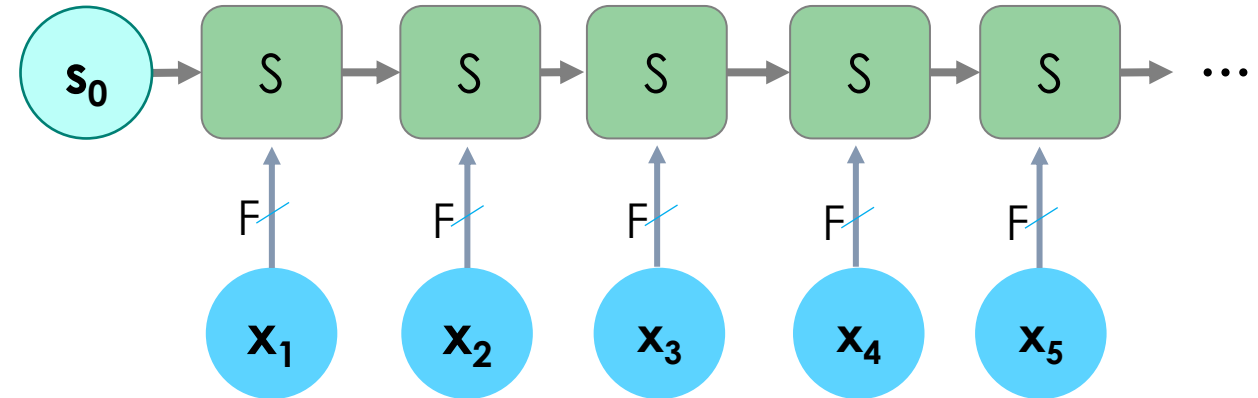


RNN

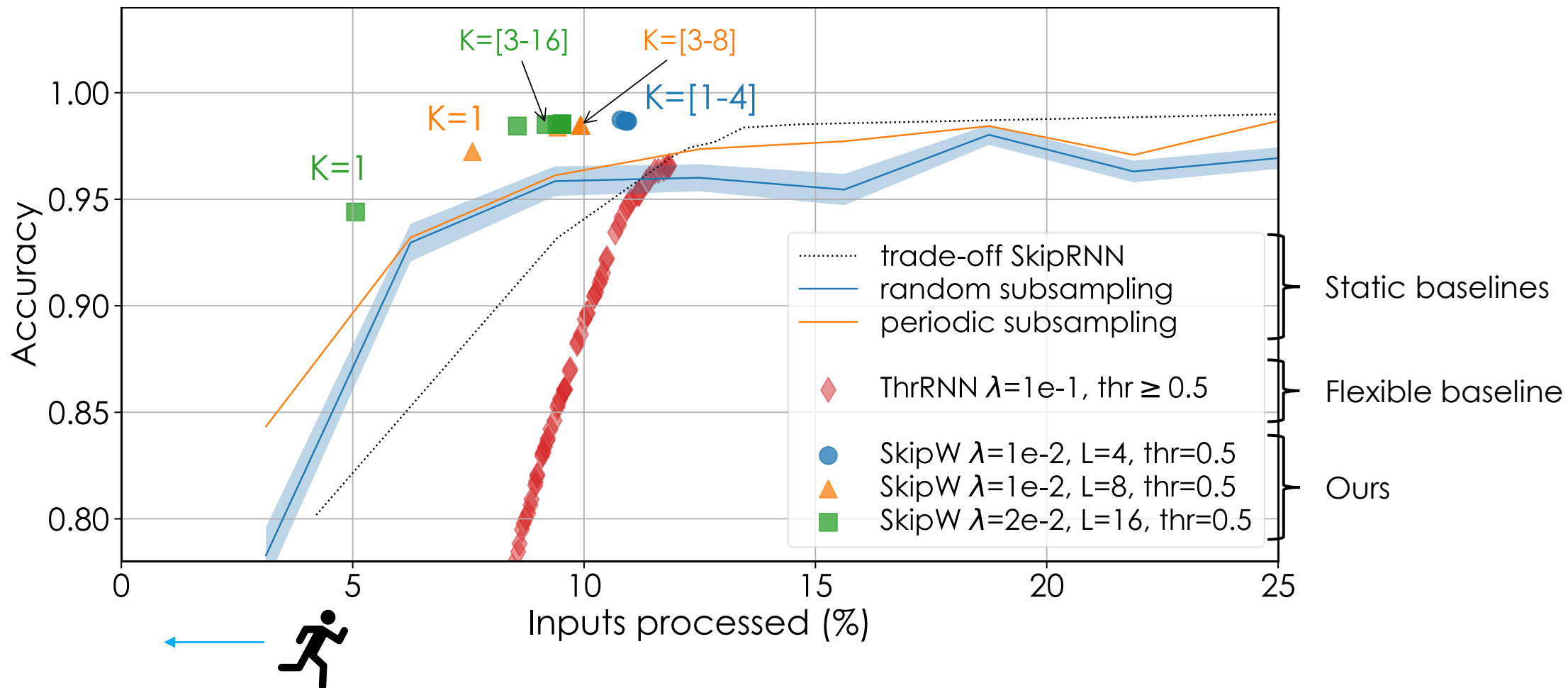
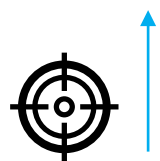
- Process all inputs

SkipW

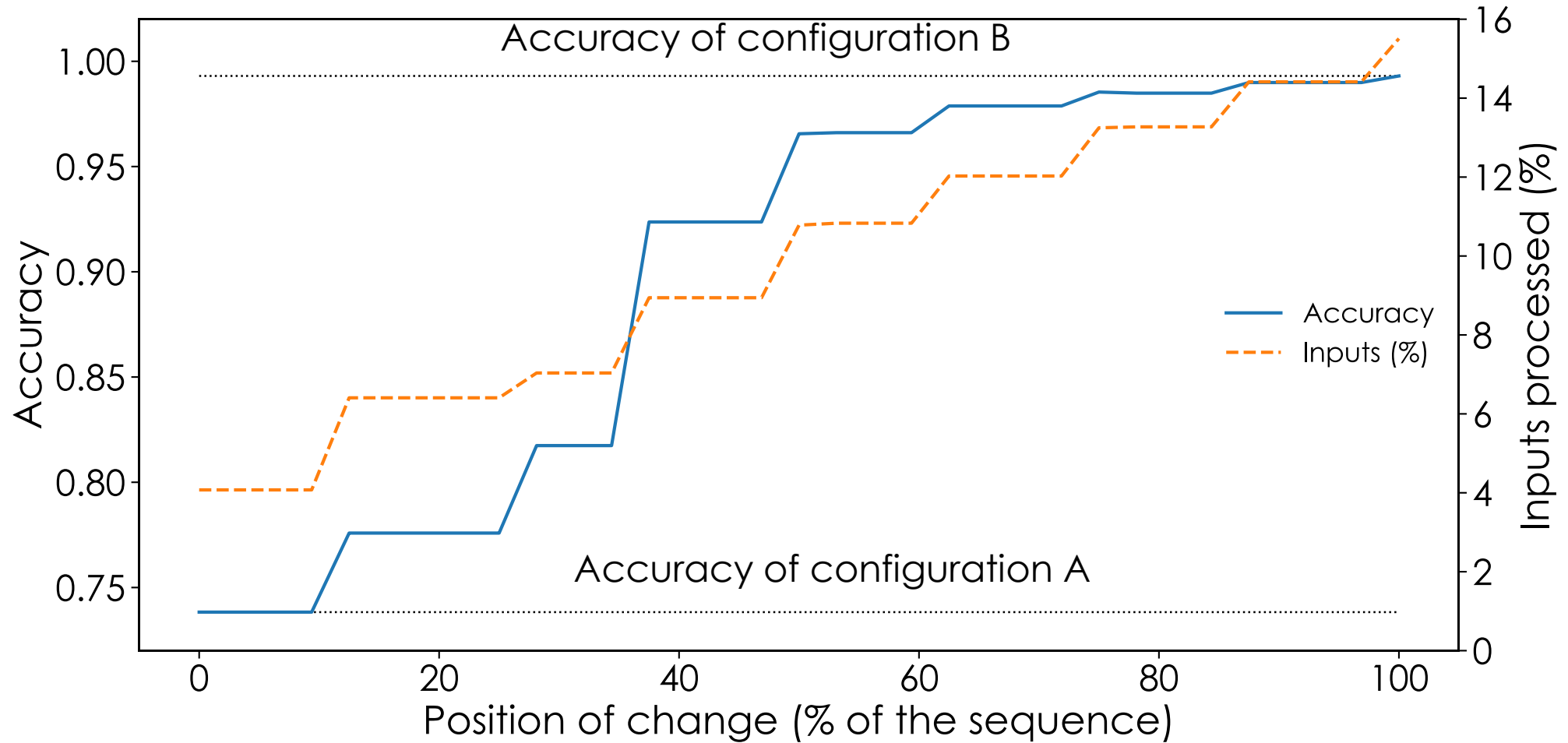
- Decide on L next inputs at the beginning of a window
 - Compute weights, discard if low, keep top K inputs.
- Adapt K to change tradeoff



SkipW learns good tradeoffs.



Seamless transition inside a sequence



SkipW can also save energy.

