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Video Recoloring via Spatial-Temporal Geometric Palettes

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快手

GEORGE
MASON
UNIVERSITY



Motivation

- Palette-based image recoloring is intuitive and simple



- Can we extend it to recolor a video?

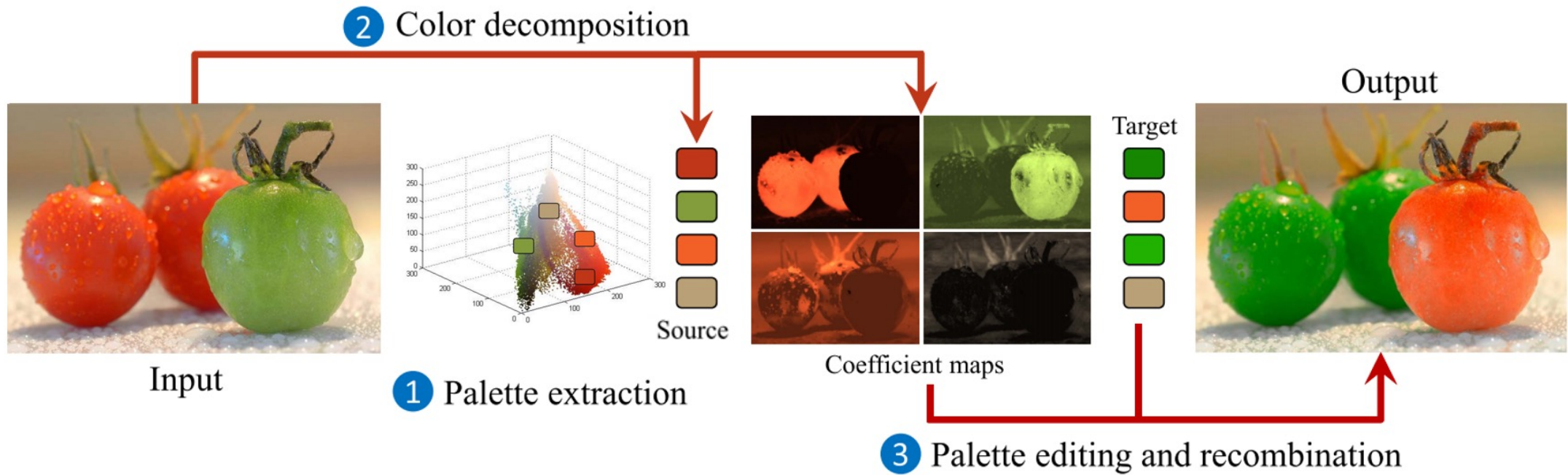
Challenge: The palette can change over time!



Related work

- Clustering-based methods

- [Chang et al. 2015; Nguyen et al. 2017; Zheng et al. 2017]



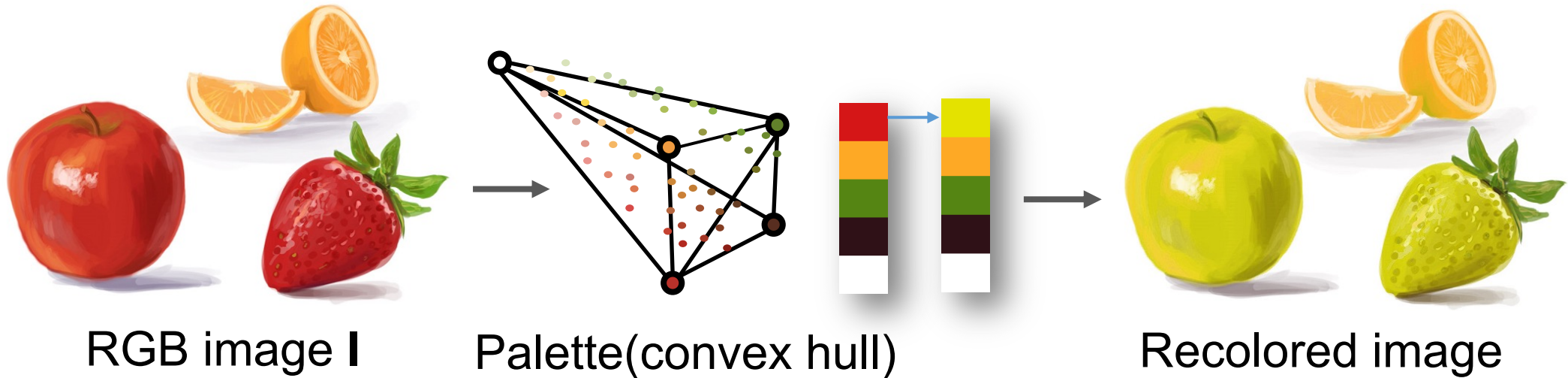
Palette-based image recoloring using color decomposition optimization [Zheng et al. 2017]

Related work



- Convex hull-based methods

- [Tan et al. 2017; Tan et al. 2018; Wang et al. 2019]

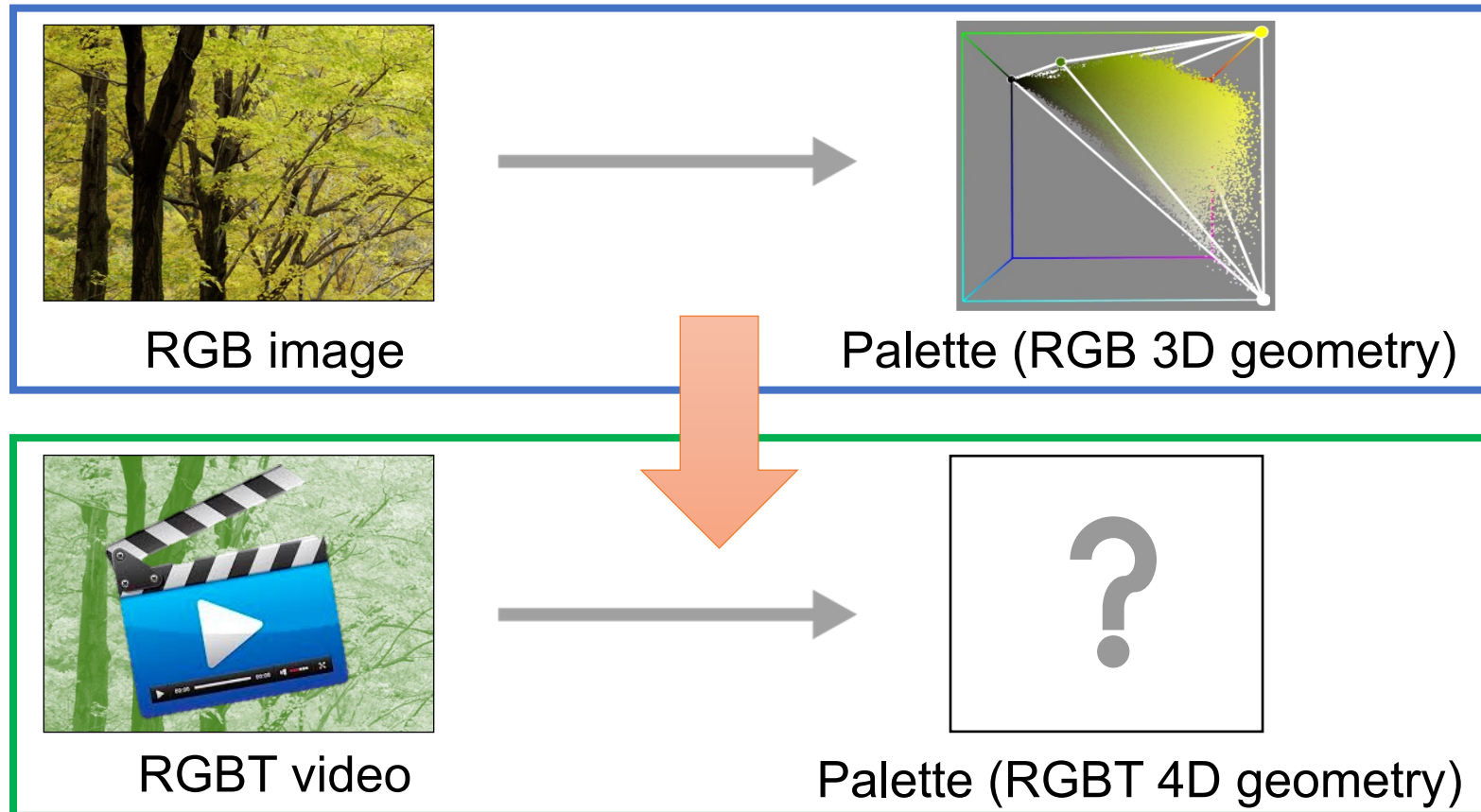


An improved geometric approach for palette-based image decomposition and recoloring [wang et al. 2019]

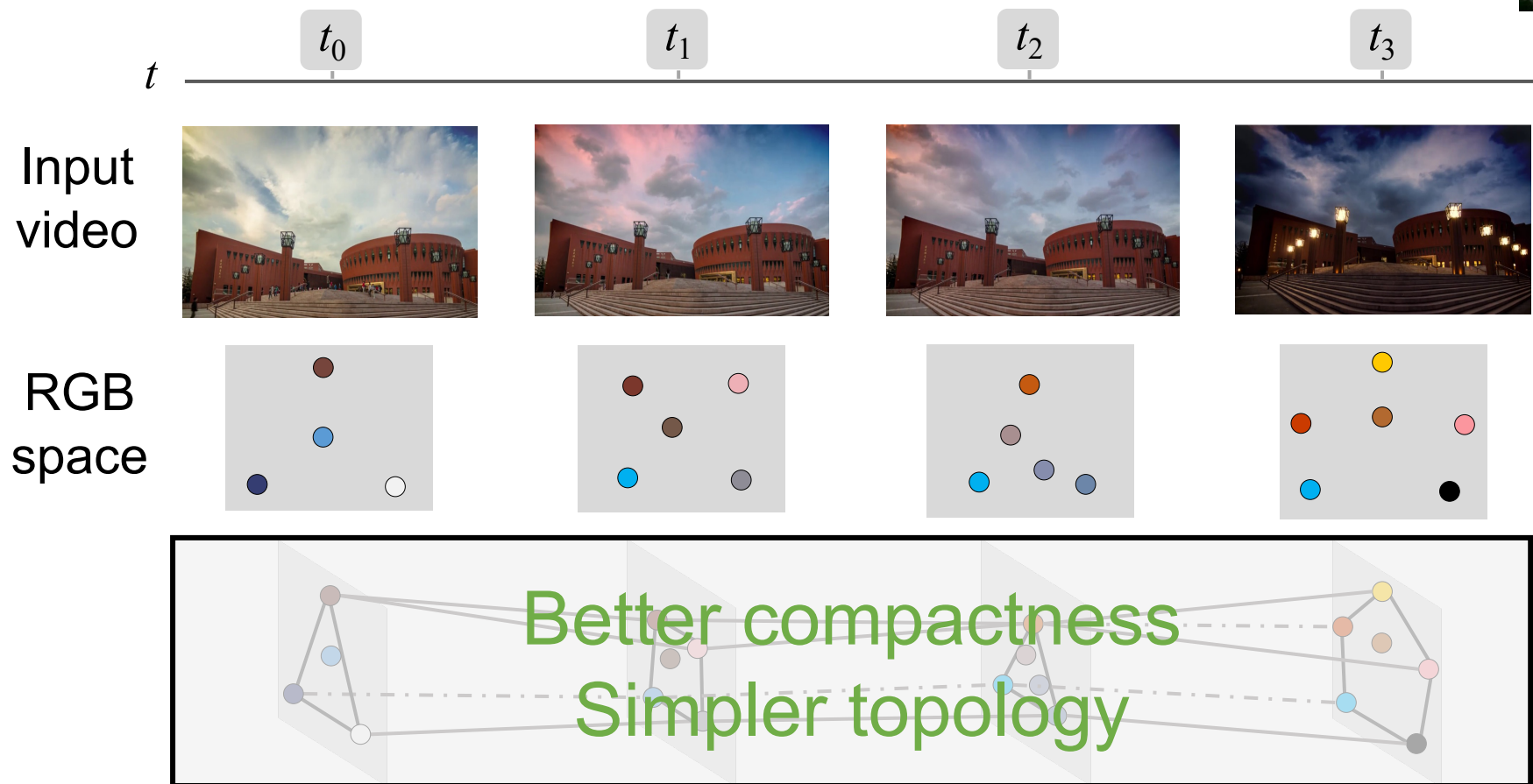
Our main idea



- Extend the convex hull-based image recoloring to video scenarios

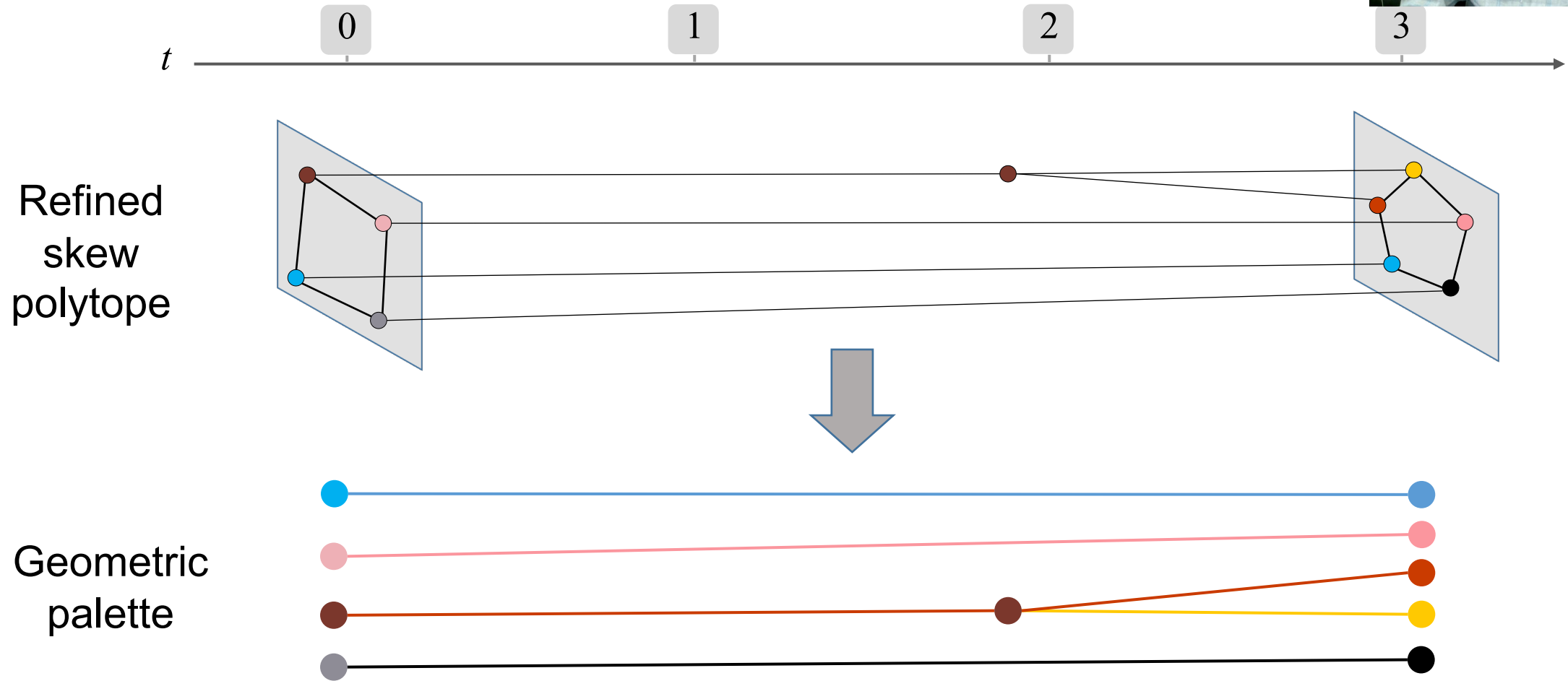


Choices of RGBT 4D geometry



RGBT skew polytope

Output the geometric palette

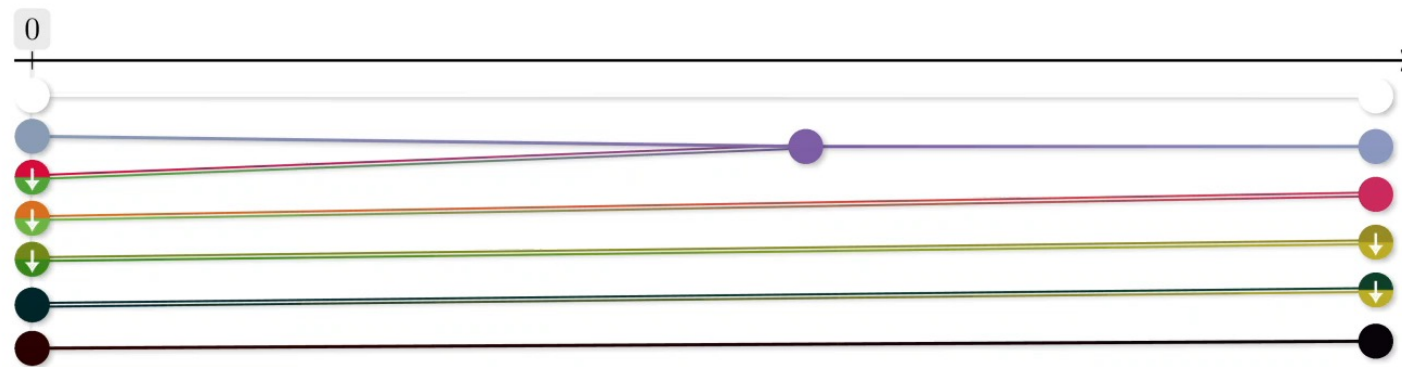


Results



Input Video

Output Video (Ours)



4D Geometric Palette

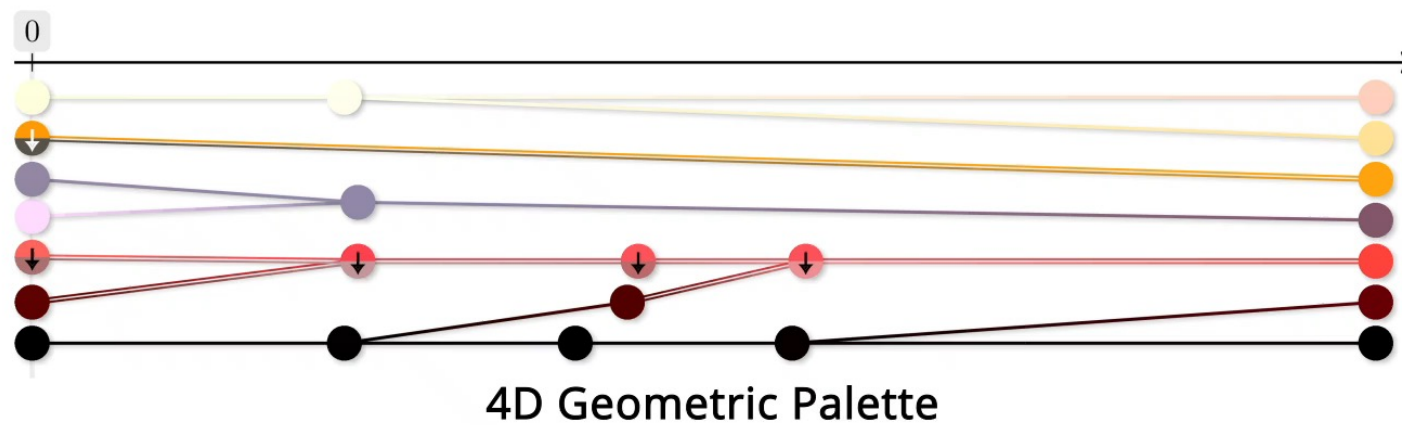
Results



Input Video



Output Video (Ours)



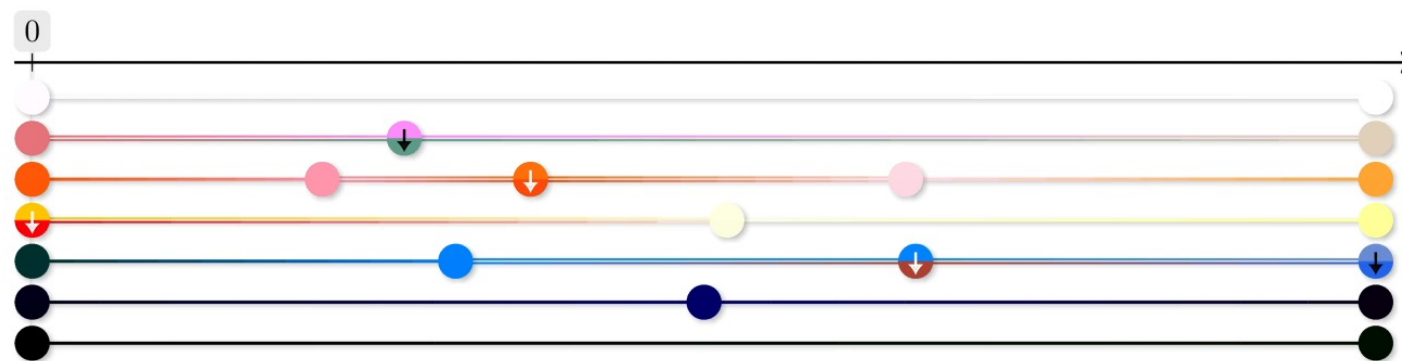
Results



Input Video



Output Video (Ours)



4D Geometric Palette

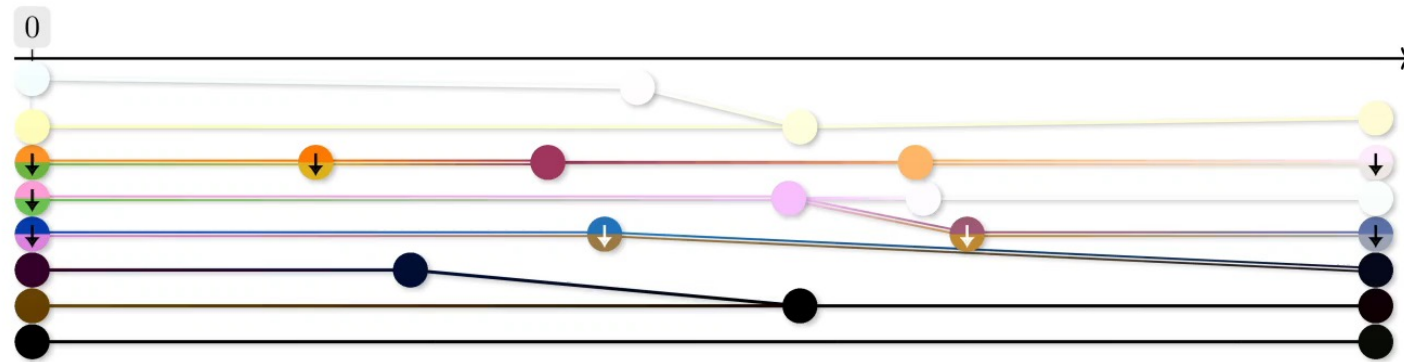
Results



Input Video



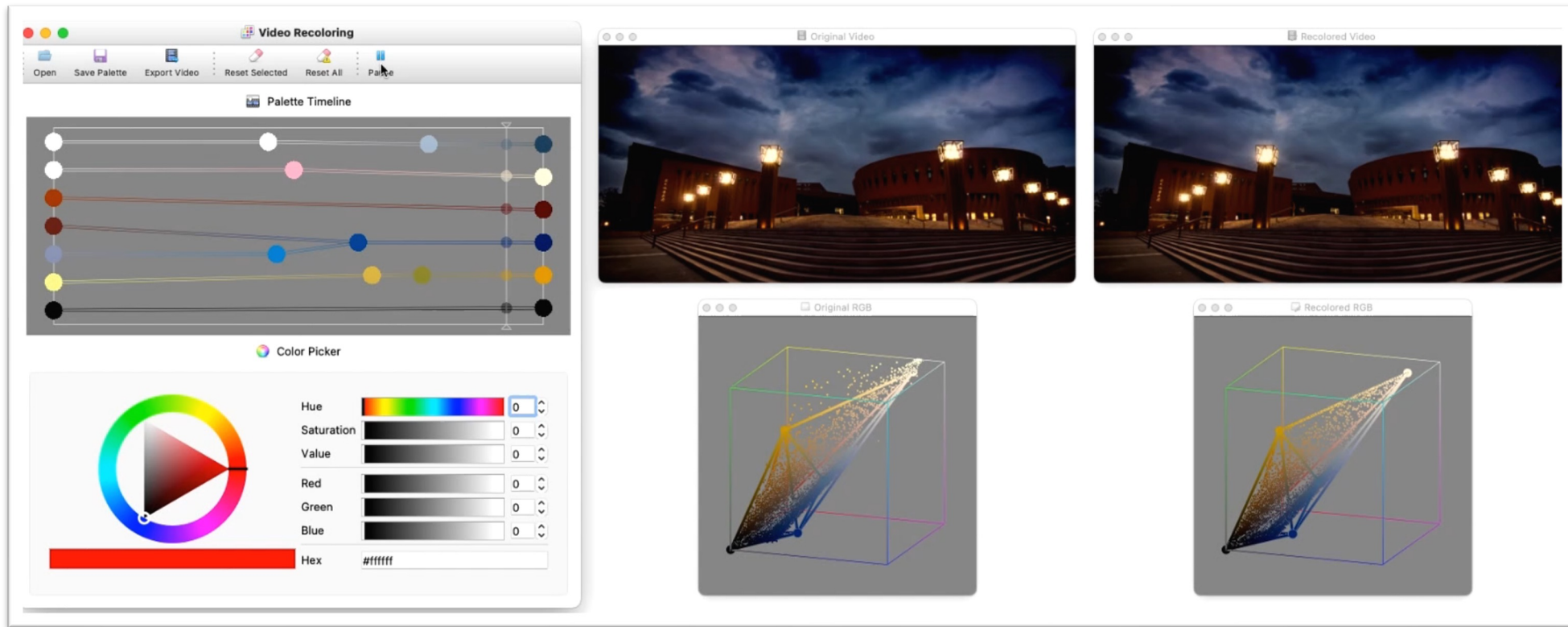
Output Video (Ours)



4D Geometric Palette

Conclusion

- We proposed the first palette-based video recoloring
- Our method produces natural, artifact-free recoloring



Thank You!



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