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Status Input
Title [MPEG-I Visual] Color-corrected IntelFrog sequence
Author Adrian Dziembowski, Sławomir Rózek, Dawid Mieloch, Marek Domański

1 Introduction

In this document we propose color-corrected input views for IntelFrog sequence [W18789].

The input views were processed using color refinement algorithm [M51583] in order to increase temporal and inter-view color consistency.

2 Color characteristics

Problem of lack of temporal consistency of color characteristics is presented in the top row of Fig. 1. For some frames the change of colors is extreme.

This problem is solved for proposed color-corrected views (bottom row of Fig. 1).



Fig. 1. v13: frame 100 (left) and 232 (right) before (top row) and after (bottom) color refinement.

In order to present significant reduction of temporal variance of color characteristics, we have calculated mean luma and chroma value in arbitrarily chosen 64×64 block. In order to show the influence of temporally changing color characteristics, the chosen block had to contain only the static background. The position of that block was set to (1024, 0) for views 1 to 7 and (640, 0) for views 8 to 13. Of course, in each view the different fragment of the background is visible within that block.

Figs. 2-4 present temporal variance (over all 300 frames) of luma (Fig. 2) and both chromas (Figs. 3 and 4) before (blue line) and after (orange line) color refinement. Results for all the input views (1 – 13) are presented. The scale for all the charts within one figure is fixed.

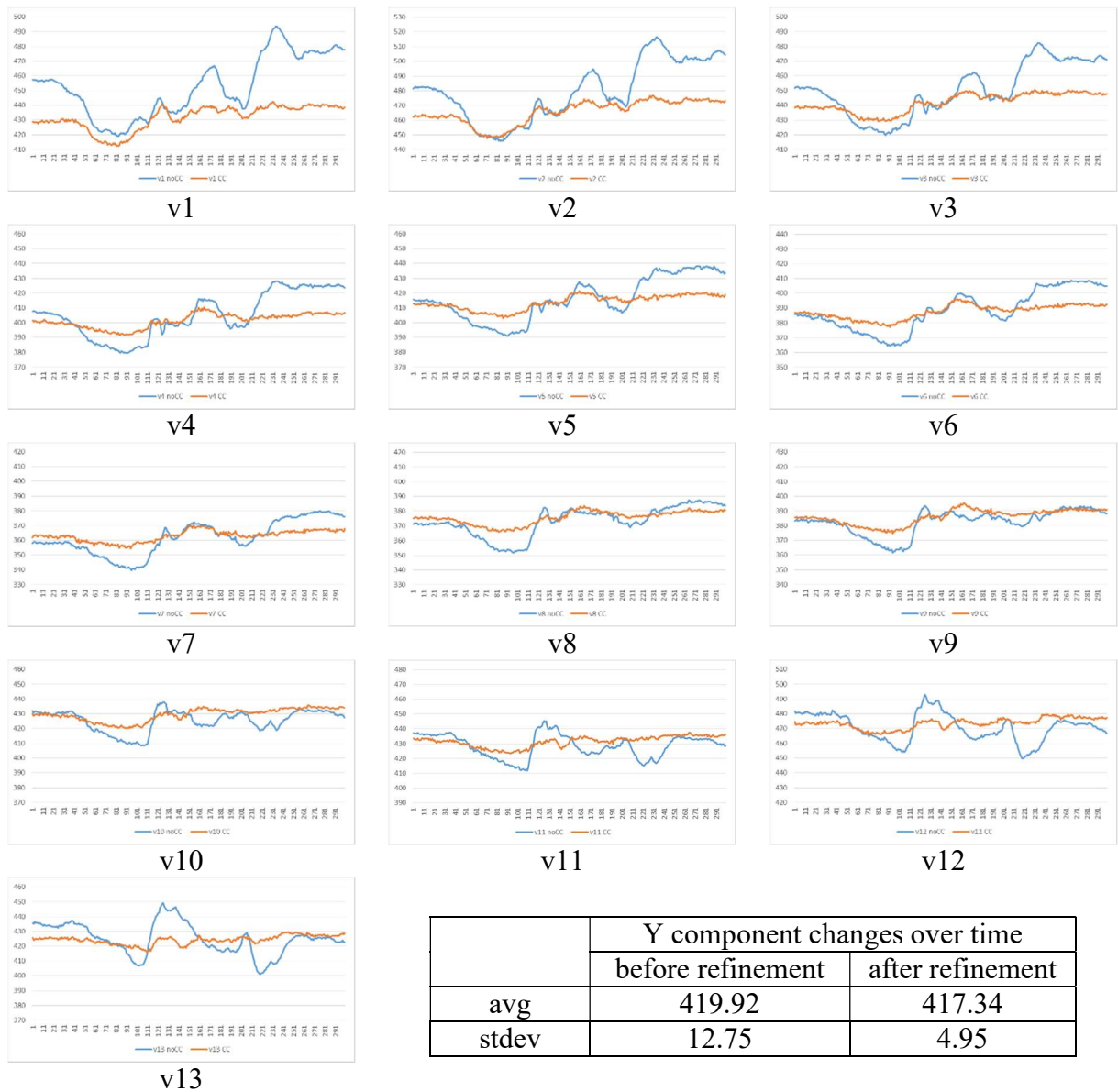
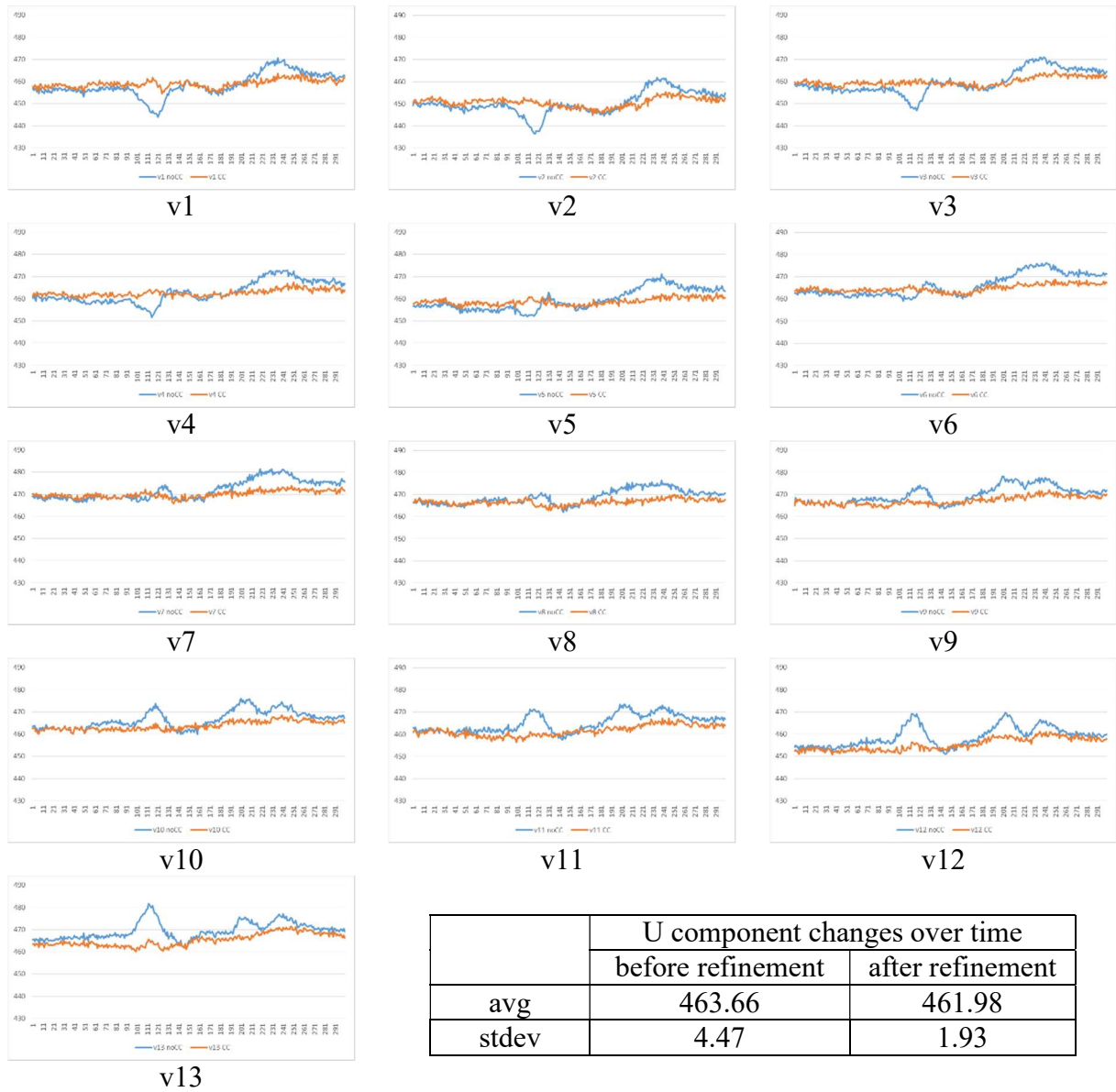


Fig. 2. Y component changes over time.



	U component changes over time	
	before refinement	after refinement
avg	463.66	461.98
stdev	4.47	1.93

Fig. 3. U component changes over time.

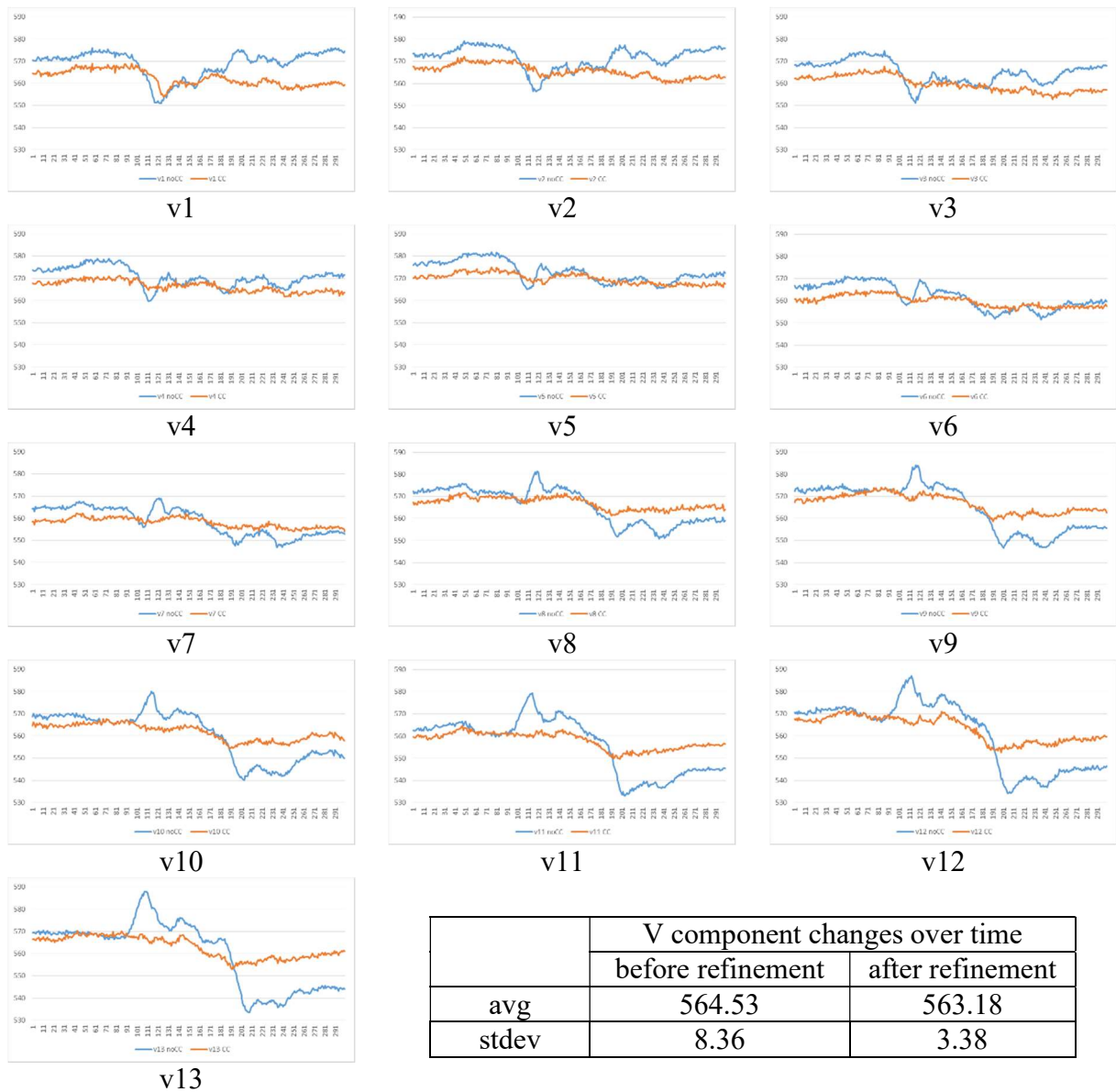


Fig. 4. V component changes over time.

The second problem (inter-view consistency) affects the quality of the synthesized virtual view. If patches were projected from different input views, the color artifacts in the virtual view may appear (Fig. 5, left). This effect is much less visible for proposed input views (Fig. 5, right).

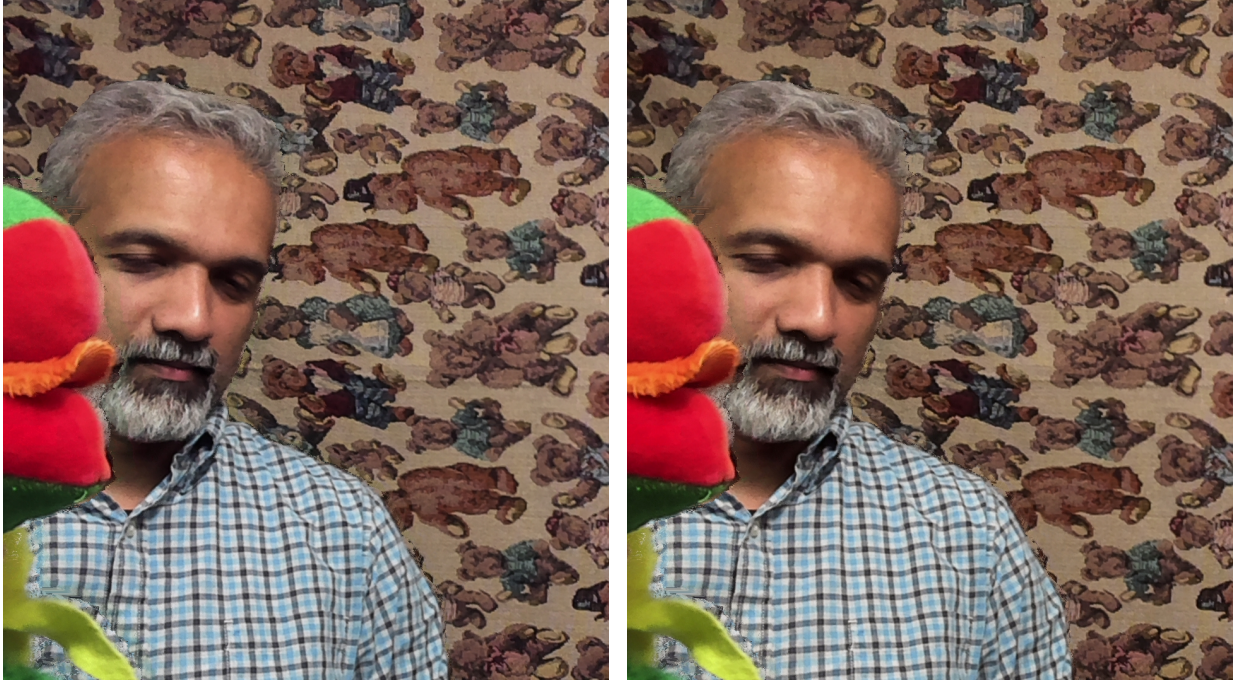


Fig. 5. Virtual view synthesized using original input views (left) and refined ones (right).



Fig. 6. Virtual view synthesized using original input views (left) and refined ones (right).

3 Recommendations

We recommend to substitute input views for IntelFrog sequence by proposed ones for all MPEG-I Visual activities.

4 Acknowledgement

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5 References

- [W18789] J. Jung, B. Kroon, J. Boyce, “Common Test Conditions for Immersive Video”, ISO/IEC JTC1/SC29/WG11 MPEG/N18789, October 2019, Geneva, Switzerland.
- [M51583] A. Dziembowski, D. Mieloch, S. Rózek, M. Domański, “[MPEG-I Visual] Color refinement method for Immersive Video”, ISO/IEC JTC1/SC29/WG11 MPEG/M51583, January 2020, Brussels, Belgium.