**INTERNATIONAL ORGANISATION FOR STANDARDISATION**

**ORGANISATION INTERNATIONALE DE NORMALISATION**

**ISO/IEC JTC1/SC29/WG11**

**CODING OF MOVING PICTURES AND AUDIO**

**ISO/IEC JTC1/SC29/WG11 MPEG2019/m50602**

**October 2019, Geneva, CH**

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| **Source Interdigital** |
| **Status Input contribution** |
| **Title New pose traces** |
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# **PoznanFencing pose trace proposal**

## Context

A new content has been introduced at last Goeteborg MPEG127 meeting [1]. The rig of cameras is an arc of 5 pairs (vi, vi+1) of cameras disposed in a large arc looking at fencing individuals, with the i index ranging on [0,2,4,6,8]. The figure 1 represents in white the cameras, in red the viewport as defined in the poznanfencing.json format.

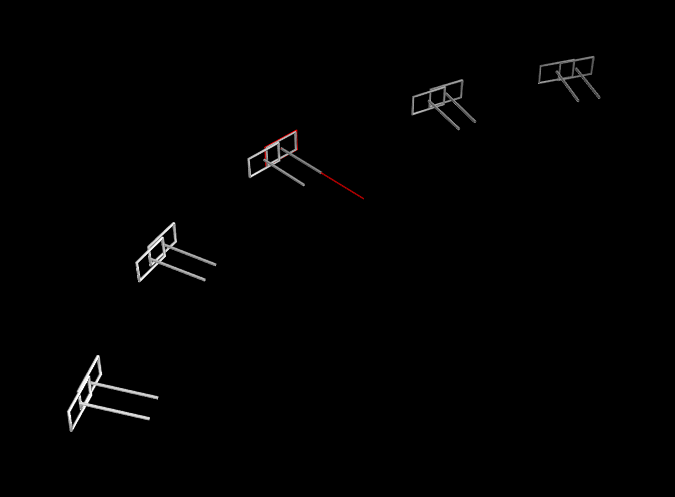


Fig 1: camera rig for PoznanFencing

However, no pose trace had been proposed for this content.

## Synthesis of 3 pose traces

The design option has been to interpolate between positions close to the cameras v0, v2, v4, v6, v8 through 3rd order polynomial interpolation, put in an ordered set:

* V0, V2, V4, V6, V8 for Lp01.csv
* V4, V6, V4, V2, V0 for Lp02.csv
* V4, V6, V8, V6, V4 for Lp03.csv

For each of these navigation step, a small distance is put on purpose. These distance to these cameras position may be as large as 20 centimeters or so.

The direction (yaw, pitch roll) has been an interpolation of the related cameras without any changes.

The results are illustrated on figure 2, 3, 4 for each pose trace, where the arrows illustrates the viewing direction.

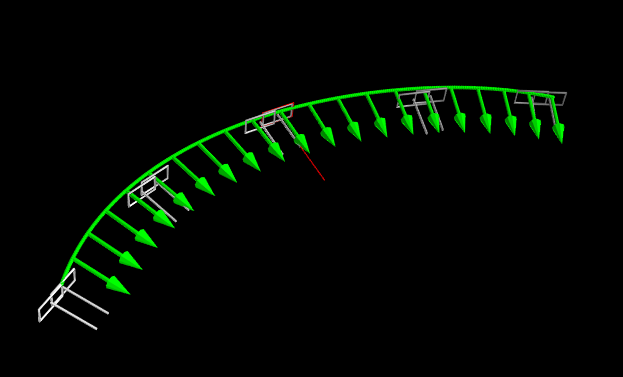


Fig 2: Lp01.csv pose trace

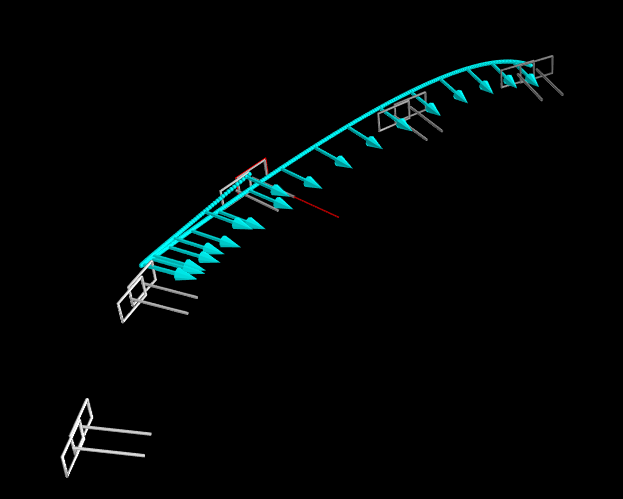


Fig 3 : Lp02.csv

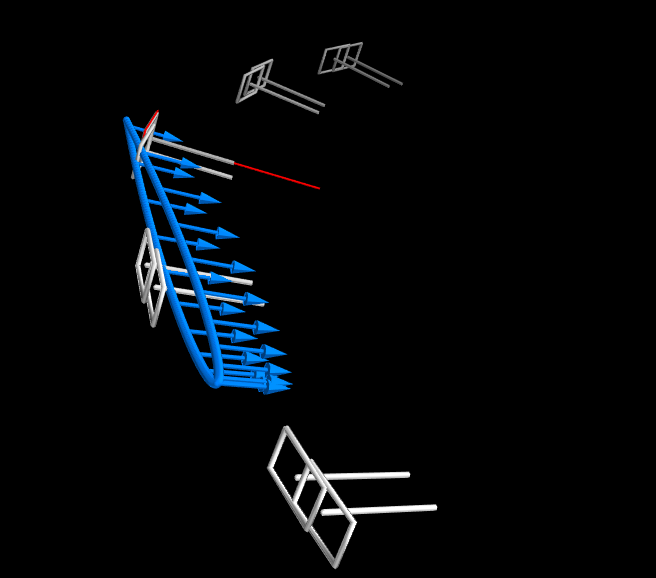


Fig4 : Lp03.csv

## Resources

The following resource are available on MPEG Content server at location MPEG-I/Interdigital/m49961\_MIV\_anchors/PoznanFencing. It includes:

* /csv: the 3 .csv files
* /TMIV2.02\_Pose\_traces: the newly generated posetraces .mp4 videos at the end of TMIV2.02 chain
* /Posetraces\_from\_sources: the pose traces .mp4 videos directly on the all source views

## Comment

The .mp4 videos of the TMIV2.0.2 pose traces are of course terrific to see so far. But even the posetraces from the sources are not good as well, showing that the investigations focus should be put on the synthesizer before to be put on the end to end TMIV chain (in the limitation given by the depth quality).

# **Proposal for a few other posetraces**

## Context

There has been critics on the quality of the TMIV pose traces by persons out of the Video group, and these critics are valid. The reasons for the lack quality are the maturity of the TMIV - something normal at this stage – and the limitation of the current synthesizer. But another reason why some artefacts are visible are related to the fact that some posetraces are outrageously out of the camera rig, putting a too large burden to the inpainting process. The reason is historical, as the pose traces has been done quite in a hurry. Here, we will compare the current pose traces with the nominal conditions, as defined in the CTC [1]

## Changing ClassroomVideo Ap01.csv Posetrace

The CTC table 9 says the following for the intermediate view position ranges:

Spheroid centered at source view v0 eg (0, 0, 0) meter position, with equatorial radius 104 mm and polar distance 60 mm:

But the following figure shows that Ap01 goes much further (+20cm), requiring an hazardous inpainting on some image parts which is quite visible, as illustrated in the next figure.

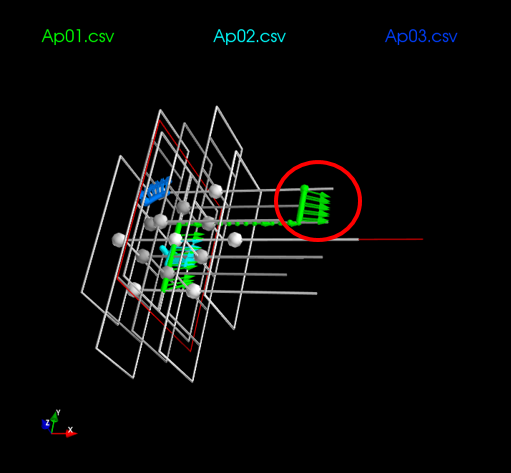


Figure 1: posetrace of Classroom Video



Figure 2: artefacts due to this non nominal position

So we propose to replace with the following pose traces with the same tool that the one used for PoznanFencing, ie forming a suite of navigation points to interpolate in-between:

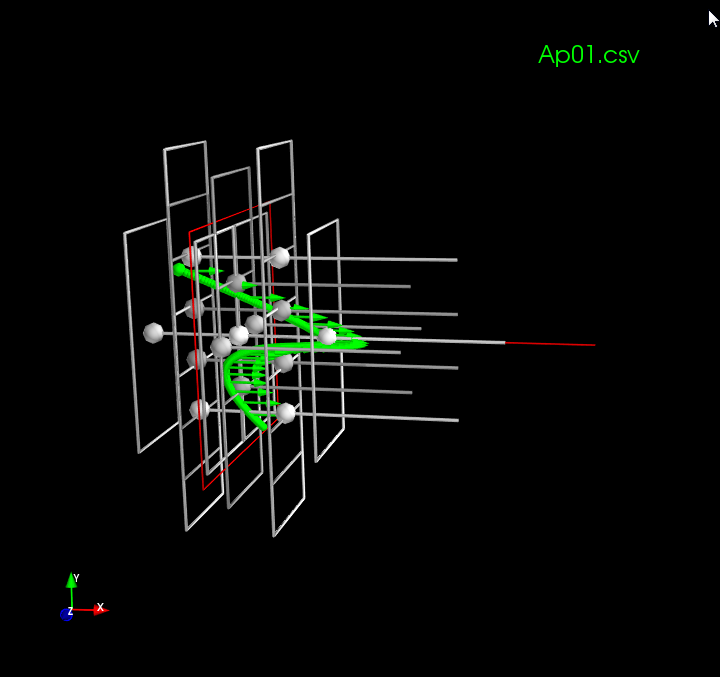


Figure 3: new Ap01.csv pose trace proposal

## Changing TechnicolorPainter Dp01.csv Dp02.csv Dp03.csv

Same observation can be done on TechnicolorPainter for which Table 9 of CTC says the following:

Spheroid centered at position [0, -0.35, -0.35] meter, covering a vertical square of side equal to 20cm and developed in the forward axis by 25cm max.

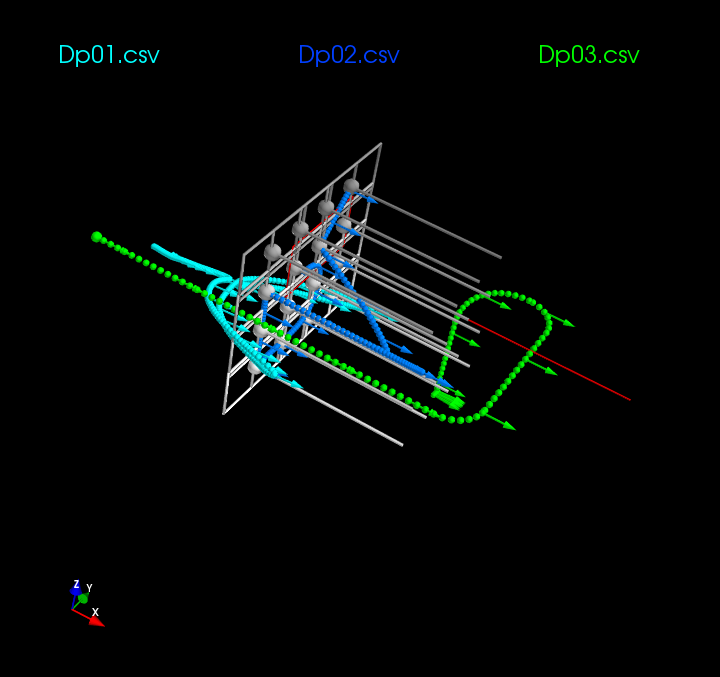


Figure 4: current pose traces for D

Proposed pose traces are the following:

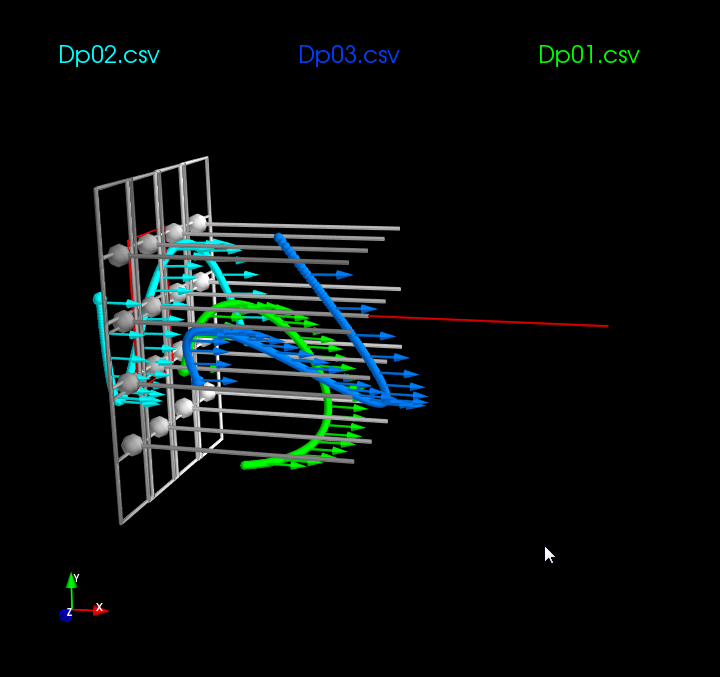


Figure 5: proposed pose traces for D

## Proposing changing OrangeKitchen Jp01 Jp02 Jp03.csv

This is the same situation as for TechnicolorPainter as the current pose traces goes 80cm above, while it is only a flat camera rig.

Still, the difference is that the CTC Table 9 claims:

*Spheroid centered at position [0, -0.4, -0.4] meter, covering a vertical square of side equal to 0.8m and developed in the forward axis by 1m max.*

In any case, should the group decide to come to a more compact pose traces, it could look like this:

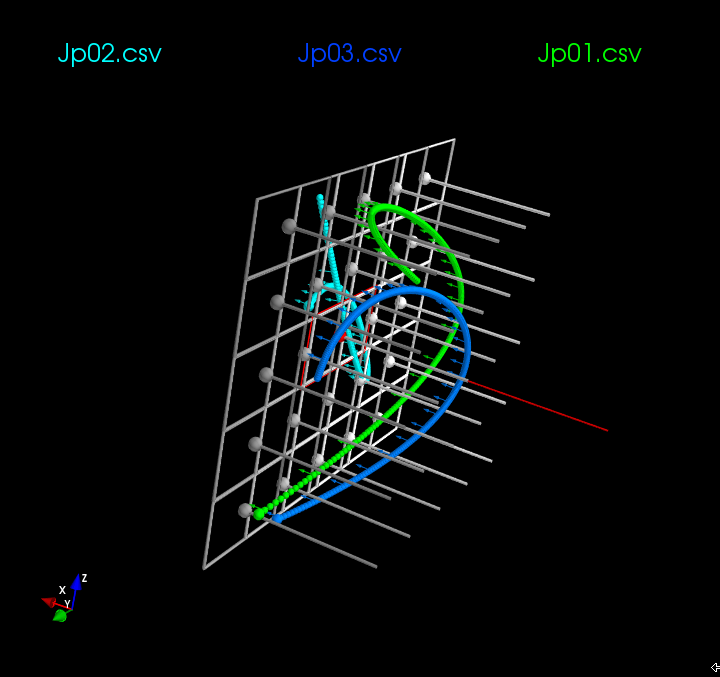


Figure 6: proposed pose traces for J

# **Conclusion**

We propose 3 posetraces for PoznanFencing.

We also propose to replace some of the pose traces for A, D and J, as we estimate that it is not putting the TMIV in the nominal conditions, as defined in the CTC. This is not necessarily an exhaustive list. We believe that it is just an adjustment to comply more closely to the CTC.

This is not a major change but it would help improving the subjective quality and the opinion of this MIV investigations from outside the group.

# **References**

1. J. Jung, B. Kroon, J. Boyce, Common Test Conditions for Immersive Video, ISO/IEC JTC1/SC29/WG11 MPEG/N18563, July. 2019, Goeteborg, Switzerland.