

Paper Reading & Discussion

Paper Title	Towards Optimal Real-time Volumetric Video Streaming: A Rolling Optimization and Deep Reinforcement Learning Based Approach
DOI	10.1109/TCSVT.2023.3277893
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Course	COMP 691
Lecture	8

Questions

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Comments

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Paper Title	MetaStream: Live Volumetric Content Capture, Creation, Delivery, and Rendering in Real Time
DOI	10.1145/3570361.3592530
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Questions

- The paper mentions that the dynamic camera calibration system will only work effectively if the movement speed of the cameras is $\leq 4.2 \text{ m/s}$. For highly active content (e.g. action sequences or a sporting event), could this be mitigated by using more cameras (the overlap reduces the need for movement)?
- Have the authors mentioned an upper-bound on the number of cameras that can simultaneously stream to the server whilst maintaining a 30 fps delivery rate?

Comments

- Successful deployment of such a system at scale could pave the road for real-time holographic video conferencing.
- MetaStream also opens up the possibility for more immersive virtual/mixed-reality applications - for example, with the rise of VR applications, MetaStream could allow for users to represent themselves in the virtual world exactly as they appear in real life.
- The system relies on specialized (albeit resource-constrained) hardware such as the Jetson Nano to run image segmentation prior to sending the video to the server. This is specialized equipment and costs a non-trivial amount of money (CAD \$180).
- The foveated rendering of point clouds could be related to the paper on saliency-based 360 degree video we discussed earlier [1].

References

- [1] Shibo Wang et al. “Robust Saliency-Driven Quality Adaptation for Mobile 360-Degree Video Streaming”. In: *IEEE Transactions on Mobile Computing* (2023), pp. 1–18. DOI: 10.1109/TMC.2023.3235103.