



VRTogether



Capture



Encode



Network



Decode
& Deliver



User
Interface

Point Cloud Encoding and Decoding

developed by



This component offers a generic real-time dynamic point cloud codec for 3D immersive video. Low delay encoding and decoding at multiple levels of detail make the codec suitable for real time mixed reality applications where point cloud reconstructions are acquired at a high frame rate. A flexible implementation allows integration with any other component in the pipeline

Key Features

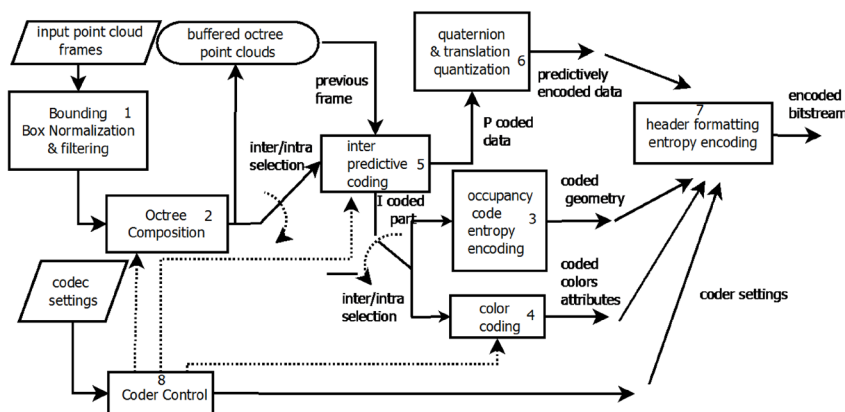
1. A generic compression framework that supports point clouds with arbitrary topology regardless of capture system
2. An efficient lossy color attribute coder that takes advantage of collocated points to encode color data using existing image coding standards
3. A real time implementation that allows low delay encode and decode on commodity hardware benefitting from multi-core architectures and a parallel implementation
4. Allows optimization of the experience by using the adaptation capabilities offered by the codec
5. A turnkey solution compatible with multiple delivery systems such as DASH, Multipoint Control Units and point to point AMQP

Point Cloud Encoding and Decoding

Realtime point cloud compression

Point clouds have emerged as a popular representation for real time volumetric reconstructions. This component offers low delay encode and decode suitable for real time applications.

- Scalable to point clouds of arbitrary size and topology
- Open source component (<https://github.com/cwi-dis/cwi-pcl-codec>) used by standards bodies as an anchor codec to develop future codecs



Schematic of Point Cloud Codec

Technical Description

- Octree based geometry compression supporting multiple levels of detail
- JPEG based low delay attribute compression for colors leveraging naturalistic source of color for co-located points
- Hybrid architecture that combines octree occupancy point coding with hybrid schemes common in video coding












VRTogether

About VRTogether

VRTogether is an end-to-end system for the production and delivery of **photorealistic and Social Virtual Reality (Social VR) experiences**.

VRTogether enables Social VR experiences that allow a **natural interaction between remote users** immersed in a shared virtual environment in an affordable way and with photorealistic quality. The project's key exploitable components cover the whole Social VR pipeline:

-  Volumetric Capturing System
-  Simple Point Cloud Capture System
-  Point Cloud Encoding & Decoding
-  Scalable Ultra-Low Latency Volumetric Data Transmission
-  Media/Session Orchestrator
-  Live Presenter (MS)
-  Point Cloud - Multipoint Control Unit Objective Metrics
-  Unity Player
-  Web-based Social VR Platform

Consortium



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