

Conception of a Real-Time Video-Based Point Cloud Compression (V-PCC) Scheme



ULTRA VIDEO GROUP is looking for several motivated BSc/MSc/PhD students to kick-start the career as a part of the leading academic video group in Finland (<http://ultravideo.fi/>). We are a research group in the unit of [Computing Sciences](#) at [Tampere University](#) and we have over 20-year experience in conducting pioneering research on media processing systems in a close collaboration with industry. Our main research interest lies in tailored video coding, processing, and streaming solutions on various platforms ranging from low-power embedded devices to highly distributed cloud environments. Our primary research focus is on:

- VVC and HEVC video encoding and streaming
- Vision-based environment perception for human/machine consumption
- Photorealistic modelling of future driving and transportation
- Video codec acceleration on embedded platforms with high-level synthesis
- Content-aware video coding, annotation, and tagging
- Volumetric video coding for extended reality (XR)

Job description

The job aims at developing a real-time Video based Point Cloud Compression (V-PCC) encoder.

The context of this project is the conception of a photorealistic volumetric video communication system that supports real-time holographic-like interaction between multiple participants. To achieve this, the dynamic point clouds of 3D objects captured with off-the-shelf consumer-grade RGB-D cameras system (also developed by us, see [3D Scene Reconstruction Using Multiple RGB-D Cameras](#)) needs to be compressed and transmitted over the network.

This job consists in the implementation of the MPEG new point cloud compression standard. The provided reference software is currently not usable in a real-time context and needs to be optimized and parallelized to perform a real-time V-PCC encoding.

Thanks to this job, you will have a first hands-on experience in domains such as video processing and computer vision.



Qualifications

Essential skills:

- C/C++
- Python

Desirable skills:

- Knowledge in computer vision
- Knowledge in video compression
- Software optimization/Complexity Reduction
- Single Instruction, Multiple Data (SIMD)

How to apply

Each position will be tailored to the applicant's skills, background, and level of studies, incl. the starting date and working time. To apply, please complete the following form

<https://forms.office.com/r/9CZ2k7AC3S>

with your resume and transcript of records. The closing date for applications is **November 14th, 2022** (at 23.59 EET / UTC+2). Interviews will be started on a rolling basis.

Contact

For more information, or any question regarding the application, please contact (in English, Finnish, or French):

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