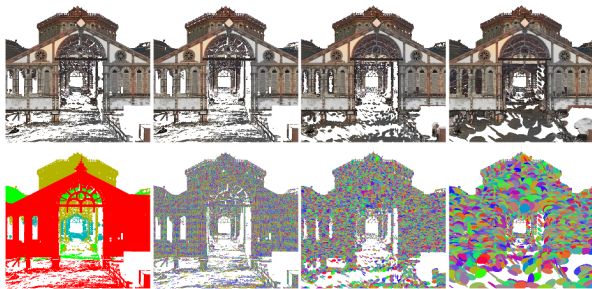


View-dependent Hierarchical Rendering of Massive Point Clouds through Textured Splats

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Nowadays, there are multiple available range scanning technologies which can capture extremely detailed models of realworld surfaces. The result of such process is usually a set of point clouds which can contain billions of points. While these point clouds can be used and processed offline for a variety of purposes (such as surface reconstruction and offline rendering) it is unfeasible to interactively visualize the raw point data. The most common approach is to use a hierarchical representation to render varying-size oriented splats, but this method also has its limitations as usually a single color is encoded for each point

sample. Some authors have proposed the use of color-textured splats, but these either have been designed for offline rendering or do not address the efficient encoding of image datasets into textures. In this work, we propose extending point clouds by encoding their color information into textures and using a pruning and scaling rendering algorithm to achieve interactive rendering. Our approach can be combined with hierarchical point-based representations to allow for real-time rendering of massive point clouds in commodity hardware.