

## **WHERE IS "THE BIRTH OF VENUS"? GOOGLE ART FROM BIRD'S-EYE VIEW**

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### **Abstract**

People often explore museums virtually with either blueprint-style 2D maps that lack photo-realistic views of exhibits, or ground-level images, which are immersive but are ill-suited for navigation. In this talk, I will present a technique for generating photo-realistic 3D aerial maps for indoor scenes, which are useful both for viewing exhibits and guiding navigation in large museums. Since it is not possible to take aerial pictures of indoor scenes, we propose a 3D reconstruction and visualization system that automatically produces clean, well-regularized, texture-mapped 3D models for large museums from ground-level photographs and 3D laser points. The key component is a new algorithm called "Inverse CSG" for reconstructing a scene in a Constructive Solid Geometry (CSG) representation consisting of volumetric primitives. I will also talk about several techniques to adjust the 3D model to make it suitable for rendering from aerial viewpoints. Our system enables users to easily browse a museum, locate specific pieces of art, fly into a place of interest, view immersive ground-level panorama views, and zoom out again, all with seamless 3D transitions. I will demonstrate our system for various museums including the Uffizi Gallery in Florence, which has thousands of pieces of art and is one of the most famous museums in the world. More information can be found on the project website: <http://mit.edu/jxiao/museum>