3D Reconstruction and dimention measurement

Photogrammetry is vital for understanding and protecting aquatic ecosystems, particularly in coral reef research and species preservation. By converting 2D images into 3D models, it enables thorough ecosystem assessment and environmental monitoring, providing vital insights into species behavior and contributing to informed conservation efforts and sustainable aquatic habitat management.

3D Reconstruction Procedures

To create a 3D model of an object, Draven captures a rotating video, which is then analyzed using a Structure From Motion (SfM) algorithm to identify visual features. This process enables the estimation of camera positions and orientations to form a detailed 3D model. Subsequently, a texturing process is applied to enhance the model's realism by adding surface details and colors, resulting in a visually accurate 3D representation, as specsified in Figure 1.

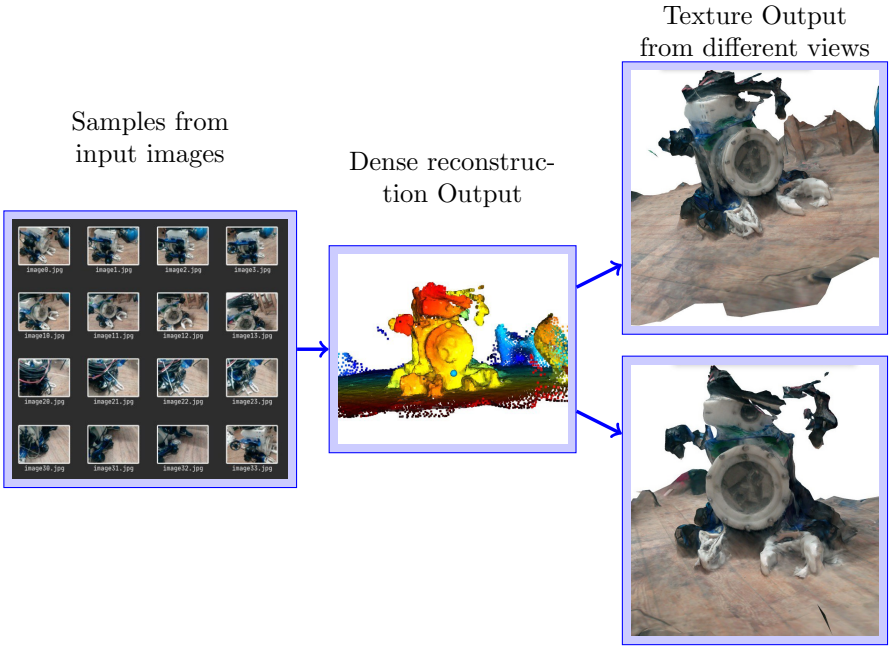

Figure 1: Reconstruction process

Dimentions measurement procedures

Draven measures specific dimensions in real time through a Graphical User Interface (GUI) using a Stereo Camera. These measurements can be saved

as references on a 3D model for further dimension evaluations, as depicted in Figure 2.

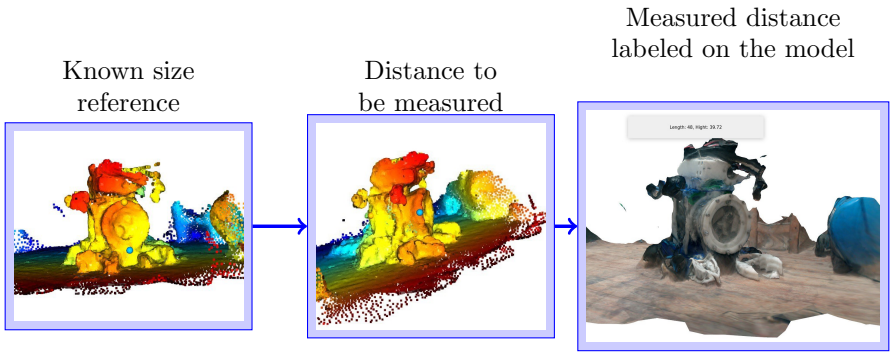

Figure 2: Measuring process