

The following relevant material for the C19 webpages has been collected by Engineering Geology students of Prof. Scott Burns at Portland State University (USA) in the framework of a students assignment. This material has not yet been screened and commented nor approved by the C19 chair and membership.

Glossary

3D Scanner – a device that provides analysis (by the collection of data) of physical objects or environments

3D Scanning Pipeline – the process from the first scan to the end model

Alignment - placing multiple scans from different directions into a common reference system

Computed Tomography – generating a 3D image from the inside of an object

Conoscopic Holography – the use of a laser to project an instantaneous reflection to be passed through a conoscopic crystal for projection

Contact 3D Scanners – scanners that touch the object that will be scanned

Image-Based Meshing – the process of generating a geometric description of a model

Mesh Model – using flat, polygonal shapes to create curved images

Modulated Light 3D Scanners – using light that changes shape (typically in a pattern) the camera detects how much the pattern is varied and translates the information into a physical distance

Non-Contact 3D Scanners – scanners that use light or radiation reflection from the object and the scanning device to complete the scan

Passive Scanners – these types of scanners use non-radiation such as visible light to detect the object

Photometric – using a single camera in varying lighting conditions

Point cloud - geometric samples from the surface of the scanned subject

Segmentation – removing unwanted elements from a 3D model

Silhouette – an image is created by using a stark contrast between the background and the outline of an object

Slicing – using images at a different depths of the object and stacking them together to create a 3D scan

Stereoscopic – using two cameras to create an image by comparing the subtle differences between the cameras

Structured Light 3D Scanners – the use of a specific shape of light that when projected onto the object creates measurable distortion to create the scan

Time-of-Flight Scanner – a laser scanner that measures the time it takes for the laser to hit the object at multiple points and return to the device in order to create a scan

Triangulation – the use of a laser emitting device, a camera, and the object to be scanned to create a triangle. The scan is captured by the laser hitting the object at different angles that are captured by the camera

Volume rendering – Using the different grayscale densities within the object to create a 3D model