



OVERVIEW

3D Reconstructions

Thank you for downloading this overview PDF from my [Services](#) page. This document aims to provide a basic overview of potential 3D reconstructions within the Cultural Heritage space. If you have any questions - please get in touch via info@belacsampai.com



Architecture

I reconstruct architecture **across every scale**, from humble thatched timber-frame huts to marble-clad temples and monumental Baroque palaces.

My work covers everything from **individual architectural elements** or buildings to the creation of **complete settlements**, castles and towns. Both **exteriors and interiors**.

To ensure that every structure tells an authentic story, I capture the **passage of time** through detailed modeling and texturing - from construction and newly completed states to weathered, degraded, or renovated conditions.



Objects

I place great care into the **precise modeling of historical objects**, using advanced texturing and rendering techniques with an eye for archaeological detail.

These production-ready assets are **designed to work on any platform**. From images and film to AR/VR and more. 3D printing can be utilized to bring the reconstructions into the physical world, offering audiences to experience history through touch, making the past **accessible and engaging for visitors of all ages and abilities**.



Archeological Visualization

In many cases, it is essential not only to present individual artefacts, but also to reconstruct the broader context in which they were discovered.

Drawing on excavation reports where available, alongside wider historical research, I create reconstructions of archaeological sites in close collaboration with archeologists and historians.

My aim is to honor the underlying research while transforming complex or otherwise inaccessible data into engaging and compelling visualizations both for a general audience, as well as historians, researchers or deeply interested enthusiasts.



Digital Restoration

I transform raw scan data into production-ready 3D models by **resolving issues such as missing geometry, incomplete colour data, and meshing inaccuracies** through **advanced digital sculpting and reprojection** workflows in ZBrush. I provide manual **digital restoration** services to restore the original appearance of historical artefacts.

A major advantage of digital restoration is that the process is entirely **non-invasive** and risk-free.

The final results can be integrated into interactive 3D viewers, VR and AR applications, image sliders, enabling **direct comparisons** between current and restored states.

Restored models can also be reproduced as full-scale 1:1 **3D prints**.



Characters

Well-known figures or ordinary civilians from various historical periods are brought back to life.

Characters can be reconstructed in different ways: either by closely replicating specific historical depictions or by synthesizing multiple sources to ensure consistency and avoid anachronisms.

Historical clothing requires particular precision, so I use Marvelous Designer to create garments based on authentic clothing patterns.

For facial likeness, I begin with Character Creator to quickly establish a base model, and then refine the details in ZBrush.

The model is then skinned & rigged and animation-ready.

Characters can be used for simple visualizations, animated films or even serious games that allow the audience to walk through the environment as a historical figure, like in a video game.



Landscapes

Landscapes can be created based on LiDAR (Light Detection and Ranging) data and geo-referenced in QGIS, sculpted from scratch, or derived from topographical contour lines.

Alternatively, LiDAR data can serve as a base model that is then re-sculpted to represent an earlier historical landscape, reflecting how geological processes may have altered the terrain over time.

For close-up detail, landscape shaders and procedural foliage spawners are created in Unreal Engine.



Full Environments

This is where all elements come together within a fully immersive 3D environment.

Buildings are placed within their **correct historical and geographical context**, while **vegetation, terrain**, physically-based **lighting** and dynamic **weather** systems are added to complete the environment with a **high level of realism**.

To further bring these worlds to life, environments can be **populated with animated inhabitants and animals** that reflect the historical dress, the culture and ecology of the period.

Lighting conditions, seasonal changes, and even lunar phases can be reconstructed for specific historical dates, allowing the **atmosphere of a precise moment in history** to be authentically recreated.

As these models are created and optimized for realtime use, they are **not limited to cinematic video rendering** but can also be deployed directly as **interactive game environments**, enabling users to explore these virtual worlds in the **most immersive way** - from a first- or third-person perspective - by walking or flying through the environments using **intuitive controls** such as game controllers, joysticks, mouse & keyboard or touchscreens.

I offer a comprehensive approach to 3D creation and specialize in building complete 3D worlds, from architecture and props to characters, landscapes, lighting, and more. Managing most aspects myself, ensures visual consistency, creative control and a more efficient production process.

[Questions or Project Ideas? Send an Email.](#)