Deliverable 3.3

Auralised Model of the Florence Music Venue

AURA

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Project Information

"AURA - Auralisation of Acoustic Heritage Sites Using Augmented and Virtual Reality" (project no. 101008547)

Project Website: http://aura-project.eu

Auralisation – the technique of creating virtual soundscapes in 3D models to provide the same immersive sound experience as the music performed in the real venue. AURA will explore exciting new opportunities that auralisation opens up for music performing arts and their traditional and new audiences.

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Auralised Model of the Florence Music Venue

A first version of the auralised 3D model of the Opera di Firenze, within the project „AURA -Auralisation of Acoustic Heritage Sites Using Augmented and Virtual Reality (AURA - project no. 101008547), has been completed.

The auralised model will be continuously enhanced and optimised. It will be used for the execution of the use cases.

Demo Video of the Auralised Model

You can find the link to a demo video of the auralised model of the Florence Music Venue here on YouTube: https://youtu.be/dcC8_c8g3xw.

The video features auralised audio of the AURA music piece, initially recorded in the anechoic chamber at the Technische Universität Berlin, the 4th part of "Golliwogg's Cakewalk" from "Children's Corner" by Claude Debussy, as part of the 3D model of the Opera di Firenze.

The Auralisation Process

The auralisation was done using the Unity editor and the audio plugin Steam Audio. Each part of the 3D model of the Florence music venue was tagged with a Steam Audio geometry component. In these components, a material can be selected. The material parameters of all objects of the Florence music venue were analysed and then used to select the correct materials in Steam Audio, for example wood, plaster etc., or to create custom ones.

The models of the musicians were then placed on the stage of the Opera di Firenze. To each musician a Steam Audio source component was added. This made further customisation of directivity (to which direction sound is emitted), occlusion (how sound is affected when travelling through objects) and many more parameters possible.

Interaction, which will be used in future use case studies, has been implemented as well. The user can currently travel to three positions to experience different perspectives. When the user is in front of the stage the musicians can be removed and added again.

Future Development of the Auralised Model

This auralised model will be further developed. The material parameters can be specified in greater detail, making the auralisation more realistic. The model will also be optimised regarding performance. Currently, both the rendering of the model as well as the auralisation itself take a lot of computing power. Further development and optimisation will significantly enhance the ease-of-use of the model in terms of the necessary computing power.

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