Quartieri della Memoria

sensible public places: system architecture for an interactive installation

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I will soar, then, beyond this power of my nature also, ascending by degrees unto Him who made me. And I enter the **neighborhoods of memory**, where are the treasures of countless images, imported into it from all manner of things by the senses. There is treasured up whatsoever likewise we think, either by enlarging or diminishing, or by varying in any way whatever those things which the sense hath arrived at; yea, and whatever else hath been entrusted to it and stored up, which oblivion hath not yet engulfed and buried.
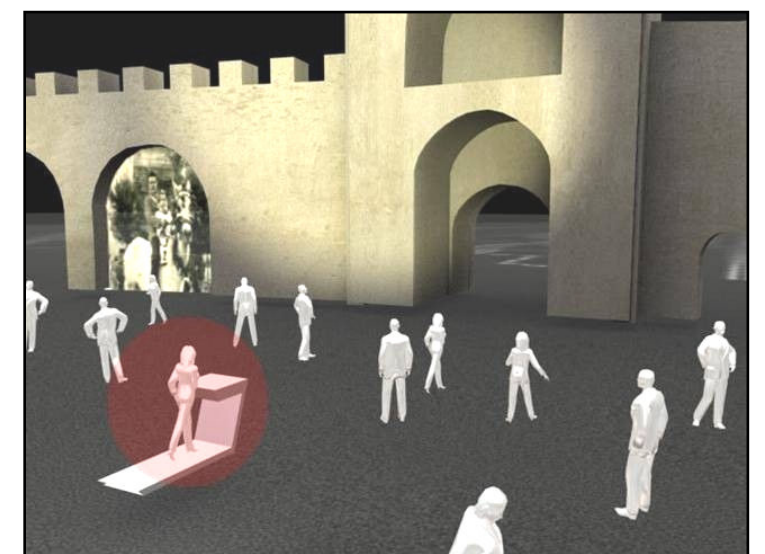St. Augustine, *The Confessions X.VIII.12.*

3D rendering of the historic center

Quartieri della Memoria is an artwork for public spaces focused on oral memories. It sets up a theater of the memory as a cultural rite in the audience's mind. The relationship between the residents and the public place changes and renews it in a progress driven mostly by an economic policy. Rieti, a town in the center of Italy, has been taken as case study. During the preproduction many interviews to residents fill the database with photos and audio stories. These media are interactively used to build the show in the piazza. The process can be re-used for other theme installations. The techniques developed will enhance the creative flexibility of artists by decreasing production time and providing a new tool.
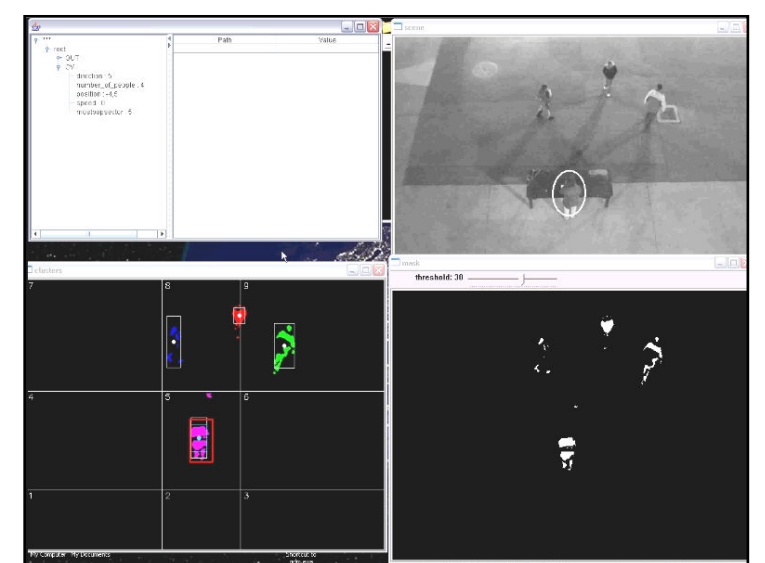
Event Handler and *Experience Generator* coordinate the independent sub-systems. The Event Handler waits for recognized tags from the RFID System and tracking data from the Computer Vision System. The acquired information is given to the Experience Generator which retrieves images and sound from the database. The collected data is processed in real-time in different states of the installation: *no interaction*, *interaction*, *post interaction* and *pianara*. The application is written in Java to be cross platform and uses TCP/IP to communicate with the sub-systems.
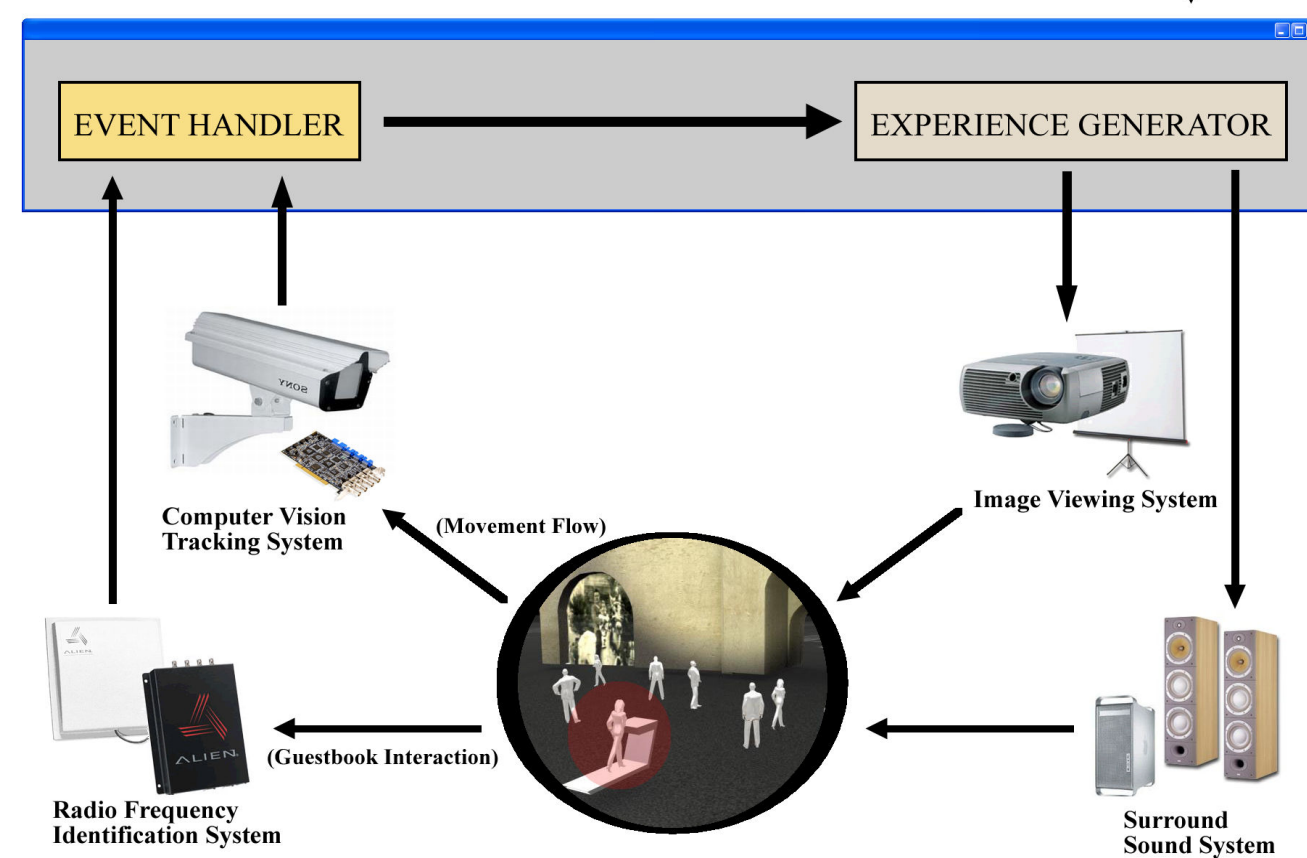

Web Gathering Interface — Database Server
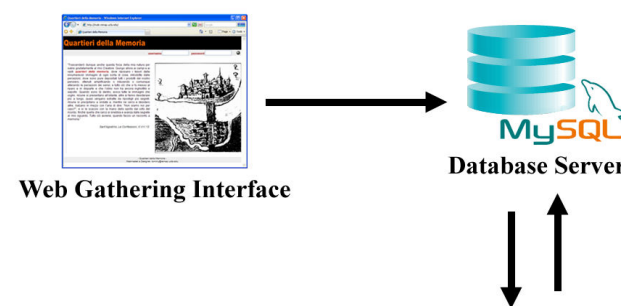
3D rendering of the interaction

The Database Server contains the RFID tags ID number associated to the visitors of the installation, Audio Interviews and Sound Schemes used in the Surround Sound System, Recent and Historical pictures used in the Image Viewing System and text description related to the material. The Mysql Database Server is directly connected with the Web Gathering Interface, an internet php/html website to collect media for the installation. In this specific project the media has collected by high school students and youth center of the province.

EVENT HANDLER → EXPERIENCE GENERATOR

Computer Vision Tracking System — (Movement Flow) — Image Viewing System — (Guestbook Interaction) — Radio Frequency Identification System — Surround Sound System

Image Viewing System is made of two components, a network connected Macromedia Flash Application and a screen projector. The Flash Application receives through the network real-time XML data from the experience generator, information on the images that are part of the installation database and eventually time related information. Images from the database are streamed on the network and projected on the screen, the persistency of the image on the screen is given from the Computer Vision System. The System mainly uses timed fade in / fade out effects between images but can be improved enabling different transitions for unique experiences. Finally, projection masks can be easily implemented and allow the use of unconventional shaped screens in the installation.

Screenshot of the computer vision module

Computer Vision System tracks for several seconds the visitor's position once he signed the guestbook. A hot spot on the piazza, therefore in the camera field, is defined in correspondence of the guestbook, once a visitor step inside the spot the tracking system starts and follows the visitor in his way out from the guestbook. Velocity and direction determine the persistence of each photo in the on going projected montage. The system also recognizes the density of the people in the piazza, these values are used by the event handler to drive the intermezzo state *pianara*.

Alien Technology RFID Tags, www.alientechnolgy.com

Radio Frequency Identification (RFID) system aims to identify clearly an interactive visitor of the installation. The system is based on an Alien Technology Reader (ALR-9780) with a fixed antenna. The system probes the interaction spot for known tags and sends the acquired information value across a wired network to the Event Handler. The unique code, read from the tag, creates a matching fusion with the tracking information given by the Computer Vision System.

Future Work the computer vision system at this moment is affected by people's shadow, and in public spaces it isn't always possible to work in light control setup that reduces the problem. The installation was thought as distributed path through three main places in the historic center of the city, the communication among the three modules has to be implemented.

3D rendering of the piazza installation