

Digital Archiving of Somma and Pompei, Italy, 2008

CVL Italy Scanning Mission Members

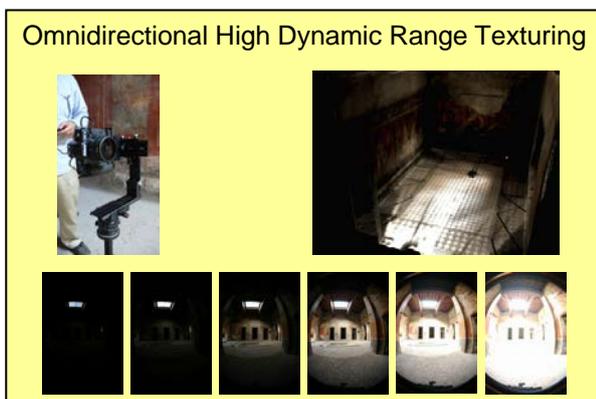
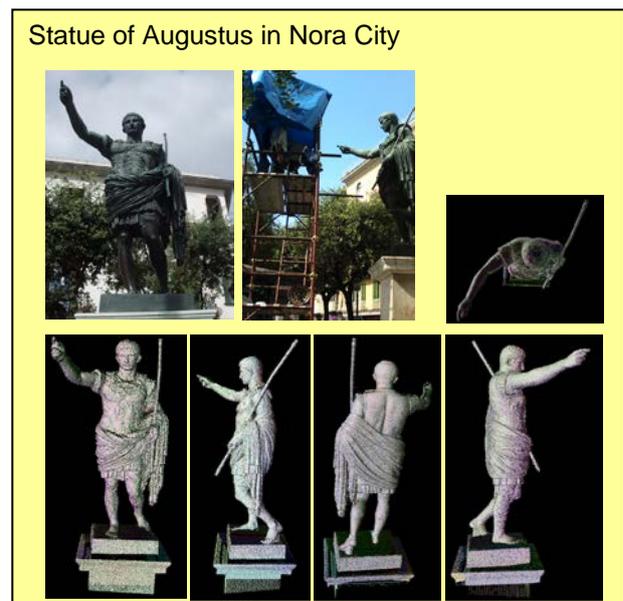
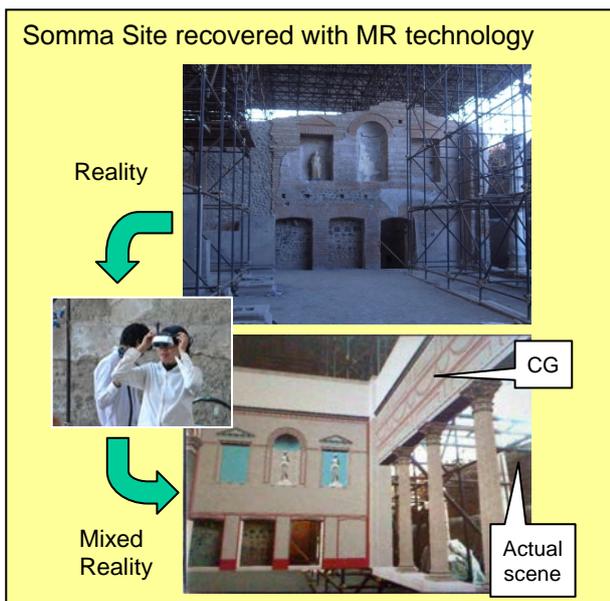
{ Shintaro Ono, Rei Kawakami, Takeshi Oishi, Tetsuya Kakuta
Raita Kudoh, Shunsuke Kudoh, Katsushi Ikeuchi }

Somma and Pompei, located near Naples, Italy are both ruins that have ever been buried in volcanic ash by large eruption of Mt. Vesuvio. We digitally scanned them every year since 2003, thanks to the collaboration with Aoyagi-Matsuyama group in the Univ. of Tokyo. They are still unearthing the Somma site, and we scanned its yearly growth, and made use of the 3D model. In this mission during Sep. 24 - Oct. 7, 2008, we made a public demonstration twice, where the building structure before the disaster, prepared as a CAD model, can be overlaid onto the current actual scene by wearing a special goggle using MR technology.

Pompei on the other hand is well unearthed and famous for a seeing spot. This time we mainly targeted textures and wall paintings in Casa del Menandro, Villa del Misteri, and most streets inside Pompei for modeling. New topics in the Pompei mission were: omnidirectional HDR texturing, improved color restoration and spectrum measurement robust to noise, street-view expression of the streets, etc.

Publication

- [1] K. Ikeuchi, S. Ono, R. Kawakami, T. Oishi, T. Kakuta, R. Kudoh, A. Banno, S. Kudoh, "Reproduction of color and structure in volcano ruins: Somma Vesuviana and Pompei", *Ricostruzione della scena culturale e naturale delle zone danneggiate con l'eruzioni vulcaniche*, Feb. 2009.



Digital Archiving of Somma and Pompei, Italy 2007

CVL Italy Scanning Mission Members

(Shintaro Ono, Jun Takamatsu*, Masataka Kagesawa, Tetsuro Morimoto, Rei Kawakami, Mawo Kamakura, Tomoaki Higo, Sonoko Okura, Katsushi Ikeuchi)

Somma and Pompei, located near Naples, Italy are both ruins that have ever been buried in volcanic ash by large eruption of Mt. Vesuvio. We digitally scanned these ruins every year since 2003, with collaboration from Aoyagi-Matsuyama group in the Univ. of Tokyo. They are still unearthing Somma site, and we scanned the yearly "growth" of the ruin and made use of its 3-D model.

Pompei on the other hand is well unearthed and famous for a seeing spot. In the scanning mission during Oct. 1-9, 2007, we mainly targeted textures and wall paintings in Casa del Menandro, Villa del Misteri, and streets between Stabia Gate and Casa del Menandro for modeling. The new topics in the mission were: (1) An efficient acquisition of texture photos for CG surface and their mapping using omni-directional images, (2) Improved photometric scanning, color restoration, and spectrum comparison, (3) Image-based spatial expression using real video stream.

Publication

- [1] S. Ono, T. Morimoto, J. Takamatsu, A. Banno, T. Oishi, M. Kagesawa, K. Ikeuchi, "3-D Modeling of Somma and Pompei Excavations Buried by Eruption of Mt. Vesuvio", *Cities on Volcanoes 5 conference*, Oct. 2007.



Somma site
(still under excavation)



Casa del Menandro,
Pompei



Villa del Misteri,
Pompei



Street to Menandro,
Pompei



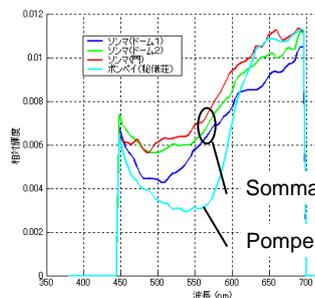
Growth of excavation
(Somma)



Omni-directional texturing



Comparison of spectral reflectance
(Red pigments on the walls in Somma and Pompei)



Real video capturing for IBR
(Pompei)

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Digital Archiving of Somma and Pompei, Italy

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Somma and Pompei excavation located suburb of Naples, Italy are both excavations which have ever been buried in volcanic ash by large eruption of Mt. Vesuvio in AD79. We have been making scanning missions of these excavations every year since 2003.

Since the whole Somma excavation is still not appeared, Aoyagi-Matsuyama group in the Univ. of Tokyo are still continuing digging, and it is said the excavation had ever been a villa of Augustus. We have been scanned the “growth” of the excavation every year and made use of its 3-D model, for confirming the restoring effect of excavated old walls, and virtual repair of unearthed broken articles such as male statues.

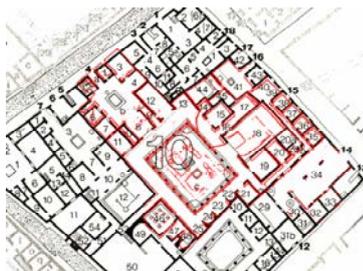
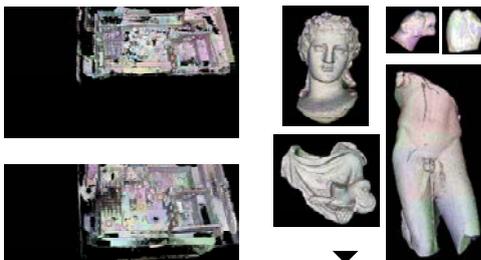
On the other hand Pompei is well excavated serving as a large seeing spot. We targeted Casa del Menandro and Imperial Villa for 3-D modeling. Our result shows that horizontal cross section using the data of the Casa is not completely same to literary drawing, implying the influence of gradient of the ground. Also we measured spectrums of beautiful wall paintings in the Casa and the Villa for photometric analysis, and digitally reproduced its original color and the view under various illumination conditions such as sunset and torchlight by calculating spectral reflectance per each color region of the paintings.



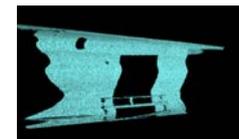
Somma site, still under excavation



Casa del Menandro, Pompei



Cross section comparison



Handheld scanning



Growth of excavation



Virtual repair



Illumination simulation