

Design Computation Summer School 2018

FAUL - University of Lisbon

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Immersive and Responsive: Performative Architectural Design in Mixed Reality

Dates: 27-29 June

Location: Universidade de Lisboa, Portugal

Organizers: İpek Gürsel Dino (Assist.Prof., PhD.), Middle East Technical University - Ankara
Şahin Akin, Middle East Technical University - Ankara
José Beirão (Assist.Prof., PhD.), Universidade de Lisboa

Duration: 2,5 days

Number of contact hours: 21

ECTS credits: 1,5

Maximum number of participants: 9

Minimum number of participants: 12

Summary:

Mixed reality is expected to be the next advancement in human, computer and environment interactions and its envisaged capabilities of implementation in architecture is quite exciting. A brief overview of immersive environments and their current relationships between world of architecture will be presented and discussed. The developed mixed reality application for Microsoft HoloLens, its possibilities and capabilities will be introduced to participants.

Architectural design in an immersive virtual world will be explored by the creation of different architectural forms and buildings by using the developed application. The application's deficiencies and advantages will be reviewed and evaluated by the participants. Output designs will be turned into physical models – via 3d printer –, so the gap between digital and physical worlds will be overcome.

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Objectives:

- To acquire a general understanding of means to think and design without the boundaries of the computer displays or the limitations of the flatlands of the two dimensional drafting papers.
- To learn about the types of immersive virtual environments and its strong linkage between architecture. To comprehend the potentials and possible future uses of this technology.
- To be informed about how to design and manage navigation in a virtual world.
- To understand the workflow and relationship between what is physical and what is digital.
- To prepare powerful presentations of the design outputs via concrete solid models, walkthroughs, real time rendering engines and boards.
- To use the capabilities of the application and realize required forms and building types in VR.
- To create an environment where participants can test, evaluate, compare and discuss their designs.

Schedule:

June 27 (afternoon):

- General introduction to virtual reality in architecture, its development, current and upcoming trends. Basic introduction of software and system to be used. Demonstration and tutorial of how to.

June 28 (morning):

- Lecture introducing the possibilities of BIM based Mixed reality in Architecture, education, construction and scientific data visualization.
- Announcement of required building types and forms to participants for initializing their design process in VR or paper.

June 28 (afternoon):

- Critics, submission of architectural forms.

June 29 (morning):

- Introduction of additional methods of using the application professionally with BIM (Revit). Critics, starting up designing required building types in VR.

June 29 (afternoon):

- Final discussion of the workshop. Presentation of participants' final design outputs.

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Prerequisites:

Basic commands of Autodesk Revit and Rhino software are required. Knowledge in Unity and 3d fabrication is a plus.

Requirements:

Projector, computers with pre-installed software or USB sticks with virtual machine installations, 3d printer and Microsoft HoloLens or other VR systems.