VIRTUAL HOUSE
: DEVELOPMENT OF GENERATIVE SPATIAL SYSTEM

ARCH 571, SPRING 2019
INSTRUCTOR: BHUJON KANG, AIA, NCARB
bhujon@illinois.edu
http://urbanproject.co

Type of Collaboration: Individual Project

DESCRIPTION
In 1997, ANY magazine released “The Virtual House” containing seven prominent architects’ design proposals that explore the idea of the virtual through the unbounded program of a house. It challenged the invited seven architects to develop the newest connections generated through its plan, space, construction, and intelligence.

Inspired by this achievement, this 571 studio aims at designing a small-scaled house developed through the generation of a unique spatial system. The spatial system, which originates from idiosyncratic and imaginative ideas and eventually systemizes a quantitative and/or parametric organism, demonstrates the architectural contemporariness that implies technological, socio-economic, and environmental issues as a compressive form of architecture. In the studio, students will research and practice diverse design methodologies with advanced digital technology.

SITE & PROGRAM
The site is 1410 N Walnut St., Champaign, IL which is a typical suburban residential site. For the design of the virtual houses, students determine their program. It is expected that students’ diverse design approaches give different weight to various programmatic matters and topics. In the design process, students test a variety of combined resolutions of the external conditions including climate, urbanity, and social issues. Students also want to adjust the size and program of the house that fit the spatial system.
GENERATIVE SPATIAL SYSTEM

The studio underscores a series of the fabulous contemporary architecture by the visionary architects such as Frank Gehry, Toyo Ito, Rem Koolhaas, Herzog and de Meuron, Zaha Hadid, UN Studio, and young remarkable architects like Christian Kerez, Sou Fujimoto, Junya Ishigami, and ALA architects. Our spatial systems—inspired by all of the above, eschew the conventional grid systems. They are closely related to geometrical developments that can be utilized by advanced digital design tools and techniques including parametric design methodology and digital fabrication. The forms of the spatial systems are morphologically operable by the set parameters. Students conceive reactive frameworks that accommodate the required performance of the units, rooms or cells.

Eventually, the spatial systems display the parametrized organism that provides for formal and functional adaptation and informs the entire building shape that is controlled by the systemized parameters. The studio also introduces the digital fabrication tools to enhance the productivity of students’ physical models throughout the entire process.

DESIGN PROCESS

For the first half of the semester, the studio will research precedent projects, analyze design principles, and create simplified digital/physical models using the digital techniques including Rhino/Grasshopper and digital fabrication tools (Laser cutting, 3D printing, and CNC routing). Based on this research, students will start to explore their own spatial systems, adapting them to innovative residential programs. At the mid-term review, the studio will focus on the completeness and versatility of the explored systems with a series of concept images, physical models and diagrams. The studio hopes to exhibit the process models between the midterm and the final review.

During the last half of the semester, the student will develop the architectural design with the systems while continuing the revision of the spatial systems. For the final review, the studio pursues the high-quality rendering images and a full set of drawings that express the functional completeness of the students’ design. Also,

* Based on the familiarity with the parametric design methodology, students may choose their level of Grasshopper usage. The studio will have brief Grasshopper scripting sessions by the instructor as needed.