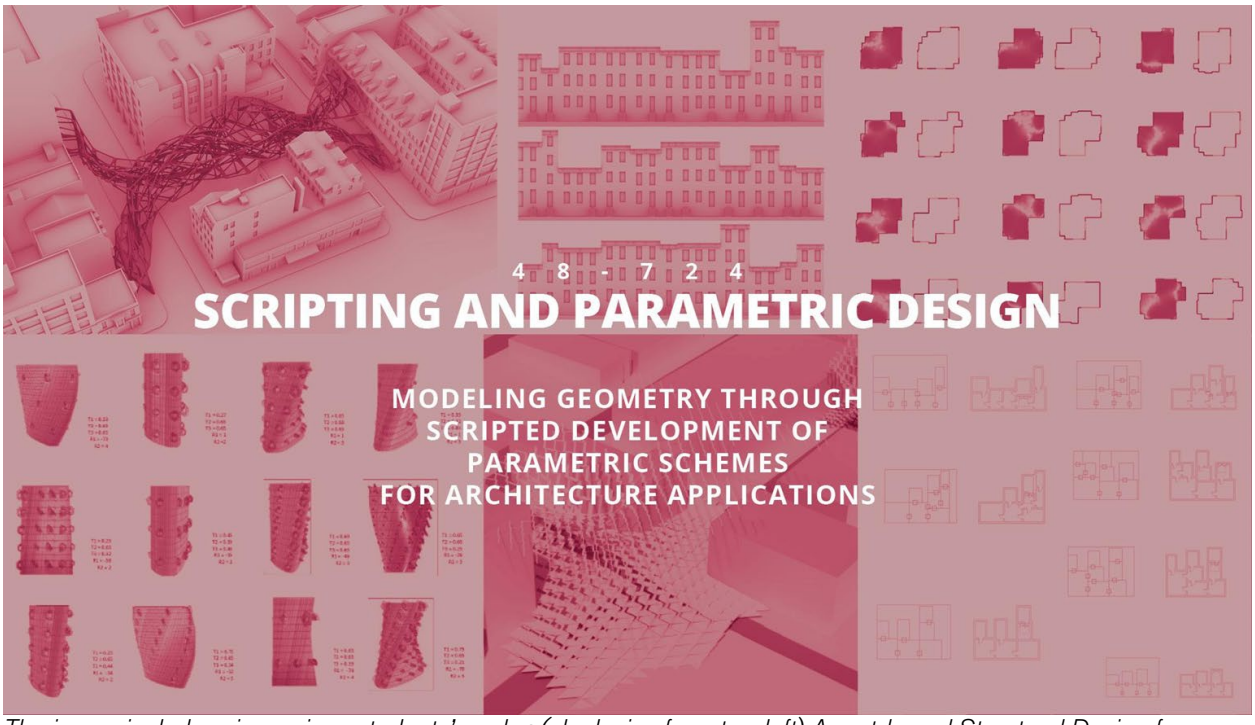
School of Architecture
College of Fine Arts, CFA 201
Carnegie Mellon University
Pittsburgh, PA 15213



The image includes six previous students' works: (clockwise from top-left) Agent-based Structural Design for Pedestrian Bridges, Terrence Ou / Generating Row House in Lawrenceville, Ryu Kondrup / GAN-based Radiation Simulator, Vishal Vaidhyanathan / Plan Generator, Chloe Wang / Urban Morphing Terrain, Jiaying_Wei / Solar-ver, Sreya Tolety

48-724: Scripting and Parametric Design
Units: 10
Instructor: Jinmo Rhee

This course introduces students to basic scripting in a geometrical modeling environment with a focus on algorithms related to form making and to reinforce and extend basic concepts of parametric modeling. Contemporary approaches to modeling geometry are computational—reflected in designers wanting much more control over the generative process by varying parameters, in turn, enhancing the efficiency with which they navigate design variations, analyze design artifacts, and explore design manifestations. The course has two parts and one final project. First, to teach the basics of object-oriented programming and algorithmic thinking using Python language constructs, and second, to teach the basics of scripting generative form making—specifically, by customizing procedures for generative design via scripts in GHPython in conjunction with Rhino/Grasshopper objects. A number of different form-making algorithms are explored, e.g., fractals, rule-based models, cellular models, agent-based models, and optimization-based models. In the final project, students will have an opportunity to translate design problems into computational algorithms and create a system to solve them. The course consists of lectures, computer instruction and weekly assignments. Prior exposure to Rhino/Grasshopper is required.