CourseNo: ARCHA4819_001_2013_3

Meeting Location: BUELL HALL 200

Meeting Time: R 07:00P-09:00P

http://site2site.github.io

Instructors: Troy Conrad Therrien and Christopher Barley

 The Stakes

Architecture is online. Recent achievements in ubiquitous computing, machine intelligence, deep learning, ambient locative media, mobile and embedded devices, machine to machine systems and other forms of the "Internet of Things", coupled with the proliferation of cheap networked sensors and actuators has brought us to a moment in which architects no longer have the comfort of speaking of connected environments in the future tense. The technology for connecting and orchestrating physical spaces digitally are not simply accessible, they have become pedestrian. And still they have yet to fully penetrate either the architectural imaginary or the space of architecture production. This course aims to do both simultaneously.

Methdology

The course will proceed reflexively. We will investigate the necessary means for designing, representing and analysizing architecture online by producing them and using them ourselves in the process. Specifically, we will build a platform for putting architecture online, a collection of networked sentient objects and the protocols and standards that will allow them to communicate digitally with one another, as well as spatially and organizationally with architecture. Unlike the hoards of tech behemoths and start-ups vying to become the platform for this coming wave of techno-social-spatial renewal, we will integrate the languages of technology with architecture. We will collaboratively design and implement a public application programming interface, an API, that integrates architectural representation with technical protocol.

Partnership

We will partner with the seminar "Corporate Avant Garde" (A6453) in taking the same construct as our object: the US Pavilion in Venice as the site for an architecture office, OfficeUS. In addition to shared sessions and objectives, we will likewise consider the future of the architecture office as a multifarious space, as part-studio, part-gallery, part-event space, part-publication house, part-factory, part-school, and other parts as yet unknown. We will use Studio-X locations to test our work in a globally distributed network, allowing us to consider questions of culture, language, time, and other misalignments, and to insert our work into a live architecture discourse and practice. In parallel, we will work with a group of technology experts who are responsible for some of the major advances in the field we will enter.

Session A

In Session A, students will design and build the furniture, climate control, lighting, and display systems, surfaces, and other objects to address one or more segments of the above programmatic spectrum of OfficeUS. Powered by a $35 Raspberry Pi mini-computer running Node.js on the Linux operating system, these objects will produce and consume digital information, collecting information about and/or producing effects in their environment. Students will also design the technical protocols and representation systems for tapping into these inputs and outputs.

This initial iteration of the platform - objects and their interfaces - will be tested at the end of Session A with a final review in the form of a hackathon. We will invite expert programmers and designers for a day-long event at Studio-X NYC to tap into the platform with the students and both build applications on top of the platform and help to improve the platform itself.

Session B

In Session B, students will focus on developing applications on top of the platform, parts of which will be distributed to locations around the Studio-X global network. Students individually or in groups will first study

these physical spaces and design a strategy for the deployment and installation the objects of the platform. That is, students will redesign these spaces using the our platform. They will then have access to the entire network of distributed objects to design and implement applications that will affect the way in which these spaces are used, and consequently the forms of architecture production these spaces support.

The final review for the course will take the form of a staged event with invited guests. Parallel to the pedagogy of the course, the event will reflexively incorporate the objects and their applications into a discussion on the course topic with invited guests and a public audience at Studio-X NYC and perhaps simultaneously other locations.

Technology Stack

The technology stack of Raspberry Pi mini-computer powered by the Node.js application/web framework provides a favorable learning curve. The only required programming language for the course is Javascript, a front-end web programming language that Node.js allows to control intensive back-end processes. Javascript is both the most common used language in open source projects, and continues to grow for its combination of power and ease of use. In short, you've likely seen it, maybe even used it, and we are going to teach you to be a Javascript ninja by the end of the course. You will use it to control web servers, to construct a robust RESTful and streaming API, to tap into cutting edge NoSQL databases, connect to a battery of andalog and digital sensors, cameras, microphones, LEDs, servo motors, and a seemingly endless array of other input and output mechanisms.

Collaborative Infrastructure

We will also extensively employ Github in our entire process. Since its founding in 2008, Github has fueled the explosion of open source projects and online collaboration. We will use it to incorporate a lean, iterative design methodology including cloning, forking, pushing and pulling to produce a clean means of collaboration in small groups and as a large class. You will determine new ways for architects to incorporate this process into their design practice, and will likely choose to use the method for a number of other tasks going forward, as so many users have.