Generative Design Workshop

Fall 2018 Studio Workshop

Professor: Zach Pino
Wednesdays 2:00pm to 5:00pm @ DTC 6th Floor Studio + ???

Description

This course serves as a broad introduction to issues in contemporary product and interaction design related to digital fabrication and data-driven form. Loosely structured around the increasingly viable notion of user-centered 'Hyper-Customization,' students will explore how emergent tools allow a designer to craft an algorithm that in turn creates unique products, services, and experiences matched to each potential user. Students will explore how the collection of data on individual users can be integrated into every aspect of the design process — not only in insight discovery and process streamlining, but also in the direct shaping of final products and experiences.

Digital fabrication tools, long heralded by designers and engineers as a more sustainable, efficient, and capable replacement to traditional manufacturing techniques, are becoming widespread and accessible enough to support these new sorts of customized products and experiences. Throughout this course, students will learn to implement a wide variety of digital fabrication tools -- including 3d printing, laser cutting, and CNC machining -- alongside the language, limitations, and capabilities of contemporary and near-future digital manufacture.

Discussions about emerging resources in digital fabrication, issues in design inclusivity and accessibility, the overlap between contemporary form design and data visualization, remote data collection techniques, and applications for machine learning and artificial intelligence in design will be included alongside case-studies from the realms of architecture and urban-planning — where hyper-customization is already being tested at large scales. Students will leave the course having designed a thing that in turn designs an infinite variety of other things, enabling every potential user to have an experience that is fundamentally designed for them.

Format

This course will be structured as an experimental laboratory, with many opportunities for students to pursue their own independent areas of interest after brief technical demonstrations. Students will choose a specific product category, and spend the semester individually exploring how objects and experiences could be made more unique to individual users.

A diverse set of resources and technical skills will be presented and reinforced throughout the class.

Office Hours

Mondays 2pm-5pm (Dedicated)
Thursdays 9am-12pm (Global)
Also as requested!

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Learning Objectives

- Gain exposure to many digital fabrication techniques
- Learn to apply many different types of customization logics to both physical and digital products
- Confront challenges in design inclusivity and product accessibility
- Attain a high-level understanding of digital fabrication technologies and their appropriate uses and limitations
- Become comfortable with failure and persevere through technical challenges
- Acquire a basic understanding of programmatic form expression in SVG, Functional Programming Code, Grasshopper, G-Code, and Point Clouds
- Confront the 'designer-agency' issues inherent to contemporary design practices that implement programmatic design tools
- Use mathematical and computational principles to address design problems
- Make stuff with contemporary tools!

Digital Fabrication Technologies

Laser Cutting
3D Printing
CNC Machining
Rhinoceros 3D
SVG
Grasshopper
Other Parametric Software TBD

Requirements

- Command of Adobe Illustrator, InDesign, and Photoshop or equivalents
- Willingness to prototype many ideas quickly
- Comfortability with working in teams and providing honest critique
- Experience in Digital Development or Foundation Digital Media — or equivalent Software Development and 3D Modeling Familiarity — is preferred but not required.

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Expectations

- Minimum 10 hours of outside-of-class idea development and execution time
- Weekly research and tutorial completion
- Weekly deliverables that may require excursions and/or materials sourcing
- Weekly uploads of code with questions for review

Grading

Students will be evaluated on the scope and ambition of their iteration and exploration, aesthetic quality of their work, participation and collaborative enthusiasm, and the clarity and legibility of their fabricated ideas.