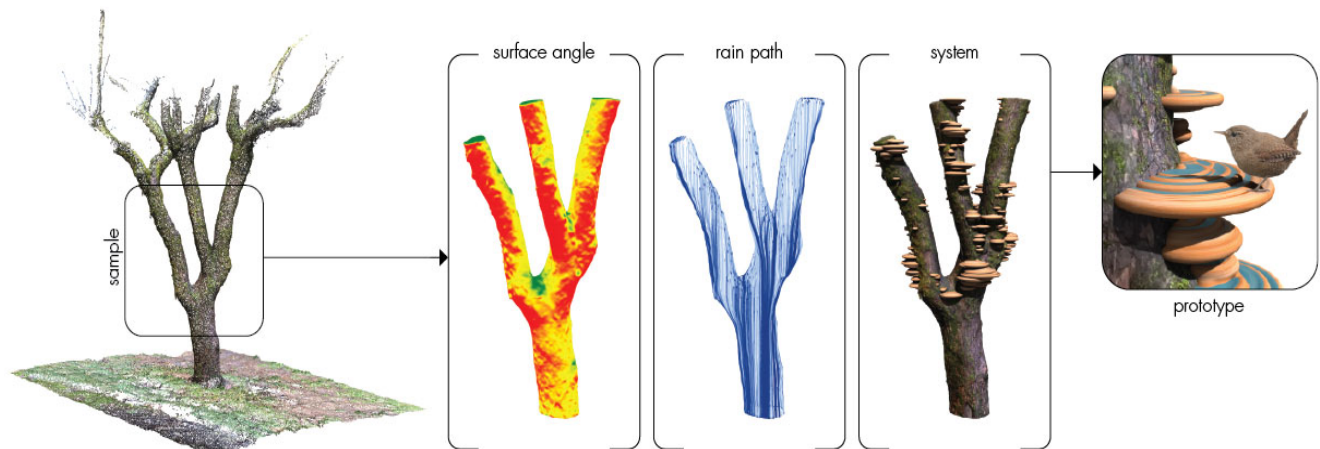LA 4/507 Winter 2022
AUGMENTED NATURES:
Design and fabrication of urban interfaces for animal inclusion based on data analysis and digital tools

CRN 23927/23946 – Tuesday, Thursday 4:00pm-5:50pm in LA 231 Lawrence Hall

Instructor: **Ignacio López Busón**, ilopezbu@uoregon.edu

sample → surface angle | rain path | system → prototype

"If there's one thing the history of evolution has taught us, it's that life will not be contained. […] Life finds a way."

— *Ian Malcom, Jurassic Park (1993)*

COURSE DESCRIPTION:

Despite the historic function of cities to isolate and protect humankind from the natural surroundings, nature has always managed to permeate and adapt to urban conditions, sometimes violently but often quietly. However, in an increasingly urbanized world, nature and biodiversity are declining at dramatic rates. Since biodiversity supports many of the ecosystem services needed by humans (food, biological control, photosynthesis, pollination, bio-recycling, etc), turning cities into habitats where nature and non-human species can thrive (and not just survive) is critical for our future.

In such an era of environmental crisis, the digital revolution of the 21st century has provided dramatic advancements in the measurement, analysis, and prediction of climate phenomena in the physical realm. As designers, technologies and computational tools such as GIS, remote sensing, or 3d scanning can help us recognize hidden patterns and inform design solutions to an unprecedented level of scale, accuracy and resolution.

This course aims to explore the intersection of design, ecology, and digital technologies, first, by analyzing animal behavior and mapping environmental conditions for the ideal location of non-human habitats in the urban realm. And second, by designing and fabricating data-driven physical interfaces to improve animal integration in contemporary cities.

PREREQUISITES:

Although students are not expected to master the advanced tools that will be introduced in the seminar (Rhino+Grasshopper+Twinmotion), they have to have experience with 3D design environments and be proficient with the Adobe Suite package. This is not a beginner's introduction to digital technologies.This course is open to a limited number of Architecture students, please contact the instructor if you are interested in participating.

Some recommended classes before this course (contact the instructor if you have any questions):
- LA 4/508 Wrk Adv Digital Media
- LA 4/550 Top Env Data Visualiz
- LA 4/510 Landscape Media I
- LA 4/510 Intro Media II

METHODS AND COURSE DELIVERABLES:

The course will be structured in four main phases:

1. A short initial tool-up phase that will introduce the students to all the necessary programs and tools
2. A research and mapping phase to determine the animal species of focus and its ideal systemic location in the urban boundary of Eugene, OR
3. A digital analysis and 3D modeling phase to develop design iterations based on environmental simulations and animal behavior
4. A fabrication phase for the students to build 1:1 prototypes of their projects and document their installation on-site.
5. Final presentation (physical model + printed design booklet)

Each phase will include a lecture by an expert in the related field (urban ecosystems, biology, computational design and digital fabrication), and will conclude with an internal public review to discuss and evaluate the progress of the project. The presentations will consist of a digital documentation booklet explaining the thoughts leading to conclusions to move forward in the design process.

The course will end with a final public presentation/exhibition where the students will introduce their projects through a **1:1 physical model and a printed design booklet**. The final booklets will include all the necessary diagrams, technical drawings, renders and prototype photographs to explain the projects.

Students will be expected to form groups of four for the research and mapping phase (2.), and then split into groups of two for the subsequent phases.

HARDWARE & SOFTWARE REQUIREMENTS:

1. PC with Microsoft Windows installed. Contact the instructor if you have any questions.
   (Mac is not recommended, but it will be accepted if users have *Parallels Boot Camp* and Windows installed and working before the first day!)

2. Rhino 6.0 or 7.0 (Rhino for Mac may not work for some tutorials, must be Rhino for Windows – see 1.-)

3. Adobe Suite (Photoshop, Illustrator, Indesign)

4. Agisoft Metashape Standard Edition
   Free 30-day trial. Please, wait until the beginning of the term to install it.
   Download at https://www.agisoft.com/downloads/installer/

MATERIAL REQUISITES:

Since the outcome of the studio is the fabrication of 1:1 mock-ups, students should anticipate to cover the cost of all the materials needed to build their physical models (around USD 50). The main costs will be related to the use and materials for 3D printing technology (PLA) and CNC technology (foam and wood).

Please, contact the instructor if you have any questions related to this.

SUGGESTED READING:

Cantrell, Bradley. **Responsive Landscapes: Strategies for Responsive Technologies in Landscape Architecture.** ROUTLEDGE, 2017.

Cantrell, Bradley, and Adam Mekies. **Codify: Parametric and Computational Design in Landscape Architecture.** Routledge, 2018.

Cantrell, Bradley. **Modeling the Environment: Techniques and Tools for the 3D Illustration of Dynamic Landscapes.** 2012.

Cheshire, James Uberti Oliver. **Where the Animals Go: Tracking Wildlife with Technology in 50 Maps and Graphics.** 2018.

Hauck, Thomas and Weisser, Wolfgang. **AAD. Animal Aided Design.** Technische Universitat Munchen. 2015.

Iwamoto, Lisa. **Digital Fabrications: Architectural and Material Techniques.** Princeton Architectural Press, 2009

Lima, Manuel. **Visual Complexity: Mapping Patterns of Information.** Princeton Architectural Press, 2013.

Lynn, Greg. **Animate Form.** Princeton Architectural Press, 1999

Schilthuizen, Menno. **Darwin comes to Town. How the urban jungle drives evolution.** Picador, 2018.

Walliss, Jillian, and Heike Rahmann. **Landscape Architecture and Digital Technologies: Re-Conceptualising Design and Making.** Routledge, 2016.

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