Version 2 – Jan 22 version
Subject to Revision

Measuring Public Life - Sensing People in Place

Urban Informatics 2

Wednesdays, 7:00 – 9:00pm
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Summary

In recent years, interest in "public life"—people's daily interactions within the built environment (Gehl 2011)—has been renewed as urban spaces are being transformed into areas for recreation, socializing and human activity. However, many of the commonly-accepted theories in environmental psychology and planning were generated from limited observations—limited by time and space. Especially salient in what would have been Kevin Lynch's 100th birthday, this course will revisit these studies performed by Gehl, Whyte, Lynch, and others in enumerating human activities in public space by utilizing sensor and pervasive computing technologies that available to us today. This course asks in what ways can sensing technologies validate or challenge these theories of public space and social interaction, and how do we intersect them with aspects of environmental quality and justice, sustainability, equity and overall general well-being?

Participants in this hands-on workshop will design and implement prototypes for the creating of data on human activity, and environmental conditions and quality. Students will also learn methodologies to analyze and present the data. We will use the university context as a living laboratory to test and reevaluate the commonly-accepted theories of public life while engaging in critical conversations that balance the positive aspects of better-informed design and policy with the challenges concerning data ethics, surveillance, and privacy.

Learning Objectives

In this class, students will not only discuss how sensing technologies, as proxies for smart cities technologies, may or may not support larger design and justice objectives, students will also engage in hands-on development and testing of sensor prototypes to support their inquiries into these topics. As such, objectives for this class widely range from hardware development to theoretical understandings of the ethics involved in these technologies within a democratic society. Largely, we can think of the data within the framework of technical (*from "technos", meaning "art, skill, cunning of hand" as it pertains to the science of craft*) and theoretical (*as a set of knowledge and philosophically-based outcomes*):

Technical:	Ability to design and implement basic hardware prototypes; Ability to create and process machine data; Understanding of how sensing technologies work; Understand how to implement sensors to support planning objectives
Theoretical:	Understand of the potentials and limitations of smart cities technologies; Understand the critical aspects of sensing and privacy, ethics and surveillance; Ability to discuss environmental and social justice differences across the fabric of the city using data; Ability to measure behavioral phenomena

Ultimately, the objectives of this class is to learn by doing while being reflective practioners as we question the application and use of these tools and discussions to the creation and promotion of better environments.

Prerequisites

Due to the wide variation is skillsets, the general mantra for the class is that course participants are required, at a minimum, to approach the activities and lectures with enthusiasm, grit and/or perseverance. There is no other requirement.

Assignments and Grading

The class is organized as a series of sprints—that organize the class toward the implementation of your final project. While these sprints are meant to frame sets of knowledge and skills, they should be thought of as discrete sections, but merely organizational stages in our learning.

Building Knowledge

To support a wider set of information gathering, the first half of the class has students collecting, collating and presenting case study precedent projects and readings to frame the state of understanding as we debate the potential relationships that digital information and the built environment have together. As groups, students will frame conversations for their peers to engage with these ideas and projects.

Technical Wiki & Peer Teaching

How do we translate activities and phenomena in the built environment using sensors? This module of the class everyone working together to create a common resource of sensor types and how they work—what they measure, and how. As a class, we will share this information with each other in presentational, hand-on, and archived manners (including a wiki) for us to share this information that frames our prototyping and final project…

Final Project

The last third of the course is dedicated to a final group project, with an agenda of your choosing and may draw from any/all of the lessons from the course. We will be working with the NYC Parks Department, and projects should in some way address the challenges set forth by the Parks

Department. The intent is for you to question the role of spatial and environmental equity and the policies that purport to enhance it. Here, you will implement a prototype that measures aspects of the use, interactions, quality and/or other metrics of the built environment and the people who occupy that space, and validate or disclaim those planning and design claims. You should implement the hardware with enough time to implement the sensors and to process the data.

Grading

Attendance and Participation ……..…… 20%
Presentations …….. 15%
Sensors Wiki …...……...…… 10%
Prototype Implementation …… 10%
Final Project …… 30%

It goes without saying…

https://www.arch.columbia.edu/honor-system
…but, feel free to discuss, collaborate and share resources at the course's Piazza page.

Readings and Required Texts

There are no required texts, although the following books have been placed on reserves, but are great books to have on hand (and can be found as e-resources, and as a bargain used book). Readings for the course can be found electronically in Canvas or on reserve. A listing of the sections' required readings are found in the Files > Readings section of Canvas.

Igoe, T. (2011). *Making Things Talk: Using Sensors, Networks, and Arduino to see, hear, and feel your world.* " O'Reilly Media, Inc. https://clio.columbia.edu/catalog/13692054

Banzi, M., & Shiloh, M. (2014). *Getting started with Arduino: the open source electronics prototyping platform.* Maker Media, Inc.

Margolis, M. (2011). *Arduino Cookbook: Recipes to Begin, Expand, and Enhance Your Projects.* " O'Reilly Media, Inc.

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Schedule

		Stage	Class Topic	Individual Assignment
1	Jan 23	Foundations Theory	Introduction Lineages: Lynch, Whyte, Gehl and Others	
2	Jan 30		Lineages Discussion i/o presentations	I/O in Daily Lives Readings
3	Feb 06		Cybernetics Group Presentation Discussion about Project Brief	Group 1 Presentation Readings
4	Feb 13		Guest Speaker: Lily Baum Pollans, PhD Discussions on Env Justice and Technologies	Readings
5	Feb 20	Technical	Sensors + Feedback Loops Group Presentation How Sensors Work	Group 2 Presentation Readings
6	Feb 27		Guest Speaker: Tara Eisenberg, Gehl Institute Part 2: Arudino and Coding 101	Wiki Entries Due
7	Mar 06	Scope	Conversation with NYC Parks Student Technical Tutorial 1	Group 3 Presentation
8	Mar 13		Project Proposal Presentation aka "Midterm"	Presentations + Brief CITI Training Due
	Mar 20		*Spring Recess*	
9	Mar 27		Guest Speaker: Lillian Bui / AV at ACSA Student Technical Tutorial 2	Group 4 Presentation Wiki Due
10	Apr 03	Workshop	Protocols Due, and Prototype Development	Revised Brief Due
11	Apr 10		Prototype Development & Implementation	
12	Apr 17		Prototype Development & Implementation	
13	Apr 24		Data Processing	*Implementations should be complete*
14	May 01		Data Processing & Storytelling	
15	May 08		Final Project Presentations	Final Project