Environmental Sensing

EE382V Activity Sensing and Recognition

UT Austin • Dept. Electrical and Computer Engineering • Fall 2016

Today

Want to try Yaafe?

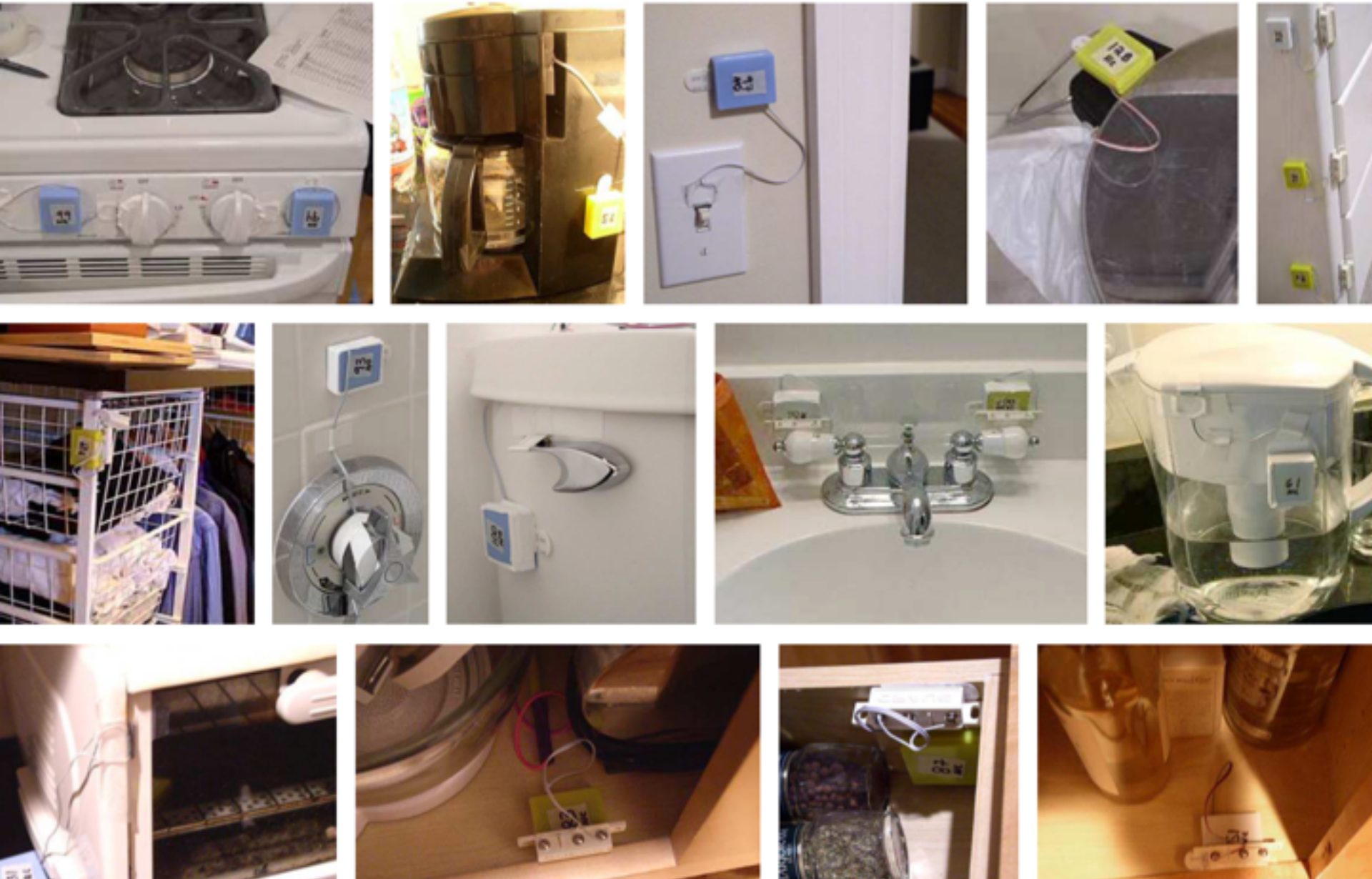
conda install --channel https://conda.anaconda.org/Yaafe yaafe

Sensors in the Environment: Objects and Simple Sensors

Video: Extreme Sensing @ Home

Panel of Experts

We have talked about environmental sensors…



What is the environment?

Home

Work

Typical Sensors

Computer

Computer

How and Why?

Computer

The Exploration & Forensic Analysis of Computer Usage Data in the Elderly

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Abstract

Unobtrusive in-home computer monitoring could one day be used to deliver cost-effective diagnostic information about the cognitive abilities of the elderly. This could allow for early detection of cognitive impairment and would additionally be coupled with the cost advantages that are associated with a semi-automated system. Before using the computer usage data to draw conclusions about the participants, we first needed to investigate the nature of the data that was collected. This paper represents a forensics style analysis of the computer usage data that is being collected as part of a larger study of cognitive decline, and focuses on the isolation and removal of non user-generated activities that were recorded by our computer monitoring software (CMS).

Computer

“One of the aims of the study is to determine whether the unobtrusive monitoring of general activity in the home can be used to detect changes in motor and cognitive function”

Computer

“Five types of events were recorded from the participants’ computers (Trigrams of general typing data, Login events, Login Passwords – a.k.a. KeyData, Application focus change events, and Mouse events)”

Drawbacks of Environmental Sensing

Hard to install

Tens or hundreds of devices

Power often an issue

Battery or connected to outlet

Hard to maintain

Software update

Drawbacks of Environmental Sensing

Collecting Data

Wired or wireless

Security

Expose a new vulnerability

Privacy

Lots of data collected about individuals

Drawbacks of Environmental Sensing

Aesthetics

Unpleasant to look at, interfere with activities

What else?

Advantages of Environmental Sensing

Nothing to wear

"Oops, I forgot to wear my watch today"

Harder to tamper with infrastructure

Might be preferable to some populations

Nothing to charge

"Oops, I forgot to charge my device today"


Deb Roy:
The birth of a word
TED2011 · 19:52 · Filmed Mar 2011
33 subtitle languages
View interactive transcript

Papers + Panel of Experts