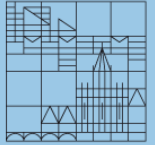


Hardware Hacking

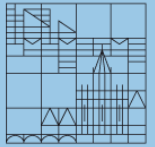
***Presentation by
Vidhu Jain
Benedikt Kromer
University of Konstanz***

Table of content

Universität
Konstanz



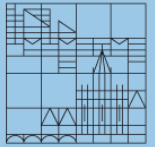
- Definitions
- Methods of Hardware Hacking
- Types of Hardware Hacking
- Prototyping Interfaces Patches
 - One Dimensional Slider
 - Two Dimensional Slider
- Example 1: Projector from LCD Laptop
- Example 2: Botanicalls Twitter



- ...instead of developing completely new sensors, often existing peripherals can be used... [Buch: Prototyping Interfaces]
- A (sometimes) clever modification or fix made to a piece of equipment that improves its performance or makes the equipment do something for which it was not originally designed. [Scott Fullam, Defcon 12,2004]

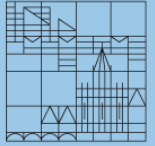
...and in a security context

Universität
Konstanz



Methods of Hardware Hacking

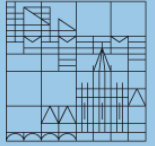
Universität
Konstanz



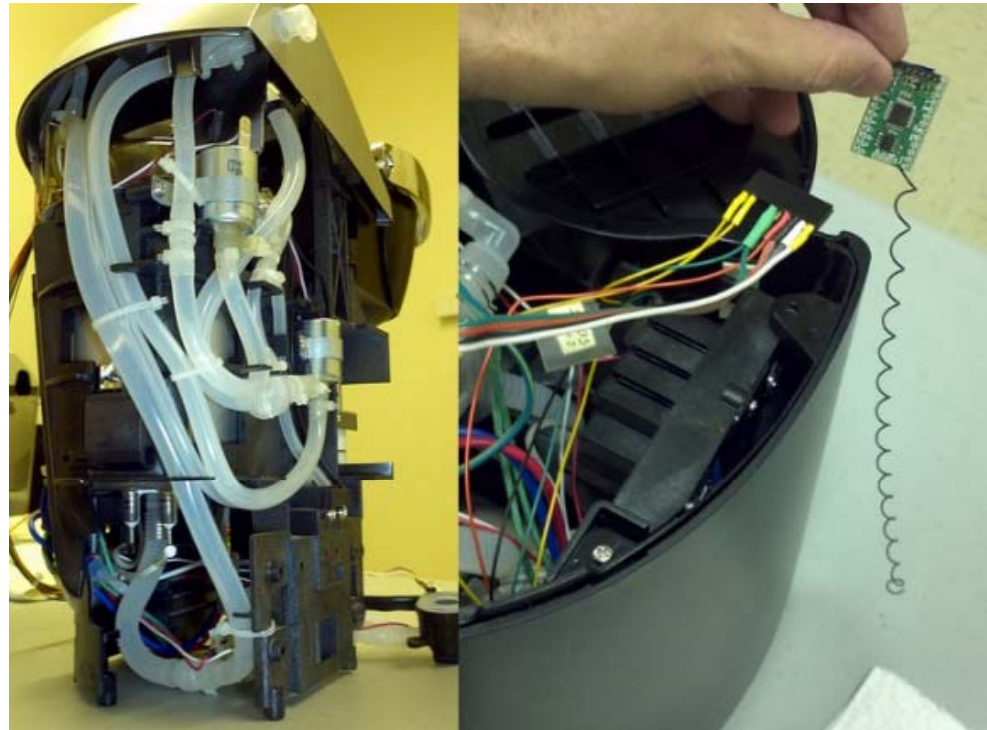
- Method 1: Patching Into I/O
- Method 2: Replacing a Component
- Method 3: The Logic Analyzer
- Method 4: Replace the controller
- Method 5: Creative hacks/rebuild

Methods of Hardware Hacking

Universität
Konstanz

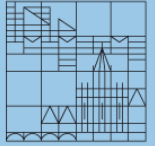


- Method 1: Patching Into I/O
 - Making your devices
 - ...wireless
 - ...faster
 - ...audible



Methods of Hardware Hacking

Universität
Konstanz

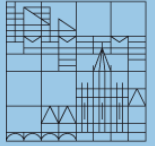


- Method 2: Replacing or add component
 - often used in circuit bending

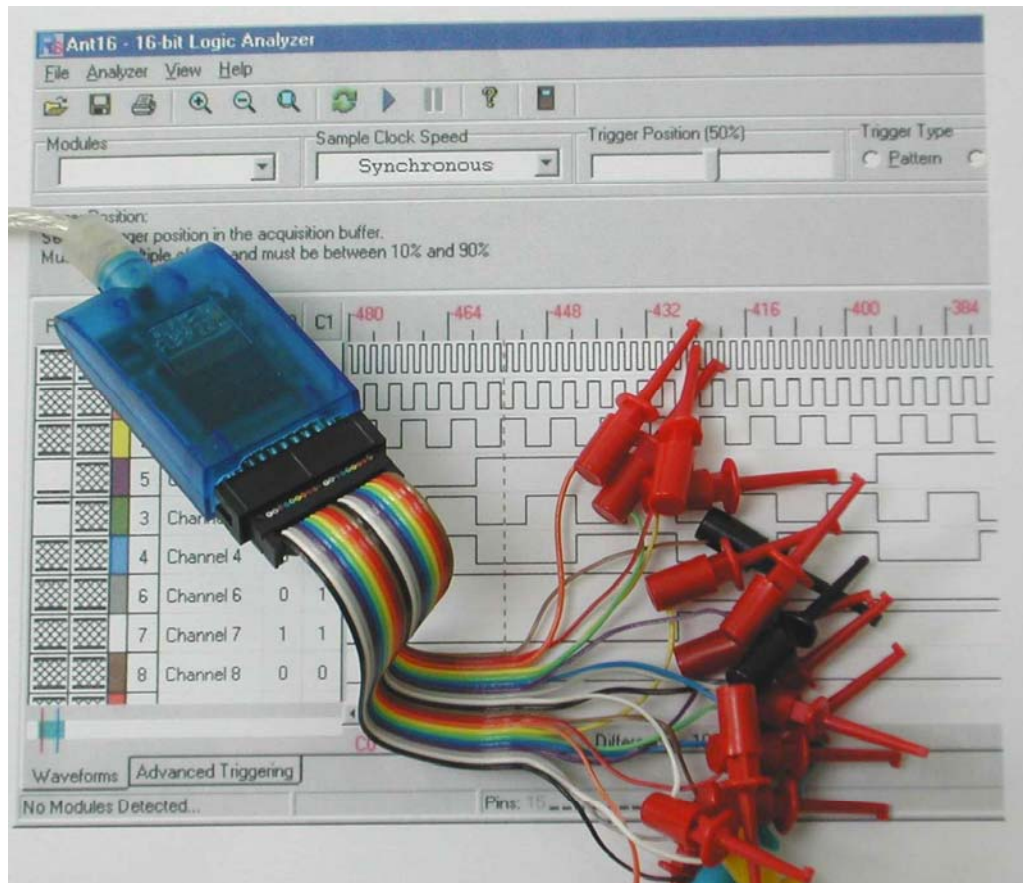


Methods of Hardware Hacking

Universität
Konstanz

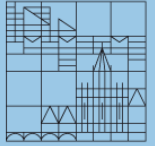


- Method 3: The logic analyzer

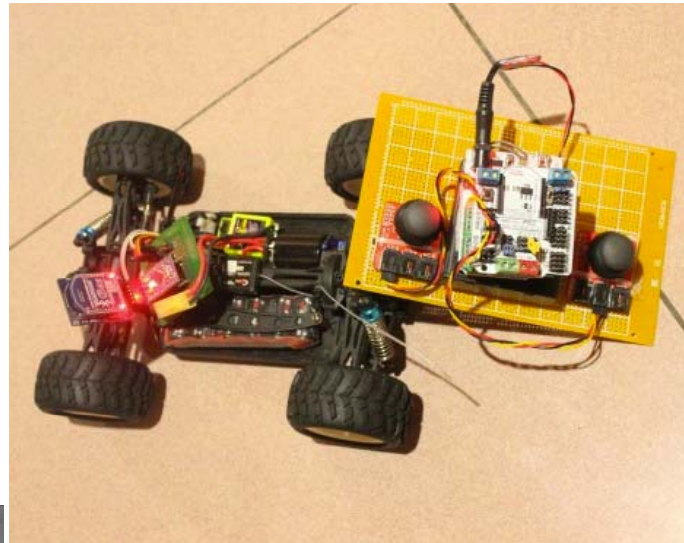


Methods of Hardware Hacking

Universität
Konstanz

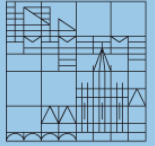


- Method 5: Replace the controller

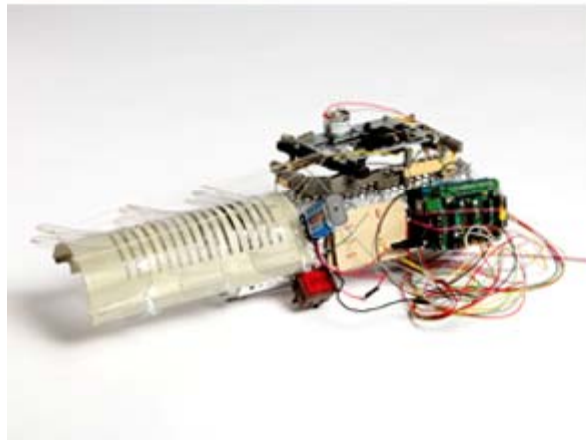


Methods of Hardware Hacking

Universität
Konstanz

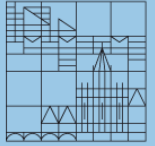


- Method 5: Replace the controller



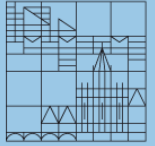
Types of hardware hacking

Universität
Konstanz

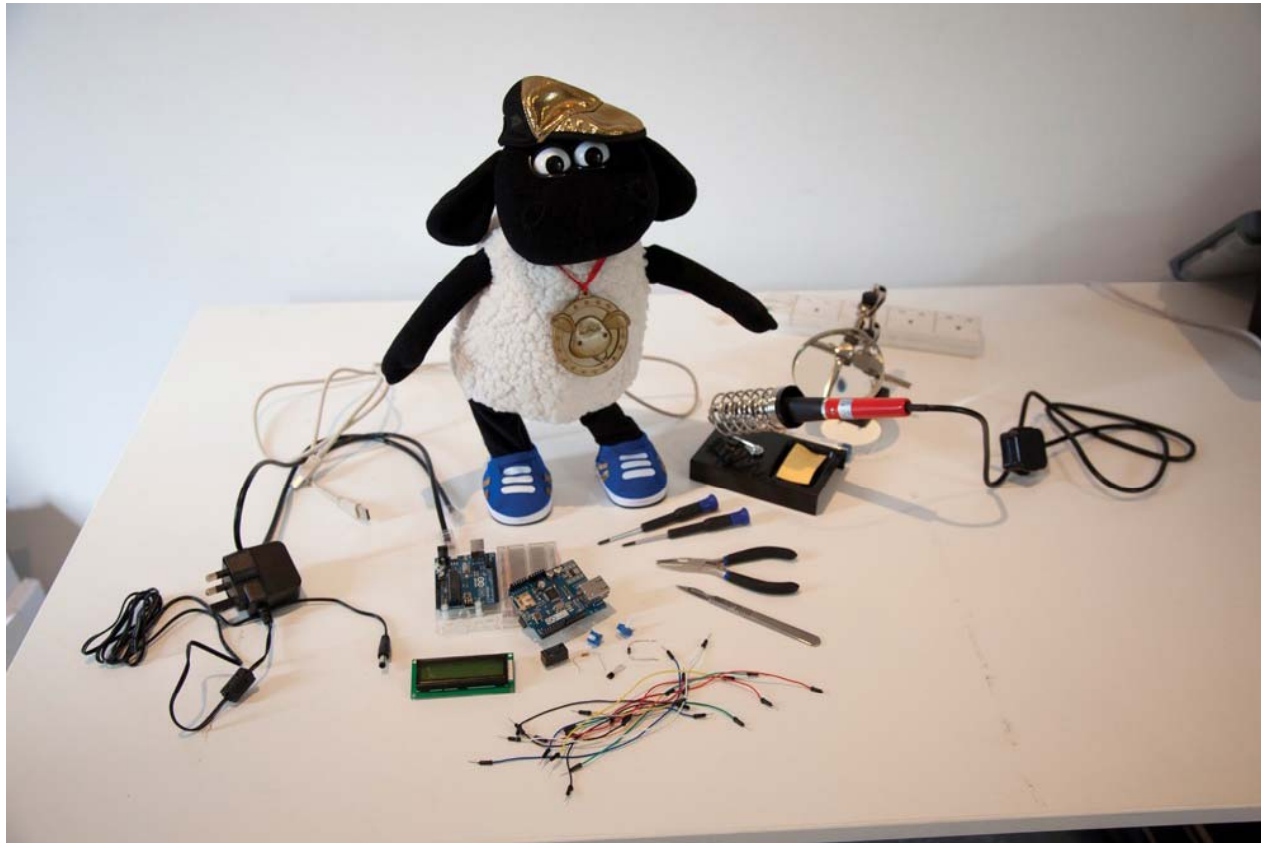


- Just hacking hardware
- Toy hacking
- SteamPunk
- Craft hacking/"making"

Types of hardware Hacking

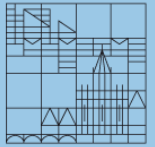


- Toy hacking
- A sheep bleats when sent a tweet

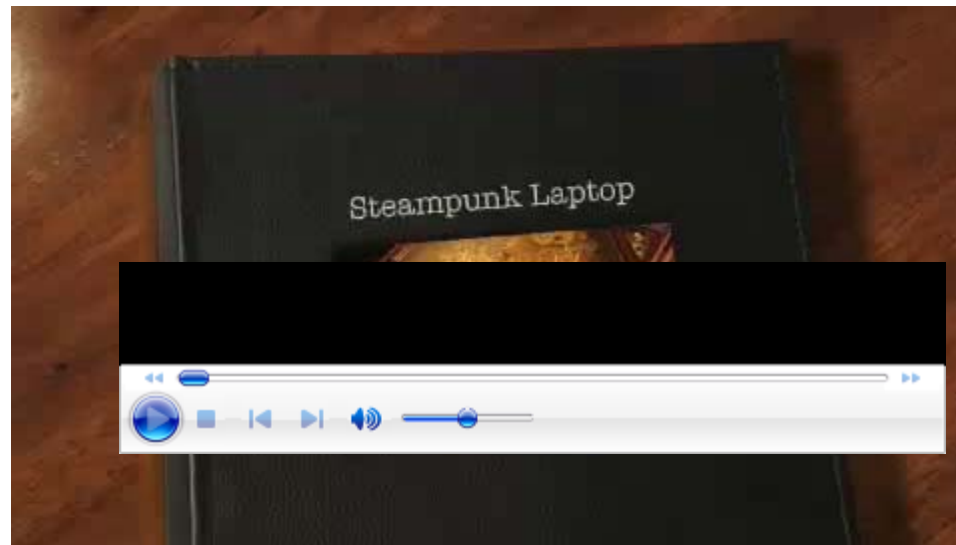


Types of hardware Hacking

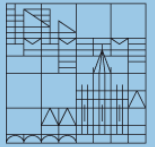
Universität
Konstanz



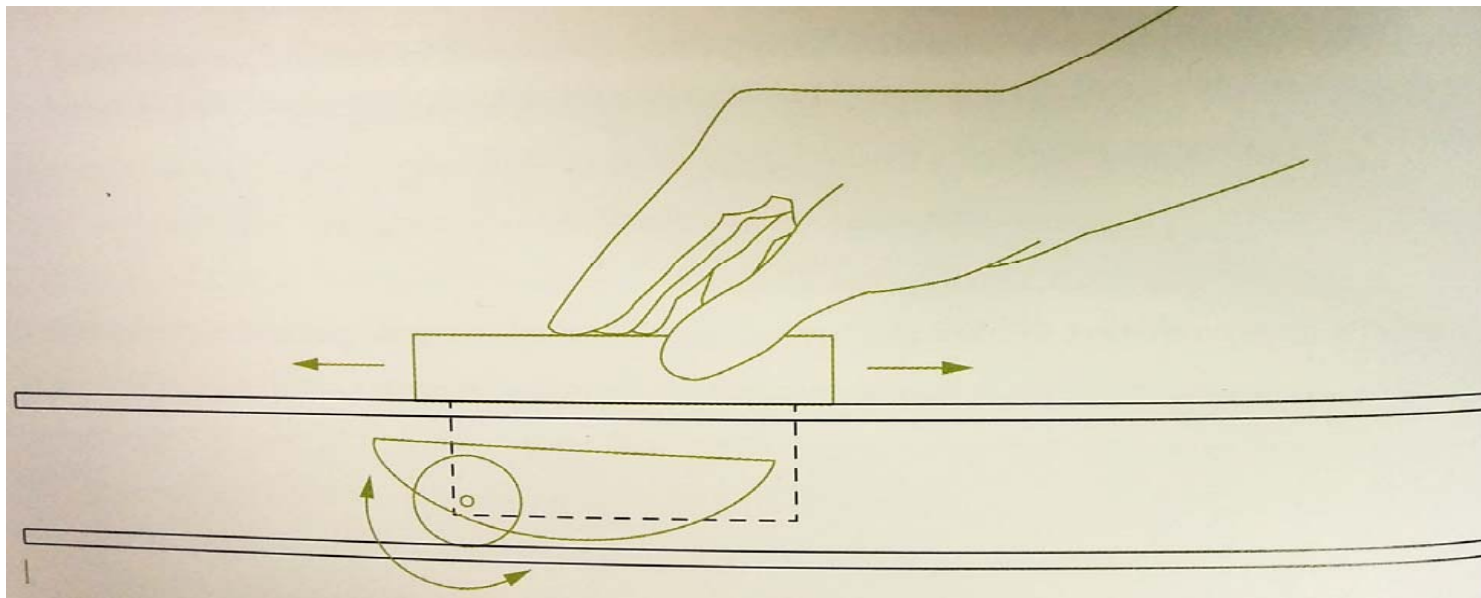
- SteamPunk : future meets the past
- Breeding of wickedly cool gadget's and art



One dimensional slider

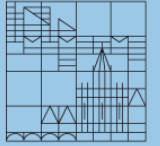


- A special construction of linear position slider
- Defined points on image
- View information on selected hotspot
- Wheel of mouse used as a sensor



VVVV Patch of one dimensional

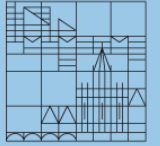
Universität
Konstanz



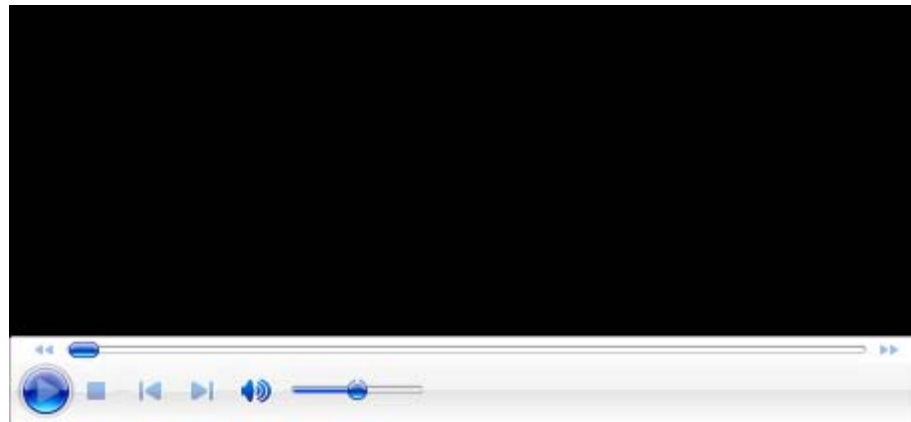
- Live Demo

Video Example

Universität
Konstanz

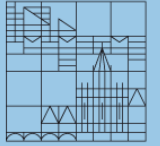


- Video from Diehl



Two Dimensional Slider

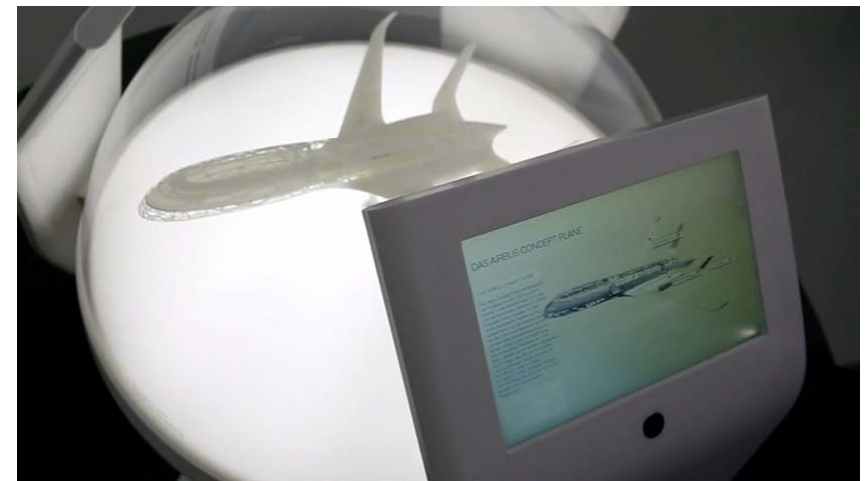
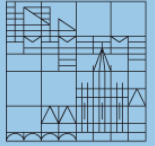
Universität
Konstanz



- Use the screen itself as interactive interface
- Look „behind“ the model and watch at details from different perspectives.
- In VVVV
 - Use regular mouse sensore to get the x and y shift

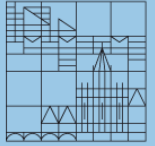
Two Dimensional Slider

Universität
Konstanz



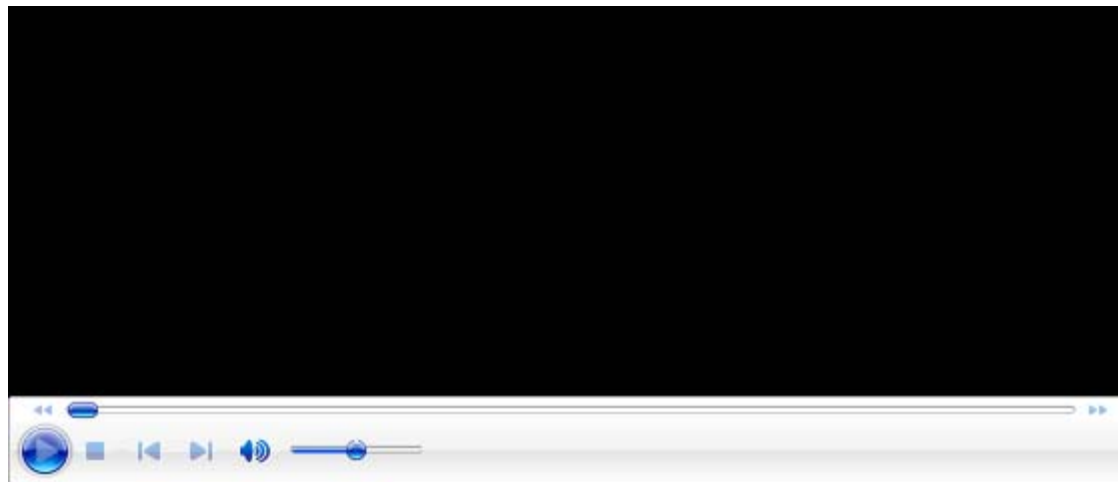
Two Dimensional Slider - Video

Universität
Konstanz



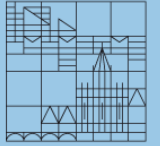
- Build for Mercedes on 2010
- Interactive Screen extension
- The user can look inside an model

- Video



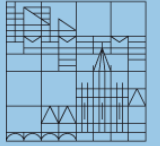
VVVV Patch of Two dimensional

Universität
Konstanz



- Live Demo

Example -1



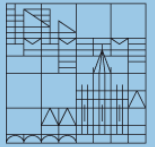
A Projector from an Old Laptop

- [Video](#)



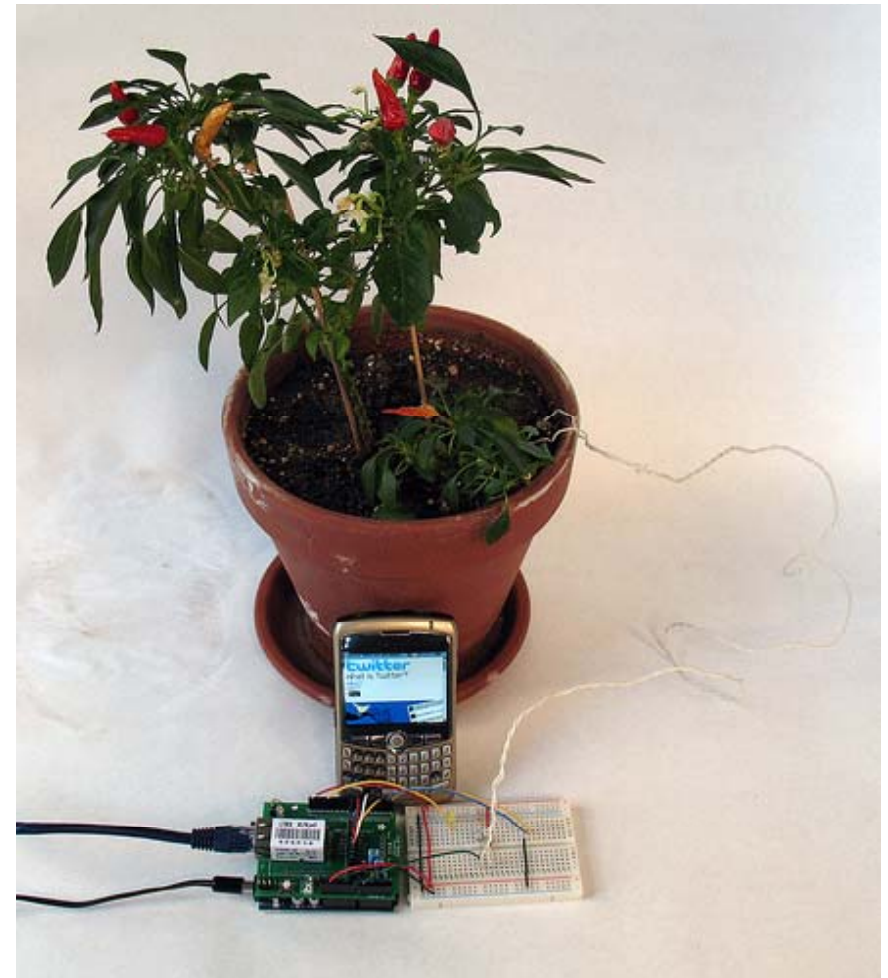
- **Item required:**
 - Old laptop
 - Screw driver
 - Overhead projector

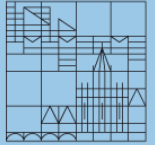
Example -2



- **Botanicalls Twitter** : What's up with your plant?

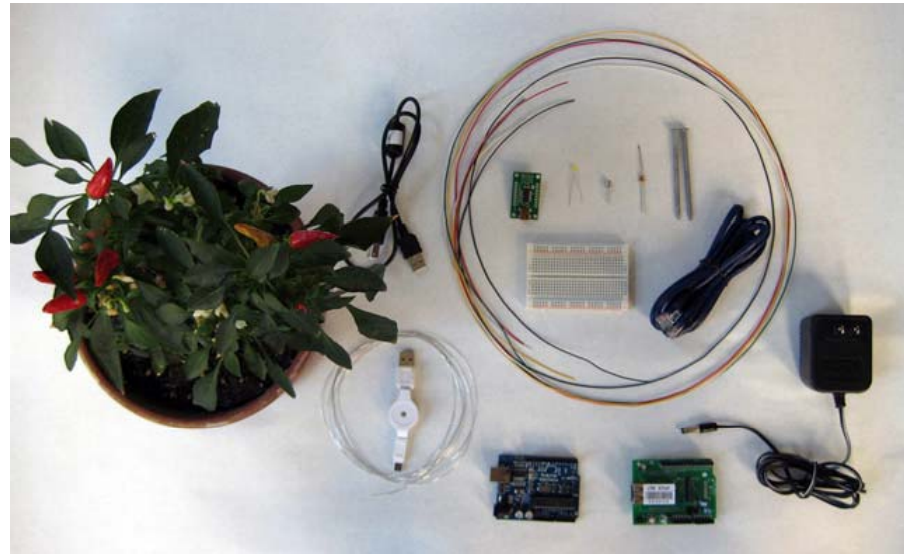
- **Twitter**
 - A software
- **Botanicalls**
 - A system to place phone calls For human help
- **With Arduino**

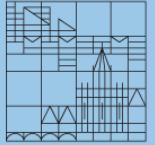




- *What we are needed?*

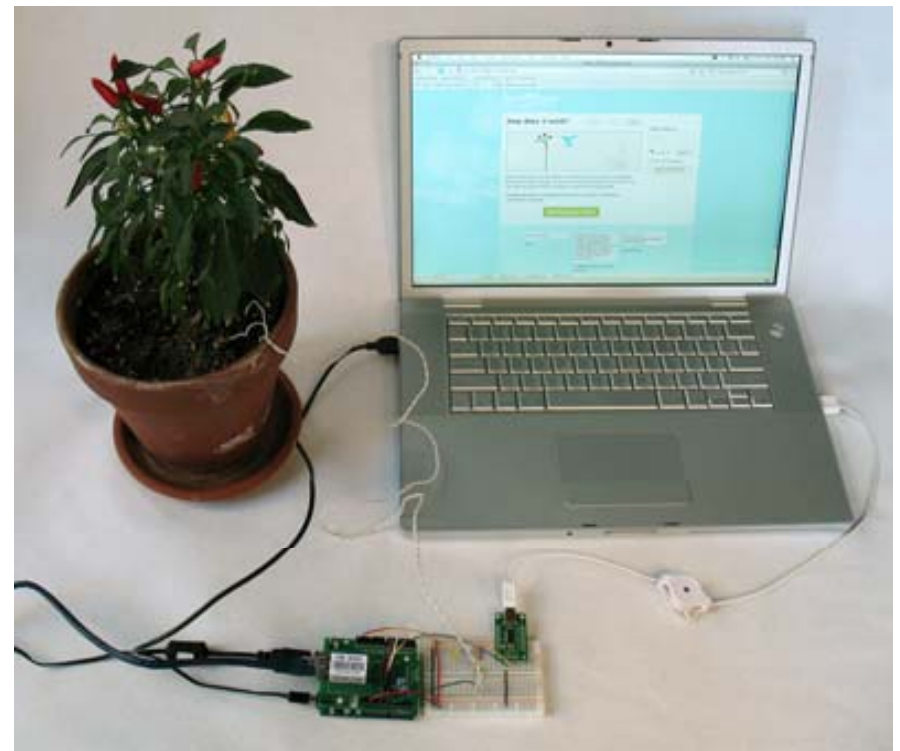
1. A plant
2. Arduino
3. Twitter account
4. Ethernet cable
5. USB cable
6. Computer
7. Transistor
8. Galvanized nails
9. Resister
10. 9V DC power adapter

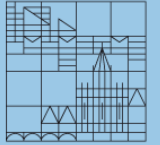




5 Different Status Updates

- Plant needs to be watered.
- Urgent water is needed.
- Thanks message.
- Water is not sufficient.
- Over watered condition





Thank you