ARDUINO
The small computer that is changing the world
Marco Triverio
WHO AM I?
WHO AM I?

Computer Engineer graduated from
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CONTACT ME

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WHAT IS ARDUINO?
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Arduino is an open-source electronics prototyping platform based on flexible, easy-to-use hardware and software. It's intended for artists, designers, hobbyists, and anyone interested in creating interactive objects or environments.
WHAT IS ARDUINO?

HI! I AM A COMPUTER
HEY! IT IS NOT FAIR!
HEY! IT IS NOT FAIR!
HEY! IT IS NOT FAIR!

This computer does almost anything but it is hard to program.
Hey! It is not fair!

This computer is more limited but it is perfect for PROTOTYPING

This computer does almost anything but it is hard to program
WHY DOES ARDUINO MATTER?
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In the same way that industrial designers have shaped our everyday life through objects they design for our offices and our homes, interaction design is shaping our life with interactive technologies - computers, telecommunications, mobile phones, and so on.

Gillian Crampton Smith
Interaction Design Institute of Ivrea
CONCEPT
CONCEPT

PROTOTYPE
with Arduino
HOW DOES ARDUINO WORK?
HOW DOES ARDUINO WORK?
HOW DOES ARDUINO WORK?

INPUT
- time
- switch
- position
- temperature
- force
- amount of light
- ...

OUTPUT
- light
- engine
- send message
- ...

...
HOW DOES ARDUINO WORK?

INPUT

distance sensor

OUTPUT

led
WHY ARDUINO?
WHY ARDUINO?
WHY ARDUINO?

Cheap (25€)
Cross-platform (Mac, Windows, Linux)
Simple, clear programming environment
Powerful
Open source software
Open hardware
SOME EXAMPLES
TABLEAU
TABLEAU

Just a **table** -technologically augmented-

New way to share experiences

Sends and receives photos from Twitter

Everything happens in the drawer

Anti-computer experience
See video at: http://vimeo.com/17280777
POWER LACES
POWER LACES

The shoes of ‘Back to the Future’

Sooner or later someone had to make these shoes
See video at: http://youtu.be/k_Efr2TaEPo
pressure sensor → motor (attached to laces)
PIANO STAIRS
See video at: http://youtu.be/2lXh2n0aPyw
pressure sensors → computer (that generates the sounds)
ARDUWAY

A small Segway
Arduino is good for robots, too
Always the same programming paradigm
(This is my Bachelor thesis)
See video at: http://youtu.be/Tw9Jr-SPLOY
BOTANICAL CALLS
Does your plant survive?

Give voice to your plants!

Your plant tweets you whenever it needs your attention
See video at: http://youtu.be/mqzwruOsQY4
humidity
sensor

Arduino UNO

Twitter
CENTER OF THE UNIVERSE
See video at: http://vimeo.com/8709711
GO WITH THE FLOW
GO WITH THE FLOW

Tangible interface to emails

Categorize emails in: work | family | friends

The amount of emails is proportional to the amount of water

Emails reach your computer ONLY when you turn the tap
See video at: http://vimeo.com/10777240
your computer

tap status

tap control

your email

fully open  fully close  partially open
CURIOUS SOUND OBJECTS
See video at: http://youtu.be/v_ocW0lp1_o
computer (that generates sounds)

various sensors and microphones
SCULPTOR OF THE 21ST CENTURY
SCULPTOR OF THE 21ST CENTURY

Shape elements through punches and kicks

On exhibit at Design Week 2006
See video at: http://fluidforms.eu/de/CassiusVideo.php
computer (that generates the animation)

pressure sensors
NATEBU

Wall that senses human presence

Humans passing by leave traces on the wall

Installation in public spaces
See video at: http://youtu.be/a0QkrciZDf4
RECLAIM THE SCREENS
RECLAIM THE SCREENS

Project to reclaim public buildings

Digitally paint on buildings

Light (a projector) is used instead of paint!
See video at: http://www.vrurban.org/smslingshot.html
VANDAL SPRAY
VANDAL SPRAY

Just like a normal can of spray

Digital spray

Create digital graffiti
See videos at:

http://vimeo.com/2573873

http://vimeo.com/2503551
can spray
button
and
commands

computer
(that generates
the graphics)
REINVENTING THE WHEEL
REINVENTING THE WHEEL

Winner of Milano Green Contest (Fuorisalone 2010)

Concept: create a digital carillon

Automatic composer of low-fi electronic music

Ever-lasting ever-changing music
See videos at:

http://vimeo.com/17400498

http://vimeo.com/17400240
rotary wheel  →  Arduino Uno  →  speaker
PROVERBIAL WALLET
PROVERBIAL WALLET

Digitally augmented wallet

Credit cards do not provide feedback of spent amounts

Provides tactile feedback about digital money
See video at: http://vimeo.com/14492626
ACROSS DIGITAL MINDS
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One-week workshop in Perugia (June 2010)

Audio + Video + Physical

Performance that joins these three aspects
More at:

http://www.acrossdigitalminds.net

http://www.adcollaboration.it
many sensors → Arduino Uno board → computer

Audio & Video signals:
- Audio
- Video
CONCLUSIONS
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Arduino is a small computer

It can be programmed easily

It is a great tool for prototyping

It is becoming the tool for Interaction Designers
ARDUINO IS GOOD

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