Internet of Things with Intel
A1 – What is IoT ?

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What is IoT ?

Internet of Things

Many definitions,
but main characteristics of IoT are :

- Highly connected
- Smart
- Thing = Not a computer / phone / tablet
- Network/physical world interface

Highly connected

Can be internet of course, but can also be :

- Intermittent internet (to save power, or because it's unavailable)
- Low bandwidth, long distance (Sigfox)
- Mesh networks
- Local : Bluetooth Low Energy BLE, ZigBee

The "Internet" of IoT is not your usual Internet.

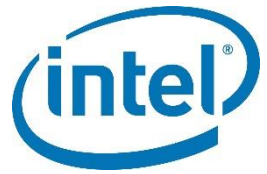
Smart

Smart does not mean the raw information is smart or coming from an ultra precise sensor.

Your solution will be smart if :

- You cross analyze data from basic sensors
- You perform a first level of AI locally
- You improve your solution with a central AI
- It works with an imperfect connectivity

Don’t wait for the perfect sensor.



Thing

A laptop will use 90% of your brain :
It’s designed as an exclusive tool.

A modern touch phone : 40%
You can walk, but not drive safely.

An old phone with keys : 20%

IoT solutions : target 0-5% maximum

Thing

Why 0-5% maximum ?

- You may have 50 of them at home.
  You don’t have time for each of them.
- You don’t want to think while you interact with them.
  Natural interfaces are better.
- The best interaction : no active interaction.

No screen, no settings, limited features.

Physical world / Network

An embedded project may not be IoT if :

- no information is gathered from the environment by analog or digital sensors
- no physical action is taken by motors, lights, sound, …

Plan to interact with the physical world

Why IoT ?

Why deploy IoT solutions ?

To optimize : an automated air conditioning system could improve your daily life.

But it can also allow the electricity company to limit your power consumption during summer peak days.

20% cheaper electricity all year to allow the electricity company to limit by 10% your consumption during 3 peak days a year ?

… why not :-)

Think hardware + software data service
rather than just hardware.

Why deploy IoT solutions ?

To collect data : Internet access and communications are already highly monitored to characterize your behavior.

But the physical world is not, except for GPS.

Knowing everything about your electrical devices, consumptions, movements at home has a lot of value.

Happy ? … *maybe not :-(*

Just like with mobile devices,
a lot of IoT devices will collect data.

Fields of IoT

Fields of IoT

Wearable

Quantified self

Form : Stuff you wear, minimal interaction, often connected your phone
but not your typical mobile device.

Motivations : body/health information.

Withings JAWBONE BASIS fitbit

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Wearable - Watches

Wearable … but not really an IoT.
More like a mobile device. Note :

- Intel/TagHeuer/Google collaboration.
- Intel MICA Smartband.

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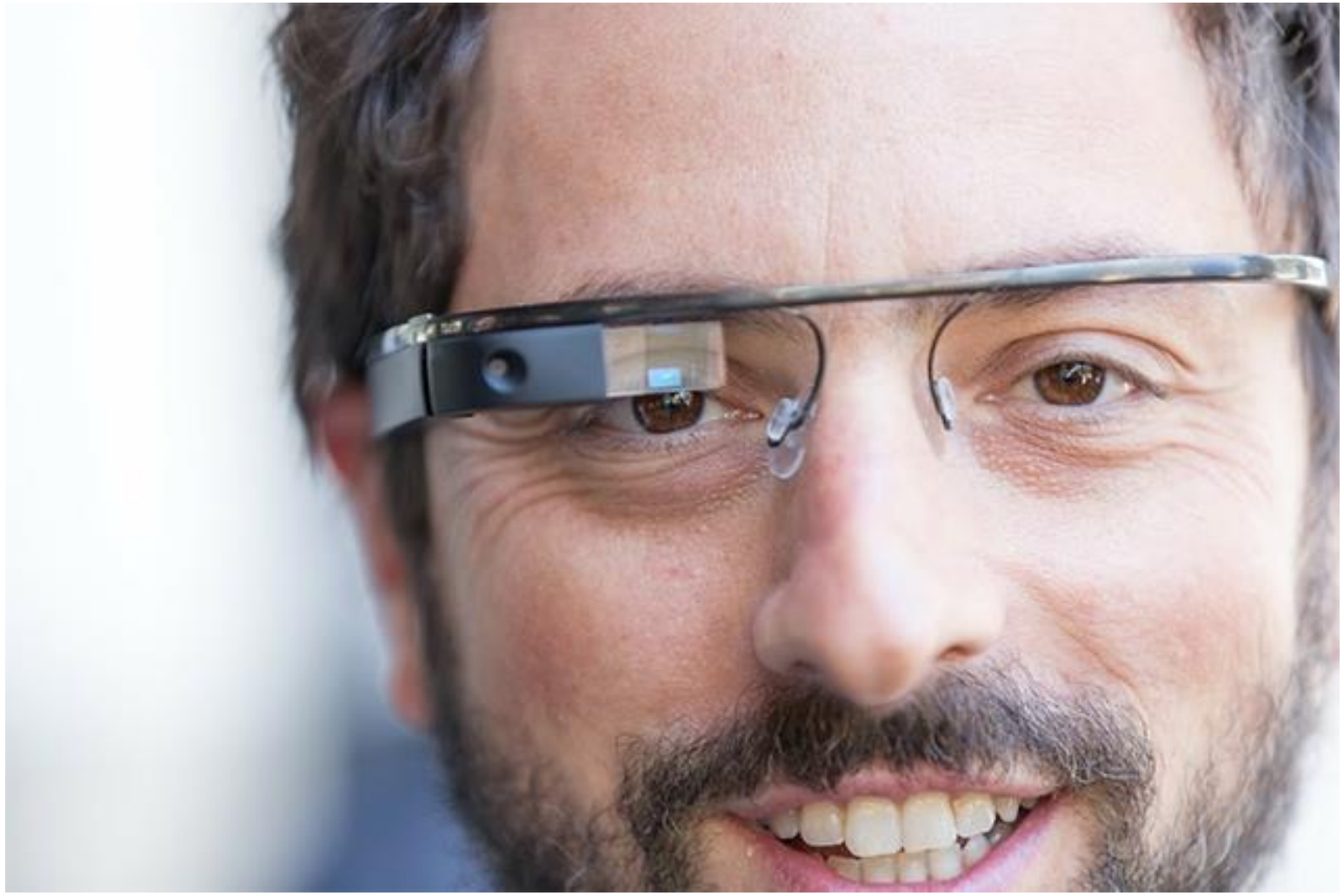
Wearable - Glasses



Fields of IoT

Smart building / Home automation

Google - Nest

Sen.se

sense
mother.

Fields of IoT

Non humanoid robots and drones

Nabaztag

Parrot Minidrones

Fields of IoT

Embedded – Old is New

Arcade / smart surfaces

MASH MACHINE

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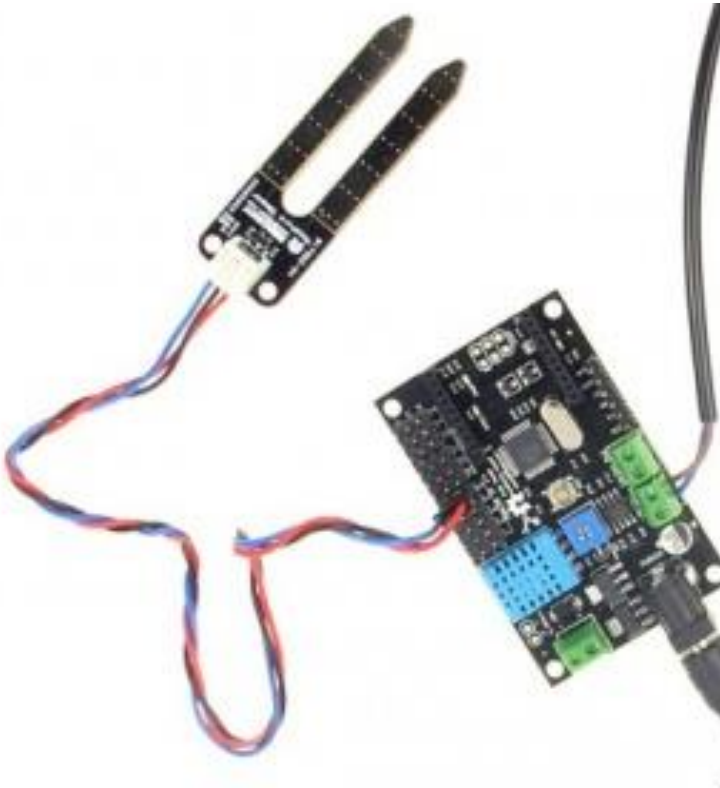
Digital signage / Smart furniture

Fields of IoT

For the fun, the lulz

Why ? Because you can !

Parrot®



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Links

Get the video recording of this lecture
and sample codes from :

https://github.com/guermonprez/intel-academic-IoT-course

https://www.youtube.com/playlist?list=PLFBM-eCNdj6A5VSmOEjpn8XoiM88398B7

http://software.intel.com/academic/iot/

Please send feedback and questions to :

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