Kinect for Windows – An Update for Researchers

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What's New in NUI
Where Are We, and Where Might We Go?

NUI Today
What is NUI?
How did we get here?
NUI Challenges
NUI Research
NUI Opportunities
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- What is NUI?
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The Kinect Effect
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For me...

NUI is how we can best interact with the increasingly ubiquitous computing world of our present – and future
What’s your perspective?
If you had to build an interactive system for 1-year olds, what would be your design objectives?
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Quiz

What year is this?
We are still living in 1968
We are still living in 1968
We are still living in 1968
But the world is changing...
"NUI"

Computers seeing & hearing us, as we see & hear, via: cameras, mics
Design Influences
don’t so much come from the workplace today, but from...
Steve Mann:
"metaphor-free computing"

CLI
- Codified
- Strict

GUI
- Metaphor
- Exploratory

NUI
- Direct
- Intuitive
in the 70s, it seemed fair to assume that users had worked in an office
2012: the office assumption has failed
800 million PCs

5 billion mobile devices
So what can we rely on her knowing?
The **physical world** around us
...touching, pointing, distances
inertia, spatial memory  ballistics
= very few rules & highly consistent
Euclid

...distances, angles, translation, rotation
1. objects stay at rest / in motion
2. objects accelerate when you apply force
3. you can bump stuff…
An interface a "1-year-old" can operate

#1 NUI: (good)
An interface that a user can operate who only knows Euclid & Newton
The screen connects **virtual with physical**
Natural = user and objects form one space
#3 NUI: (best?)

(ideally) a single Euclidian/Newtonian space that includes display(s) and user
Basic NUI principles:

- NUI brings together the physical and the virtual
- To facilitate a seamless, transparent experience
- People-centric, not the computer – and not the interface
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Skinput Project

http://research.microsoft.com/en-us/um/redmond/groups/cue/skinput/

Joint work with CMU
Humantenna Project

http://research.microsoft.com/en-us/um/redmond/groups/cue/humantenna/

Joint work with UW
Sensors & Devices Group

http://research.microsoft.com/en-us/groups/sendev/

Joint work with (multiple, EU)
Natural Interaction Group

Joint work with (multiple, e.g. CMU, UMD, Cornell, UIUC, UCLA, TU Lisbon, RWTH Aachen, HPI, Newcastle...)
Computer Vision Group

http://research.microsoft.com/en-us/groups/vision/

Joint work with (multiple, EU)
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USE THE POWER OF KINECT TO CHANGE THE WORLD

Be at the forefront of innovation. Explore how Kinect for Windows transforms the way people interact with technology. Help unlock the possibilities.

PRODUCT FEATURES

Purchase
Learn where to purchase a Kinect for Windows sensor, and start developing today.

Discover
What’s possible with Kinect for Windows? See how Kinect is being applied to fields beyond gaming.

Develop
Download the SDK and Toolkit, along with access resources to help develop Kinect for Windows applications.
用 KINECT 的力量改变世界

处于创新的最前沿。了解 Kinect for Windows 如何改变人与技术的交互方式。帮助开启无限可能。

产品功能

购买
了解何处可以购买 Kinect for Windows 传感器，并立即开始开发。

开发
下载 SDK 和工具包，以及访问资源，以帮助开发 Kinect for Windows 应用程序。

探索
Kinect for Windows 有哪些功能？了解如何将 Kinect 应用于游戏以外的领域。
Kinect for Windows v1.6

- Released October 8, 2012

- Wider availability
  - **China!**
  - Next: Chile, Colombia, Czech Republic, Greece, Hungary, Poland, Puerto Rico
  - 38 markets by end of year

- New features:
  - Extended sensor data access
  - Improved developer tools
  - Greater support for operating systems
Kinect for Windows v1.6
Features - 1

**Extended sensor data access**

- Data from sensor's 3-axis accelerometer now exposed
  - Enables detection of sensor's orientation
- Extended-range depth data beyond 4m
  - Lower accuracy, but extends usage scenarios
- Color camera settings
  - Brightness and exposure, to tune sensor to environment
- Infrared stream now exposed
  - Many scenarios, such as calibrating other color cameras to the depth sensor or capturing grayscale images in low-light
- Faster toggling of IR to support multiple overlapping sensors
Kinect for Windows v1.6
Features - 2

**Improved developer tools**

- Kinect Studio updated to support all new sensor data features
- German speech recognition language pack
- Skeletal tracking now supported on multiple sensors within a single application
- New samples
  - How to use all the new SDK features
  - New sample demonstrates a best-in-class UI based on the Kinect for Windows [Human Interface Guidelines](#)
  - “Basic Interactions – WPF sample”
Greater support for operating systems

- Windows 8 desktop compatibility
- Development with Visual Studio 2012 and Microsoft .NET Framework 4.5
- Virtual Machine support
  - Works on Windows running in a VM
  - Tested: Microsoft Hyper-V, VMWare, Parallels

Remember: all new features are supported on the Kinect for Windows sensor

- Not the Xbox 360 sensor!
- See www.kinectforwindows.com for availability
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Resources

http://microsoft.com/next/

http://kinectforwindows.com


http://microsoft.com/education/facultyconnection

http://research.microsoft.com

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#KinectWindows
Thank you!