

CODONICS: Kinect TechTalk



Intro

- Presenters
 - Garvin Seto (Case 04)
 - Mike Lustig (Case 07)
- Goals:
 - Inform students about opportunities at Case
 - Mini-Codonics Update
 - Provide Tech Demo/Discussion



Quick Outline

- Case Section
 - Career Center
 - Engineering Co-op Program
- Codonics Section
 - Info
 - New Products
- Kinect Tech Talk
 - Goals/Mini-spec
 - Hardware
 - Tools
- Kinect Tech Talk Continue...
 - Design
 - Code
 - Demos
 - Other Cool Tools/Projects
- Bonus Toby Section
- Q&A/Give-a-way/Future Talks
- Play with Kinect
- EI Fin.

Case Information

- Career Center Website
 - Keep your resumes up to date.
 - No resume?!?! Make one.
 - Link: studentaffairs.case.edu/careers/
- Career Fair Date (Oct 6th 2011)
 - Know who comes to Case.
 - Begin to network with employers.
- Engineering Co-op Center
 - Interview practice
 - Resume critique
 - Link: engineering.case.edu/coop

Codonics Information

- Medical Device Manufacturer Headquartered in Middleburg Hts. OH
- In-house operations: Design, Engineer, Manufacture, Shipping
- 60% Business International.
- Proud of co-op program over 70 students +10 years
- Ohio co-op award 2010



Codonics Information pt2

- New Products for 2011. Geared towards OR market.

- SLS



Codonics SLS Safe Label System is a complete solution for safe, compliant, fast labeling of medication in the operating room, or anywhere syringes are prepared.

- Improve patient safety.
- Multiple distractions and poor handwriting greatly contribute to the chance an anesthesiologist could get drug vials confused or put the wrong label on a drug.
- Super-Cool Mystery Product.
- Check out our cool products at Codonics.com

Legal-ese Section

Codonics does not condone illegally hacking/modding devices. Such actions can void warranties or decrease the life of the product. Even worse Sony has been known to sue hobbyist* and force them to flee to South America** ;)

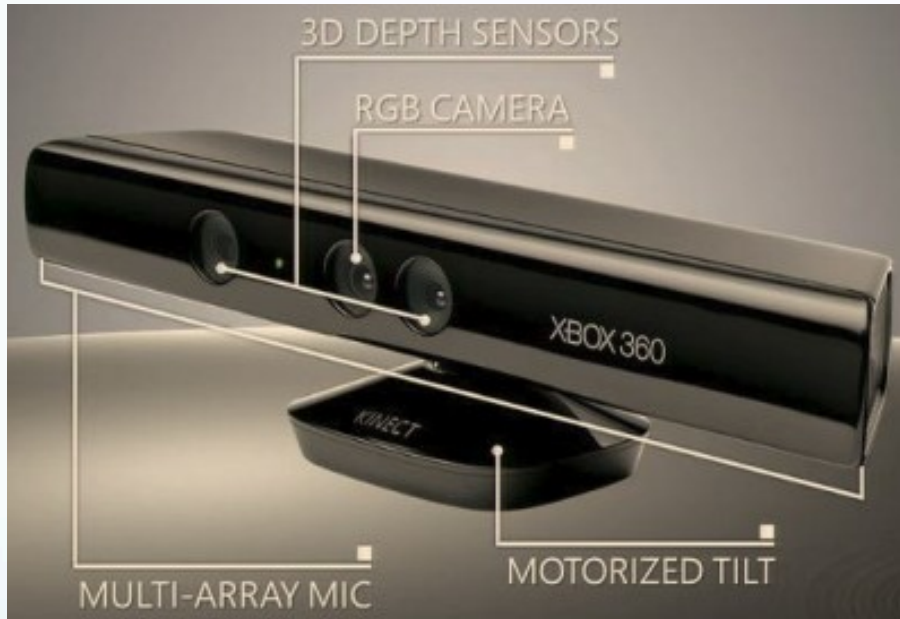
* - “Sony follows up, officially sues Geohot and fail0verflow over PS3 jailbreak” www.engadget.com/2011/01/12/sony-folows-up-officially-sues-geohot-and-fail0verflow-over-ps/

** - “Geohot is not fleeing, he is on vacation [Sony Decetion]” www.tekgoblin.com/2011/03/24/geohot-is-not-fleeing-he-is-on-vacation/

TechTalk: Mini-Spec

- Evaluate Kinect motion capturing.
- Create algorithm to capture the following gestures:
 - One handed swipe left/right/up/down
 - [future] Two handed swipe left/right/up/down/cross
- Link gestures to existing Codonics Virtua.
- Gestures will be used to navigate interface.
 - 1-left: next page, 1-right: previous page
 - 1-up: last page, 1-down: first page
 - [future] 2-left: last page, 2-right: first page, 2-cross:logout

TechTalk: Das Hardware

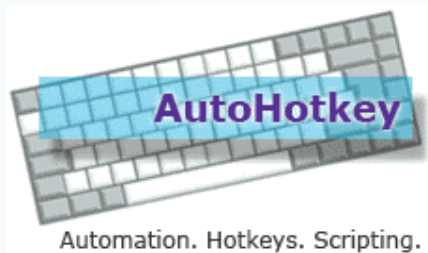


- RGB video stream uses 8-bit VGA resolution (640 × 480 pixels)
- 30 fps
- 1.2–3.5 m (3.9–11 ft)
- 27° either up or down
- Microphone array features four microphone capsules and operates with each channel processing 16-bit

TechTalk: Tools pt1

- **OPEN KINECT**: Free, open source libraries that will enable the Kinect to be used with Windows, Linux, and Mac.
 - 2000 members
 - GPL2
 - <https://github.com/OpenKinect/libfreenect>
 - Dependencies (for windows):
 - libusb-win32
 - pthreads-win32
 - Glut
 - http://openkinect.org/wiki/Getting_Started

TechTalk: Tools pt3



- **AutoHotkey**: free, open-source utility for Windows.
- <http://www.autohotkey.com/>
 - Automate almost anything by sending keystrokes and mouse clicks.
 - You can write a mouse or keyboard macro by hand or use the macro recorder.
 - Create hotkeys for keyboard, joystick, and mouse. Virtually any key, button, or combination can become a hotkey.
 - Expand abbreviations as you type them. For example, typing "btw" can automatically produce "by the way".
 - Create custom data-entry forms, user interfaces, and menu bars. See GUI for details.
 - Remap keys and buttons on your keyboard, joystick, and mouse.
 - Respond to signals from hand-held remote controls via the WinLIRC client script.
 - Run existing AutoIt v2 scripts and enhance them with new capabilities.
 - Convert any script into an EXE file that can be run on computers that don't have AutoHotkey installed.

TechTalk: Design pt1

- Color depth map. Now what?!?!



TechTalk: Design pt2

- Depth filter.



TechTalk: Design pt3

- After depth filter.



TechTalk: Design pt4

- What next? Optimization.... Duh. Let's make assumptions.



TechTalk: Das Code/Demos
Meat and Potatoes.



TechTalk: More cool stuff with Kinect

- Official windows sdk <http://www.youtube.com/watch?v=uUKsMcnvAyE>
- <http://kinecthacks.net>



TechTalk: Toby Section

- This is where Toby pwns all and makes us look bad. Go Toby!

TechTalk: The Wrap Up

Q&A

- Continue to support Case Engineering via:
 - Tech Talks (RFID, what else?, Kinect pt2?)
 - Offering Co-op positions.
 - [potential future] Sponsor senior/class projects.
 - [potential future] Code Wars.
 - [potential future] Charity Coding.
 - [potential future] What else?
- Contact Info:
 - gseto@codonics.com,
 - mlustig@codonics.com

Thanks for your time.
See you next semester.

