Towards Solving Real-World Vision Problems with RGB-D Cameras

Kinect for Windows SDK+Toolkit
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Before I Forget...

• Lots of people helped to create the content for this presentation...
  • Not only from K4W, but also DPE, Xbox, MSR, etc.
Kinect for Windows releases

- 1.0: Feb/01/2012
- 1.5: May/21/2012
- 1.6: Oct/04/2012
- 1.7: Mar/18/2013
- Future
  - 1.X investment
  - New sensor
Environment Differences...

Xbox
- Known CPU: PPC
- Known bus
- 1 device per machine
  - Only 1 supported
- Known architecture
- Known GPU
- Selected audience
- Mainly games

Windows
- Intel, AMD, ...
- USB 2.0+
- Multiple devices
  - 1 per USB controller
- Win32, x64
- V1: no GPU requirement
- General audience
- Unbounded scenarios...
KINECT SENSOR

- IR Emitter
- Color Sensor
- IR Depth Sensor
- Tilt Motor
- Microphone Array
Drivers
Runtime

• Sensor discovery, initialization and notification
• Frame delivery supports event-based notification and polling models
• Emphasis on low-latency, low per-frame allocations
• Supports virtual sensors, including test tools and Kinect Studio
Release Notes and Online Resources
Web page with known issues and links to any updated or new resources.

Difficulty: Beginner
Languages: C++, C#, VB

SDK Documentation
The Kinect SDK API reference compiled help.

Difficulty: Intermediate
Languages: C++, C#, VB

CodePlex Website for Samples
Online code repository for all Toolkit samples and more.

Difficulty: Beginner
Languages: C++, C#, VB

Human Interface Guidelines
Guidelines on how to design interactions and interfaces for Kinect for Windows applications.

Difficulty: Intermediate
Languages:
KinectSensor kinect = null;

void StartKinectST()
{
    kinect = KinectSensor.KinectSensors.FirstOrDefault(s => s.Status == KinectStatus.Connected);
    kinect.SkeletonStream.Enable();
    skeletonData = new Skeleton[kinect.SkeletonStream.FrameSkeletonArrayLength];
    kinect.SkeletonFrameReady += new EventHandler<SkeletonFrameReadyEventArgs>(kinect_SkeletonFrameReady);
    kinect.Start(); // Start Kinect sensor
}

private void kinect_SkeletonFrameReady(object sender, SkeletonFrameReadyEventArgs e)
{
    using (SkeletonFrame skeletonFrame = e.OpenSkeletonFrame())
    {
        if (skeletonFrame != null && this.skeletonData != null)
        {
            skeletonFrame.CopySkeletonDataTo(this.skeletonData);
            ... HANDLE SKELETAL DATA HERE ...
        }
    }
}
Questions?

- **K4W links**
  - Download the SDK & Toolkit
    [http://go.microsoft.com/fwlink/?LinkId=236070](http://go.microsoft.com/fwlink/?LinkId=236070)
  - Software support forums
    [http://go.microsoft.com/fwlink/?LinkId=236056](http://go.microsoft.com/fwlink/?LinkId=236056)
  - Sensor support and repair
    [http://go.microsoft.com/fwlink/?LinkId=236069](http://go.microsoft.com/fwlink/?LinkId=236069)
  - Samples online