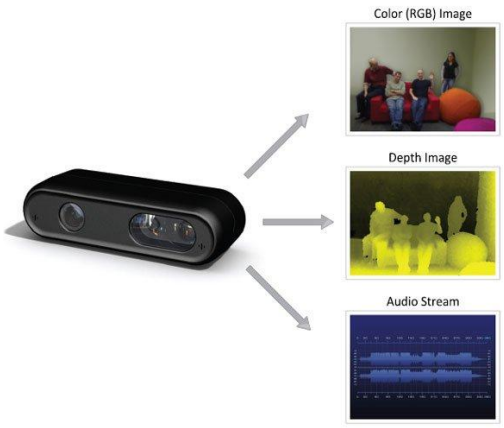
几种深度摄像头简介

随着微软 kinect(natal)的发展，深度摄像头吸引越来越多人的目光，深度摄像头可以用在人体跟踪，三维重建，人机交互，SLAM 等等领域。但是深度摄像头的高昂的价格实在是让一般人望而却步，我所知道的 primesense 的一个摄像头要 5000 美元。。。而 kinect 的出现会不会带动民用（相对廉价）的深度摄像头的发展呢（传闻 kinect 定价 199 美元）？

cvchina 曾经介绍过两种深度摄像头，下面再转一个最近看到的几种深度摄像头的简介：

	The Mesa Imaging SwissRanger 4000 (SR4000) is probably the most well-known ToF depth camera. It has a range of 5-8 meters, 176 x 144 pixel resolution over 43.6° x 34.6° field of view. It operates at up to 54 fps, and costs about $9,000. I've seen these used in a number of academic laboratories.
	The PMD Technologies CamCube 2.0 is a lesser-known, but equally impressive ToF depth camera. It has a range of 7 meters, 204 x 204 pixel resolution with 40.0° x 40.0° field of view. It operates at 25 fps, and last time I checked, it costs around $12,000.
	As part of the PR2 robot, Willow Garagehas developed a dense stereo rig using visible projected light (embedded in the sensor head pictured above-left). I refer to this class of depth camera system as "projected-light stereo." In essence, a projector displays (pseudo) random patterns onto the scene to enable robust stereo feature extraction. This method seems to produce very high-quality range data at framerate to produce point-clouds like the one shown below-left. The Willow Garage system was (partially) explored in a paperat Humanoids 2009 by Rusu *et.*

	a1. The biggest drawback with the system in its current form is that it uses visible light. I'm sure subsequent versions will transition to infrared. To my knowledge, these are not yet available for purchase.
	The sensor pictured is Microsoft's Project Natal, as announced at 2009's E3 convention. A brief history… Microsoft purchased ZCamfrom 3DV Systems in 2009. ZCam had made some impressive ToF imagers in the past and had plans to make a custom-silicon solution for ranging webcams. However, the safe bet is that Project Natal is actually infrared projected-light stereo, hence the three opening ports on the pictured device (two camera ports for stereo imaging, one extra port for IR projection). Presumably this device will be quite cheap; it is meant to be a mass-market gaming console sensor. To my knowledge, these are not yet available for purchase.
	The PrimeSense depth camera is driven by a single-chip custom-silicon solution. It projects a known infrared pattern onto the scene (perhaps a grid-like pattern?) and determines depth based on the pattern's deformation as captured by an infrared CMOS imager. The resulting depth image is 640 x 480 pixels with a maximum throughput of 60fps. An optional color CMOS imager returns 1600 x 1200 photos. You can learn more here. To my knowledge, these are not yet available for purchase.