

IEEE Consumer Electronics Society

Consumer Electronics Show Report



Image Capture Products & Technologies

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January 2015

Disclaimer

The following report represents the views and opinions of the author only and does not represent the views or opinions of the IEEE.

The following presentation is a collection of information limited to the 3 convention center halls.

Welcome to CES!



“Selfie” Products



- Auto everything image capture
- Pocket sized
- Enablers:
 - “Back Side Illumination” for sensor die shrink
 - BLE for remote controllers
 - MIPI for inter-connect shrink

Sports & Lifestyle Image Capture



- Highly ruggedized
- Physically unobtrusive
- **Wireless preview/output**
- High resolution, high frame rate
- Large field of view
- YouTube HD is a key enabler!



Drones!



- Great potential for broadcast and public sector agencies
- Serious Regulation Issues!
 - Blade Safety
 - Collision Avoidance
 - Motor/Battery Failure Procedure
 - Identification Beacon
 - Nuisance/Privacy Regulations
 - FAA Jurisdiction?
 - Anti-Terrorism???
 - Public Safety Nightmare!

Photogrammetry

TOSHIBA
Leading Innovation >>>

An Easier Way to Check Out New Outfits!

Virtual Fitting Solution

- ▶ Enjoy finding suitable clothes anytime and anywhere.
 - Place: Hair salon, Shopping mall, living room, air port lounge...
 - Device: Digital signage, TV, personal mobile phone...
- ▶ Try various coordinates with a simple operation.
- ▶ Collection and analysis on fitting experience history for marketing purposes.




TOSHIBA's New 3D Contour Sensing & Fitting

Body contours are modeled in 3D.



Clothes are scaled to size.



The shoulder line is used for the fitting.




- New uses for old technology
- Depth mapping for new uses
- Data enhanced imaging
- “Computational” imaging
- No longer just for cartography
- Showing up in strange places

Thermal Imaging



- Went from \$50,000 to \$500
- Low cost enables new applications.

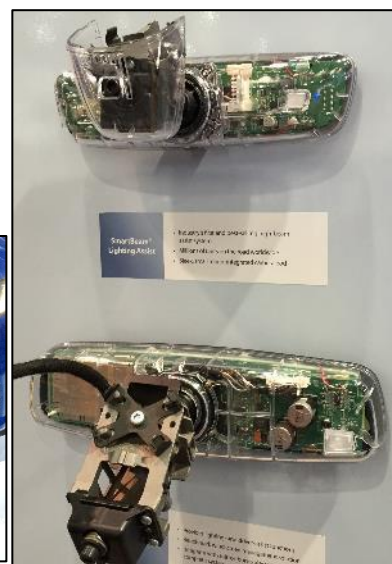
360 Degree Capture

- Capture full 360 degrees
- Very difficult to mate edges of images, especially with video
- Playback tools currently immature
- Viewer can select viewpoint after image capture



Automotive is Explosive!

- Multi-camera collision avoidance, view enhancement.
- Driver gesture detection
- Infotainment
- Event Capture



Most Creepy Awards!



Most Overlooked Product Award!

INSPECTION DVR TORCH

Dimmable Flashlight
Dim → Medium → Strong
→ Flash → SOS

TF-3000HD

PATENT PENDING

**THE WHOLE BODY
WATERPROOF IP68**

A wide range of uses

The fire rescue

Secluded cave

Imaging Take-Aways

Progression of Video Capabilities

1. Compressing & Recording Video
2. Adding Meta Data
3. Real Time Video Correction
4. Detecting Simple Objects
5. Detecting Complex Objects
6. Extracting 3D Information

Good Time to be an engineer!