

Research Demo & Proposal

— Building Your Favorites in 3D

Ruofei Du



Computer Science

Part I: 3D Reconstruction

- Real-time object tracking and camera pose estimation
- Interactive segmentation with multi-view propagation
- An efficient client-cloud service for surface reconstruction

Tracking



Interactive segmentation



SMART CAPTURE



- Automatically recording
 -
- With simple setup
 -
- In less than one minute
 -

MULTI-VIEW RENDERING

- 2D-3D Mapping



SILOUETTE PROPAGATION

- With epipolar constraints



SURFACE RECONSTRUCTION

- Accurate thin structures



Part II: Augmented Reality

- Project to your world
- Enlighten your photos



VOLUME CALCULATION

[Volume] X: 18.48cm Y: 4.96cm Z: 14.58cm



- RANSAC estimation
- Marching cubes
- Measured by user specification

SURFACE DETECTION (ongoing)



- Extended Kalman Filter
- SLAM Framework
- Potential Games

PERSPECTIVE SCENARIOS (ongoing)

- Virtual Shopping Mall
- Parkour Game (ongoing for CHI2013 Student Session)
- 3D Print (with Microsoft Redmond)

WINDOWS 8 APPS

- Pencil vs. Camera (with Jiawei Gu)



- Encrypt, ClockCompass, DBLP..

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Research Demo & Proposal(cont.) Ruofei Du



— A Visual Illustration of my earlier projects

Computer Science

• Part 0: Eye Wander System (2010) [\[youtube\]](#)



• Eye-controlled Phone



Screen Lock



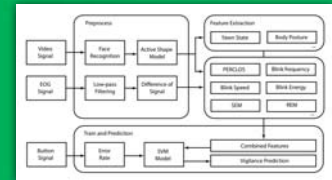
Text Auto-scroll

Photo-viewer

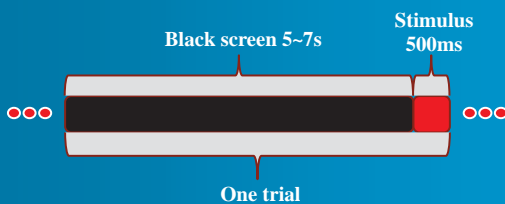


• Part I: ICONIP 2012

- Online Vigilance Analysis Combining Video and Electrooculography Features
- The FIRST experiment by comparing and combining both types of features.



• Experiment Design



• Part 2: The future

Explore the world by eyes
Sculpt the models by hands
Move the objects by proxies
Express ourselves by voice
Change the future by minds



- Rendered by my reconstructed objects

Life beyond Research

Ruofei Du



— Design my Life & Invent the Future

Computer Science

Part I: Poster & Album



EXPO 2010 Poster



Part II: Real-world Design



Calligraphy (Presentation)



Sketch Works I



Sketch Works II



III & Engraved Seals

Part III: Miscellaneous



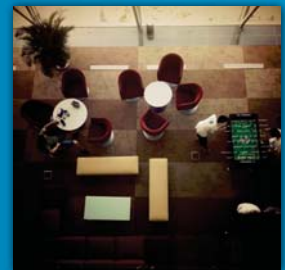
BCMI Logo



English Corner Logo



My Website



Photography

MSRA Intern Postcard Winner Prize



Harmonica & Friends

