Dyna-Eye: A dynamic 2D-3D Stereo Viewer

Requirements Presentation – 09.11.2017

Project Supervisor: Benjamin Busam

Presented by: Ruiqi Gong
Background & Motivation

- 3D view: important for surgeries
- Common methods:
  - Head mounted display
  - Stereo control cabinet
- Drawbacks:
  - difficult interaction with the team
  - always focus on the same plane regardless of the depth
Main Idea

• Stereo view with crossed eyes

• Pros:
  – No additional devices needed
  – Focus changes with depth

• Cons:
  – Training required

YouTube. “3D without glasses, Cross-Eye HD” (07.11.2017)

Donald Simanek. “How to view 3D without glasses”. (05.11.2017)
Tasks Description

• First: Static stereo view with pre-defined “focal length”
  – 3D rendering for multiple fixed focus points

• Next: Dynamic stereo view
  – 3D rendering for a focus point that moves smoothly

• Programming Language: C++

• Libraries:
  - OpenCV
  - PCL
  - VTK
Stakeholders

FRAMOS GmbH

Chair for Computer Aided Medical Procedures & Augmented Reality

Interdisziplinäres Forschungslabor (IFL)
UML Diagram

Dyna-Eye 3D Viewer

- Input distance of eyes
- Input distance to the screen

Calculate position of cameras

- Render two 2D images
- See a 3D object

User

Program
Thank you for your attention. 😊

Question?