Magic Eye: An adaptive 2D-3D Stereo Viewer

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Final Presentation

Computer Aided Medical Procedures (CAMP)
Technische Universität München, Germany
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Stakeholders

- Project partner
  - FRAMOS[1]
  - IFL[2]
- Supervisor
  - Benjamin Busam
- Project Manager
  - Aleksandr Bulankin
- Development team
  - Aleksandr Bulankin

Motivation

• 3D perception is an integral part of many surgical interventions
  • User is bound to the display -> can not see patient live
  • Limited interaction with the medical team

How it works

- Designing and implementing a free-view 2D-3D stereo viewer

Task

- Implement a rendering pipeline from a 3D scene to stereo images
- Implement eye tracking algorithm
- Implement GUI
- Testing and Debugging
- Image fusion method evaluation
- Documentation and Report
- Prototype
## Workflow

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<th>May</th>
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**Initial meeting**

1. **Project Requirements Presentation**
2. **Rendering pipeline with fixed parameters**
   - **Design and Coding**
3. **Eye tracking algorithm implementation**
   - **Design and Coding**
4. **Intermediate Presentation**
5. **Integration**
   - **GUI**
   - **First Prototype**
   - **Validation**
   - **Verification**
6. **Testing and Debugging**
7. **Documentation**

**Stereo Viewer**

1. **Rendering pipeline with fixed parameters**
2. **Design and Coding**
3. **Focus Helper**
4. **Integration**
   - **GUI**
   - **First Prototype**
   - **Validation**
   - **Verification**
5. **Testing and Debugging**
6. **Documentation**

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[1] created with [GanttPRO](https://www.ganttpro.com)
Activity diagram

<<iterative>>

- .ply file
- scaled point cloud
- Set up cameras
- Render stereo pair
- Focus helper
Focus Helper

Quiz

Type of focus helper

- Circle
- Semicircle
- Slider

Participants

(1) (2) (3)
How it looks like...
Possible improvements

Questions?