Automatic Pose Synchronization

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Project Partner: FRAMOS

Intermediate Presentation

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Project’s Goal

Synchronize different pose streams in time

+ Minimize lag due to sampling

Requirements and Specifications

- Use of Quaternionic Upsampling¹
- Alignment of different tracking streams
- Visualization Framework
- Demo

[¹] Source: B. Busam, M. Esposito, B. Frisch, N. Navab *Quaternionic Upsampling: Hyperspherical Techniques for 6-D-of-F Pose Tracking* International Conference on 3DVision (3DV), Stanford University, California, USA, October 2016
Synchronization Problem

Stream 1

- \( t_0 \) to \( t_1 \)
- \( t_1 \) to \( t_2 \)
- \( t_2 \) to \( t_n \)

Stream 2

- \( t_0 \) to \( t_1 \)

\( \Delta t \)
Prototype design

1st Stream

• Pose acquisition
• Extract rotation component
• Convert to quaternion
• Quaternionic interpolation/extrapolation
• Translation linear interpolation
• Convert back to transformation matrix
• Synchronization (In process)

2nd Stream

OTS 1

Visualization

OTS 2
Tasks

- Communication interface
- Quaternionic Upsampling
- Prototype – Synchronization of artificial data streams
- Real time pose evaluation
- Debugging
- Demo

☑️
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In Process

- to do
- to do
- to do
So far ...
Time schedule reminder

Project requirements presentation
Communication Interface
Upsampling
Prototype development
Intermediate presentation
Evaluation + Testing
Debugging
Demo
Final presentation

Gantt Chart

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<td>Project requirements presentation</td>
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Potential problems / risks

- Feasibility for the available time
- Software limitations
- Functionality of the prototype with the real poses
Thank you!

Questions??