**Master project Process**

**Initial situation**

2 – 4 cameras (low Resolution)

model puppet

OpenCV

CUDA

**Main Goal**

The main goal is to take a model puppet as an input for the 3D animation process. The movement of the puppet should be displayed in real-time on a digital 3D character to directly examine the posing. If the user is satisfied with a pose a key frame is set digitally. After the motion capture process the interpolation between those key poses result in a digital 3D animation of the digital character.

**Possible Steps**

Based on the paper *“Real-Time Marker-free Motion Capture from multiple cameras“*

1. Camera calibration
2. Silhouette recognition by background subtraction
3. 3D shape construction by combining the different camera views (voxels)
4. Ellipsoid fitting for pose recognition
5. Joint recognition
6. Joint Tracking
7. Transfer of movement on a digital character

***Termin, 30.10.17- 15:00 Uhr***

Focus on the 3D reconstruction, fitting process

- No motion

- No occlusion

Dr. Cremers (Computer Vision)

- Articulated body segmentation

- Articulated Shape reconstruction

- Pose Capture method

Research terms: articulated body segmentation, shape reconstruction, 3D reconstruction, skeleton fitting, shape fitting, 3D scanner, Dr. Cremers

**ToDo:**

3D Reconstruction (Code zur Publikation) - Shape

Research for terms!

**Research findings:**

**3D Scanning**

* RecFusion (Imfusion) RS300 Sensor
* Artec Studio
* Skanect
* KinectFusion

🡪 take a depth camera as input (kinect)

**Steps of “Pose capture” process**

1. Scan Process (3D Reconstruction)

* Depth camera
* Multiple cameras (Shape-from-Silhouette, Structure-from-Motion)
* Moving camera (Turn-table, Shape-from-Shading)
* Single camera

1. Shape Fitting

- Ellipsoid Fitting

1. Skeleton Fitting
2. Transfer on Object

***Termin, 14.11.17- 15:00 Uhr***