CULTURAL HERITAGE
A CHALLENGE FOR EUROPE

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A Quick Summary of My Short Stay in Rennes

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Multi sensors, multi kinects topology

- We base on the depth images
- DIsadvantages:
  - Calibration
  - Cross Perturbation
  - Synchroniztion
  - multi computer
- Advantages:
  - Fusion data
  - Less occulusion

Single Kinect Topology

- Advantages:
  - Simple, cheap.
  - No need Calibration, calibration
  - Easy for the users
- Disadvantages:
  - Noisy, poor raw data
  - User need to face to the Kinect
  - Big problem with occlusion

- For the starting period, 1 kinect topology is recommende. For further part, multi kinect topology should be considered but no more than 3 kinects topology. To deal with the disadvantages, we can:

- Problem with back side of user: For some motions (such as: turn around) we can use interpolation for enriching the depth maps based on using machine learning with our available dance database

Process

- Vicon system with awesome experiment room :) in Rennes.
- Main steps:

- Capture all markers of each frame (saw the real system) and labelling (saw the real process) them.
- Skeleton Fitting
- 2-cycles Looping
- Retargeting on model: Skinning, Blending.

Challenges

- Motion capture data clean-up (noisy, occlusion, unlabelled):
  - Raw data (C3D unlabelled, noise, occlusion) -> NN -> true label
- Calibration. (Frank discuss about some approaches for me :))

TodoList

- Short presentation about the approaches to improve the building skeleton from depth images: Motion Capture with Ellipsoidal Skeleton using Multiple Depth Cameras
- Calibration problem
- Calibration Technique
- OpenPose: The first real-time multi-person system to jointly detect human body, hand, facial, and foot keypoints (in total 135 keypoints) on single images. Github link

References

Thank You