

eNTERFACE'14

A character animation authoring platform for the 99%

Problem statement

Animated characters are a paramount element in video games, where movement quality and gesture repertoire has now become an intrinsic characteristic of the essence of a character, at the same level as appearance, story background and skills. Animated characters might also be a privileged support of the narrative: in recent years, some media organizations have begun to use animations in news reports. Animated characters also have the capability to support the expression of deaf individuals on the internet, by allowing them to express opinions anonymously in their primary language: Sign Language. All these applications: character customization, animated narrative and sign language generation – share a common requirement: they all need a convenient and straightforward character animation authoring system.

The human body has an utterly complex kinematic structure driving its surfacing movements. Attaining the degree of expertise required to design and drive full-fledged animated characters requires both passion, time and dedication. As a consequence, only few people today are considered capable of authoring believable character animations.

Fortunately, recent advances in consumer-range interaction devices like the Kinect¹ or the Leap Motion² has opened the door to an unprecedented range of new user interfaces, interaction modalities and metaphors where gesture and bodily interaction are the cornerstones. Taking inspiration from these trends, we proposed a reinterpretation of the traditional animation authoring process where consumer-range interaction devices are seamlessly integrated into the authoring pipeline as genuine authoring tools used by the animator in conjunction with keyboard and mouse.

The system we developed so far³ provides a natural animation authoring interface that seamlessly supports two different edit schemes inspired from the fourth principles of traditional animation. This principle opposes straight-ahead animations and pose-to-pose animation. In straight-ahead mode, the leap is used as a performance-capture device that records the motion of the both hands of the animator and map them on the animated avatar. In pose-to-pose edit mode, the leap is used as a pose-manipulation device that lets the user precisely tune the posture of the animated character one hand at a time. Fig. 1 graphically depicts our authoring workflow.

¹ <http://www.microsoft.com/en-us/kinectforwindowsdev/newdevkit.aspx>

² <https://www.leapmotion.com/>

³ <http://slsi.dfki.de/2013/11/20/455/>

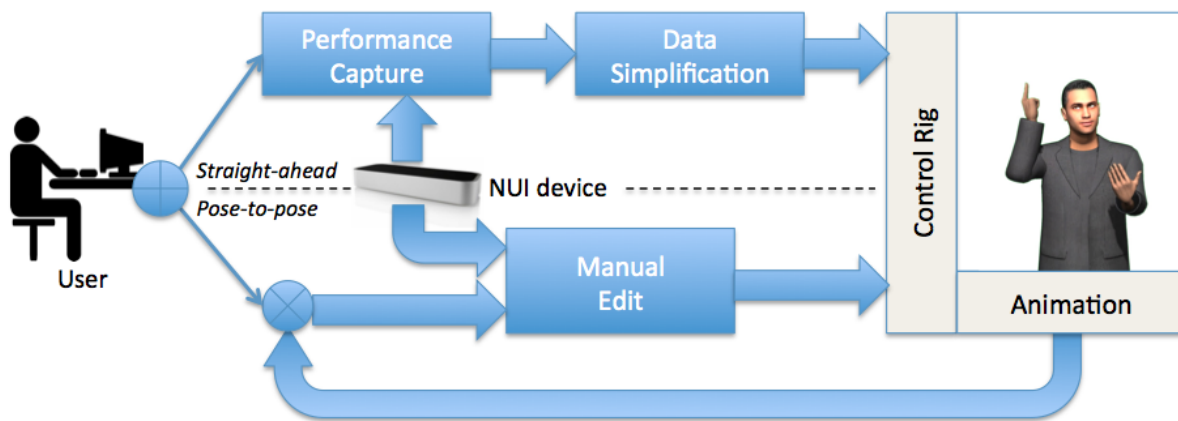


Fig. 1: Overview of our authoring workflow

This system relies on both the Leap motion and the Kinect v.1 for capturing palm movement (position + orientation) and facial animation.

Workshop goals:

Firstly, we would like to explore the capabilities of the new Kinect device (v.2), combined with the Leap motion for capturing hand animation and improving our existing framework. Secondly, we would like to explore new interaction metaphors enabling Novices and Deaf users to author animations.

Workpackages:

- Fusion of Leap Motion and Kinect2 sensors
- User Experience Design / Mockup creation / Early User experience validation
- Implementation
- Evaluation

Deliverables:

- A library that works
- A documentation that is understandable
- A nice Demo
- A Technical report that might end up as a paper

Profiles of the participants:

- We welcome candidates interested in Computer Animation, Sign Language generation or non verbal communication. Ideally, candidate should have experience in at least two of the following items: User Experience Design, 3D UI, 3D Animation, Software engineering, .net and python.

Project Leaders:

Aexis heloir and Fabrizio Nunnari (slsi.dfki.de)