

Project PAALM: Phalangeal Angle Approximation through the Leap Motion Controller

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Abstract

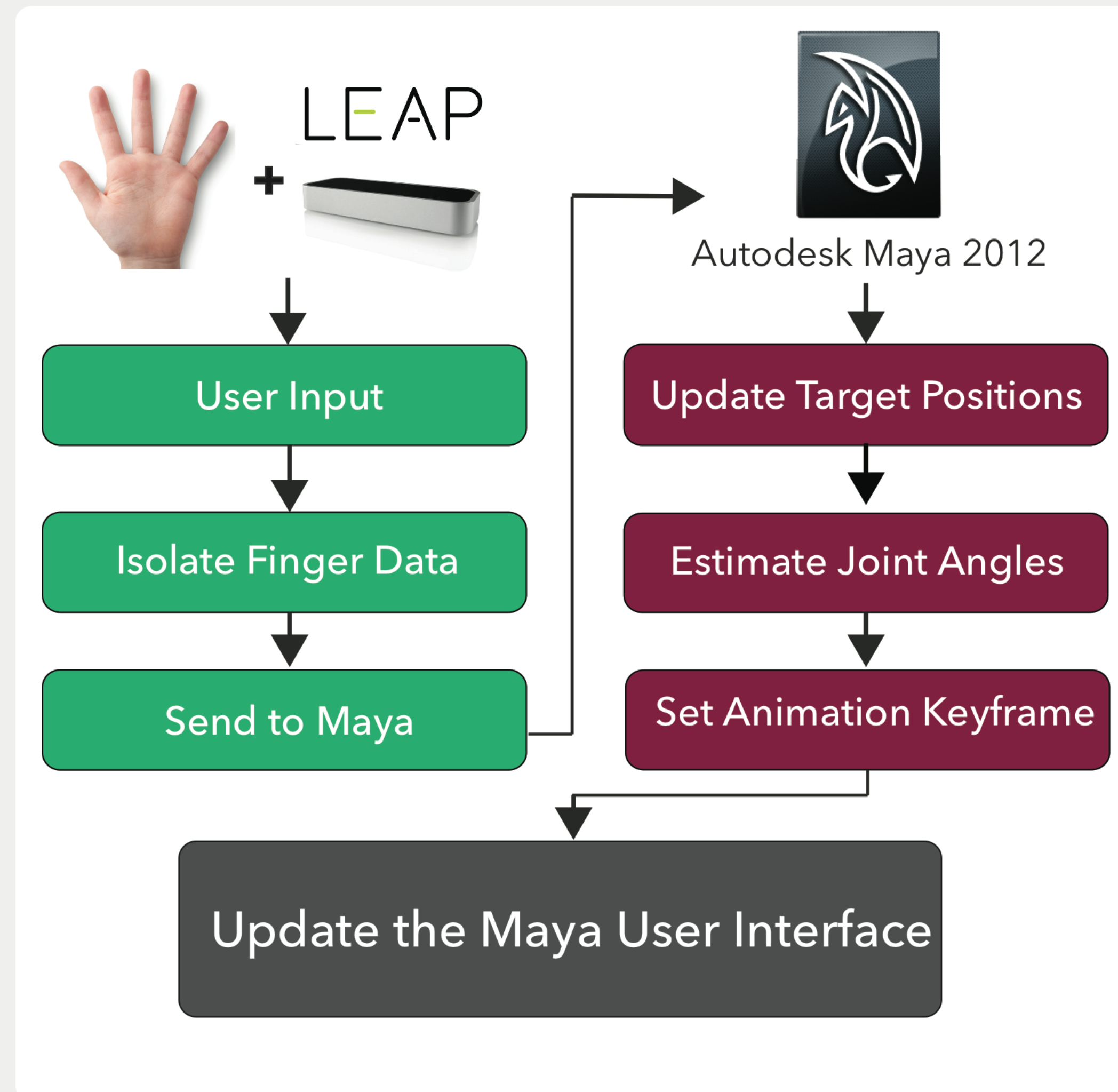
Project PAALM is a framework for approximating and visualizing joint angles of the hand using the Leap Motion controller and 3D modeling software called Autodesk Maya.

Motivation

In computer graphics, the realistic animation of the human hand has been a fundamental problem. Detailed and subtle finger motions are very difficult to capture. Current methods are expensive, restrict the motion of the hand, or confine the user to a space.

The Leap Motion controller is a cheap, portable and unexplored technology capable of tracking finger movements to 1/100th of a millimeter. The device's superb accuracy presents a unique opportunity for detecting complex hand motions and gestures.

Process



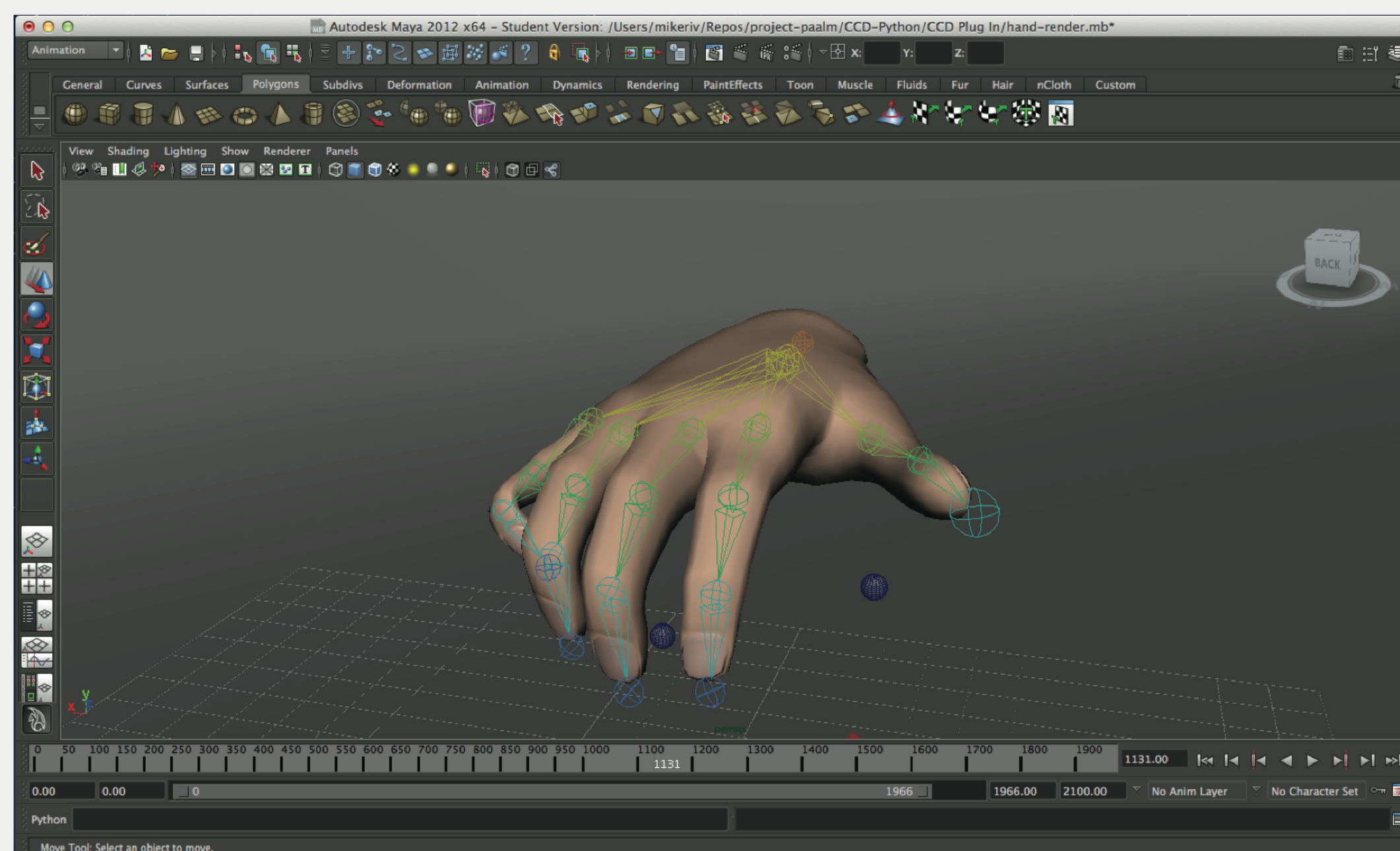
Contributions

- An accurate, cost-effective and freehand method of approximating phalangeal joint angles using the Leap Motion controller.
- An application programming interface (API) for visualizing phalangeal joint angle data using Autodesk Maya 2012.

Future Work

- Extend the framework to perform American Sign Language gesture recognition.
- Utilize multiple Leap Motion controllers to capture finger motions that feature occlusion.
- Permit the animation of arbitrary character models using the framework.

Results



Hand Model using the Project PAALM Framework in Autodesk Maya 2012

