

Augmented Reality Three-Dimensional Modeling System based on hand gesture recognition

Description

We propose a gesture-based three-dimensional modeling system, which allows the user to create a three-dimensional model and sculpt it with hand-gestures. A delicate three-dimensional model can be easily created.



Technology

Draw-to-Create tool

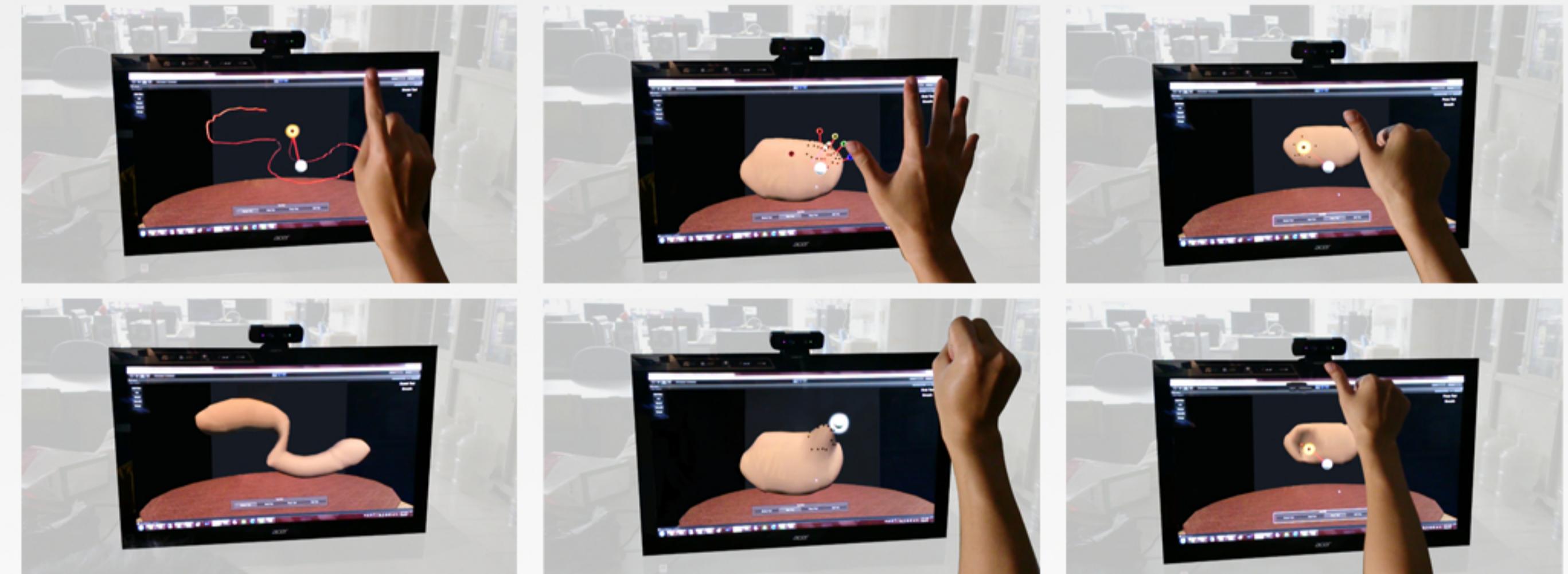
allows the user to create an initial 3D model by drawing its 2D contour. This rotund 3D model is inflated from the 2D contour and then smoothen automatically.

Grab-to-Extrude tool

allows the user to grab/select the surface area of a 3D model with five fingers for further extrusion; the currently selected area will be first highlighted for guidance; the size of this extrusion area increases as the hand moves away from the selected surface until released.

Press-to-Dent tool

allows the user to select the surface area and dent it by pressing with a thumb.



Summary

The contribution of our system is to provide a more intuitive three-dimensional user interface than the traditional 2D ones which use a mouse or a touch pad as input. A series of hand gestures are designed for interacting with the 3D object and their corresponding mesh processing functions are developed. Therefore, the user can create a desired virtual 3D object in a way that is similar to how people shape clay.

Future work

We are currently developing an easy-to-use animation system which can continue to animate the 3D model we generated. The user can pose a sequence of key frames of the skeleton with multiple postures. The animation will be generated by interpolating different postures specified by the key frames.

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