Integration of Leap Motion Controller on Mobile Devices for AR Applications

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Related work
Leap Motion is currently building an SDK that provides basic connectivity between Leap Motion and Android cellphones:
• Not yet public available
• Granted access as an alpha tester
• Contribute feedback to the development team
• Most contributors focused on VR applications
• AR application is more challenging due to the additional processing necessary for the cellphone’s camera feed

Limitations
There are a few factors influencing the experience:
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• Only test on snapdragon 810 processor with 3GB of memory
• Hard to recognize palm initially
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Development of three methods to trigger specific functions:
• Uses static gestures (Example 1)
  • Immediate response
• Uses dynamic gestures (Example 2)
  • User has to learn appropriate speed
  • Poor tracking may result in the need for repeating the gesture.
• Uses virtual widgets, such as toggle button (Example 3)
  • User has to learn appropriate hand positioning
  • Poor tracking may result in the need for repeating the gesture.

Conclusion & Future work
The static gestures version has the best performance and does not suffer from tracking issues. The virtual widget version can provide more options but users have to learn hand position. The dynamic gestures version was least liked because of slow response.

With increasing computational power and memory on smartphones, this system would be a low cost choice for AR application. The future work stresses on improving the response speed and comprehensive user studies. It would also be useful to provide a simple interface for users without programming expertise to create and use their own gestures.