This projector smartwatch turns your arm into a terrible touchscreen

Researchers at the University of Carnegie Mellon University have unveiled a new “first-of-its-kind” smartwatch that can turn your arm into a touchscreen. The prototype LumiWatch projects an interactive surface area on the wearer’s arm or hand, allowing them to tap and swipe on their skin to use the watch. The prototype shows how an on-body interface might work: you swipe left to unlock the watch, and apps are then displayed along your arm. The watch can project an interface up to 40 square centimeters in size, which the researchers say is roughly 5 times bigger than the interface of a typical smart watch.

The LumiWatch is self-contained and made up of a logic board, projector, depth sensor, metal enclosure, and battery. The projector uses three lasers of red, blue, and green, and the projection is bright enough to be seen outdoors. The watch features a 15 lumen scanned-laser projector, continuous 2D finger tracking, a Qualcomm 1.2 Ghz quad-core CPU, 768MB of RAM, 4GB flash memory and a 740 mAh lithium ion battery with Bluetooth and Wi-Fi capability. It runs on Android 5.1. The researchers found the watch lasts over one hour of continuous projection, and with intermittent use they anticipate the battery would last for around a whole day.

Photo: Robert Xiao / Carnegie Mellon University

“Although obstacles remain for practical adoption, we believe our work demonstrates the first functional projection smartwatch system and constitutes a significant advance in the state of the art,” the researchers wrote in a paper, titled

“LumiWatch: On-Arm Projected Graphics and Touch Input.” Some of those obstacles include difficulty in projecting an interface onto somewhere like an arm because it’s not completely flat – often resulting in distortion. The watch, therefore, detects when the user uses the swipe left to unlock mechanism. It then tracks the user’s finger to calibrate and optimize the angle of the projection so the interface is usable.

The researchers estimate that immediate retail cost of the prototype model would be around $600. The prototype model of the watch is rather bulky, measuring 50mm x 41mm x 17mm (2 inches x 1.6 inches x 0.66 inches). That’s considerably larger than the aluminum case 42mm Apple Watch Series Three, which measures 42.5mm x 36.4mm x 11.4mm (1.67 inches x 1.43 inches x 0.45 inches).

The watch might be the first to project a useable on-body interface, but it’s not the first watch to project images and other content onto users’ arms. Haier’s Asu watch also has a built-in projector that displays information on the back of your hand like fitness goals while you’re running. Ritot also has a wearable band that syncs with your smartphone and projects notifications onto the back of your hand.

https://www.theverge.com/circuitbreaker/2018/4/27/17289572/lumiwatch-projector-smartwatch-arm-touch-screen