***Total time: around 2:30min.***

***[Introduction] – n minutes***

We present PassTure a technique that allows the user to carry out touch input on passive objects by swiping across their surfaces.

[show the title and then a very short demo that swipe to do something]

Enabling touch input in physical environment allows easy and quick access to computing power. While PassTure utilizes the bumps that exist on the surfaces or in the structures of many ordinary objects.

[show swiping on different objects].

There is no need to instrument the objects, or users’ body with electronics and sensors.

[maybe show pictures of heavily instrumented objects or people].

The system recognizes when the finger swipes across such bumpy surfaces, only using an inertia measurement unit such as those build into existing finger or wrist worn smart devices.

[show some pics of exsiting smartwatches, rings, writ bands, and then show our prototype (assembling process)]

***[Show how it works]*** ***– n minutes?***

When the user’s finger swipes across the bumpy surface of an object, a mechanical vibration is generated that can be sensed by the IMU sensor and uniquely labelled for object identification.

[show signal generating and comparison scene]

A user can also 3D print her own bumpy surfaces to enhance the recognition capability and flexibility of PassTure

[show printed widgets/stripes, and maybe the ones we took this morning]

After the bumpy surfaces are printed, the user can attach them to any suitable objects and assign the desired functionality to enable touch input.

[show the clip on pans, on school bags, on laptop etc…]

***[Use scenarios]*** ***– n minutes?***

[1] PassTure can be deployed in children’s museum where children can swipe on surfaces of the exhibitions.

[show museum scene]

Swiping on the different parts of the shell plays different videos for detailed explanation.

[pause to show]

[2] In the kitchen, while cooking, a user can swipe the edge of the cutting board to flip pages in the digital recipe book on a tablet, or turning up the music. (show cooking with dirty hands... show flipping forward, then swiping in the other direction flipping back again, swipe up and down to adjust the music volume. Remember first give a second to show the textures on the cutting board)

Afterwards, while cleaning up, the user can comfortably zap through the channels on the TV set, or pause a movie…

(show doing the dishes with wet hands, swiping on the plate holder to quickly zap through channels).

Swiping the synthetic stripes on the refrigerator quickly shows the calories consumption to the user’s mobile device.

[show refrigerator]

[3] Synthetic widgets can also be used for stylus interactions. A engineering student uses a soldering tool with three stripes attached. When operating, the student can swipe on the stripes to zoom in and out the circuit diagram. Swiping on a different stripe switch the display to show anther image.

[4] Touch input on the user’s body can be made possible through clip-on widgets.

[show synthetic widgets in pockets, on bags to either mute phone calls, turn on music volume or switch on and off lights]

[5] Even without any widgets, users may swipe on their hands to switch out the light, when leaving the office.