Supplemental Material: Step-by-Step Building Instructions

Transparent Touch Tablet

This document contains additional information on how the transparent touch-enabled hardware prototype of our research work CleAR Sight is constructed. For this purpose, all components and a series of detailed photos with all essential fabrication steps are provided that allow to replicate the hardware device. All related software components can be found on our project website. For more details, please refer to our publication:

CleAR Sight: Exploring the Potential of Interacting with Transparent Tablets in Augmented Reality
Katja Krug, Wolfgang Büschel, Konstantin Klamka, Raimund Dachselt
Project Website: imld.de/clear-sight/

List of Required Parts

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<td>Raspberry Pi Foundation (SKU: 19906)</td>
<td>1x Thin wire LiFY (0.8mm) 2x Swiss connectors (3 pins) 1x Shrinking tubes (small)</td>
<td>1x Screen Protector Foil 1x JST 1.25 connector cable (4 pin) 1x Base housing cover (3D-printed) 1x Base housing cover electronics (3D-printed) 1x Base housing (3D-printed) 1x Flex cable clip (3D-printed) 4x Base housing marker clip (3D-printed)</td>
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<td>1x micro SD card (16GB) 2x heat sink with adhesive 9x M2 screws (long, l=16mm) 6x M2 screws (short, l=12mm) 15x M2 nuts 4x Lego Technic, Axle 2L (3704) 4x Lego Technic, Bush (3713)</td>
<td>2x Fibre, d=0.75mm 1x Sheet of reflective material</td>
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3D-print all required parts (Case)

3D Models (STL-Files)
1. base_housing_cover_variant_A.stl
2. base_housing_variant_A.stl
3. base_housing_cover_electronics.stl
4. base_housing_marker_clip.stl
5. flex_cable_clip.stl

All parts can be made with normal plastic filament (e.g., PLA or ABS) on a standard FDM 3D printer with a build plate that can print at least objects with a size of 29 cm x 21 cm. Please use support material if needed.
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1. **Remove support material & sand 3D-printed parts** (Case)
   - [Images of the process]

2. **Hammering case nuts** (Case)
   - [Images of the process]

3. **Place touch panel in case** (Capacitive Touch Panel)
   - [Images of the process]
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**Relocating the power switch** (Battery Shield)

![Image of relocating power switch](image1.jpg)

**Break out power and i2C connections** (Battery Shield)

![Image of breaking out power and i2C connections](image2.jpg)
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**Add battery** (Battery Shield)

**Insert battery shield in case** (Battery Shield & Case)
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**Connect Touchscreen to HID USB board** *(Capacitive Touchscreen)*

- Connect Touchscreen to HID USB board
- Solder Micro-JST 1.25mm 4 Pin USB connector

**Connect the flex PCB cable**
Carefully lift up the connector board and guide the flex cable along the prepared clips. Please do not bend or fold the cable too strong to avoid any signal breakage. The blue sides of the cable should face upwards. Please use ESD safe tweezers and be careful when opening and closing the board flex connectors.

**Solder Micro-JST 1.25mm 4 Pin USB connector** *(Raspberry Pi)*

- Solder Micro-JST 1.25mm 4 Pin USB connector
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Create LED spots with fiber (Case)
Close prototype (Case)

Attach marker mountings to the case (Case)
Fabricate Tracking Marker (Case)
Add screen protection