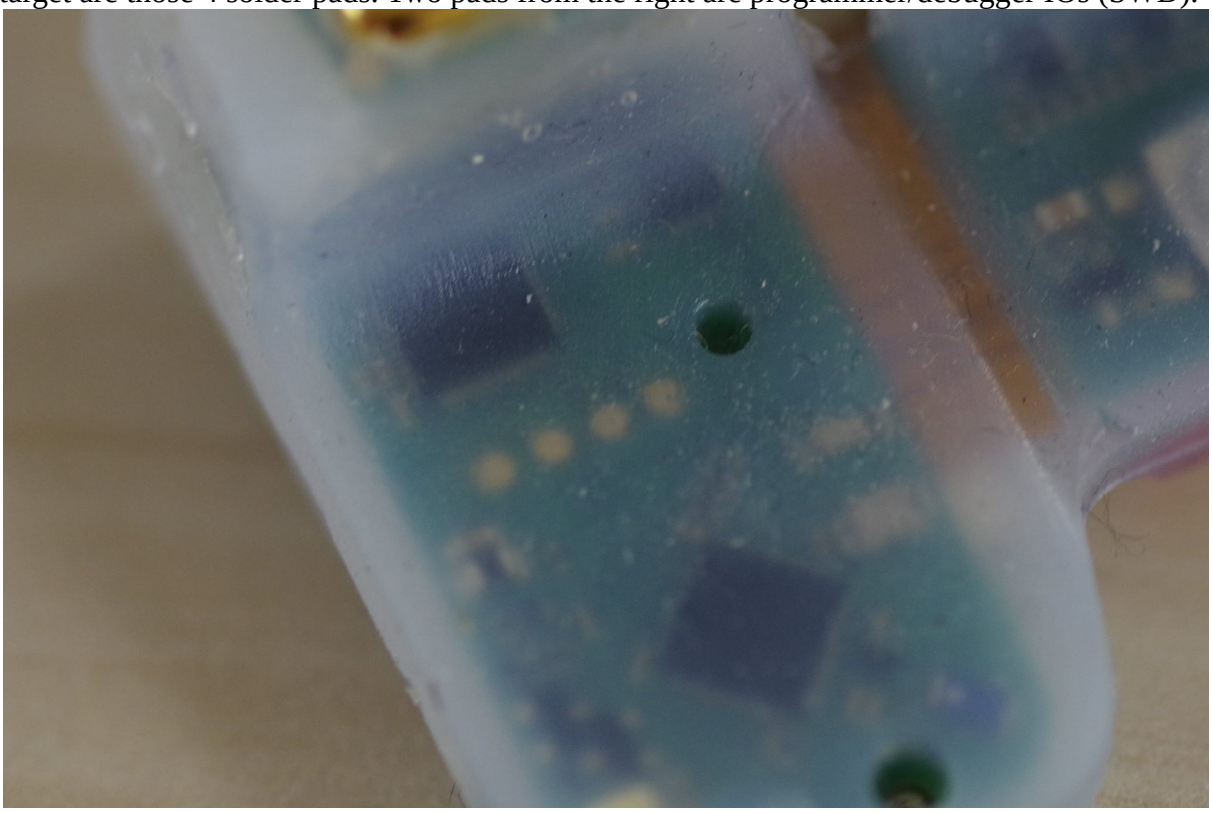
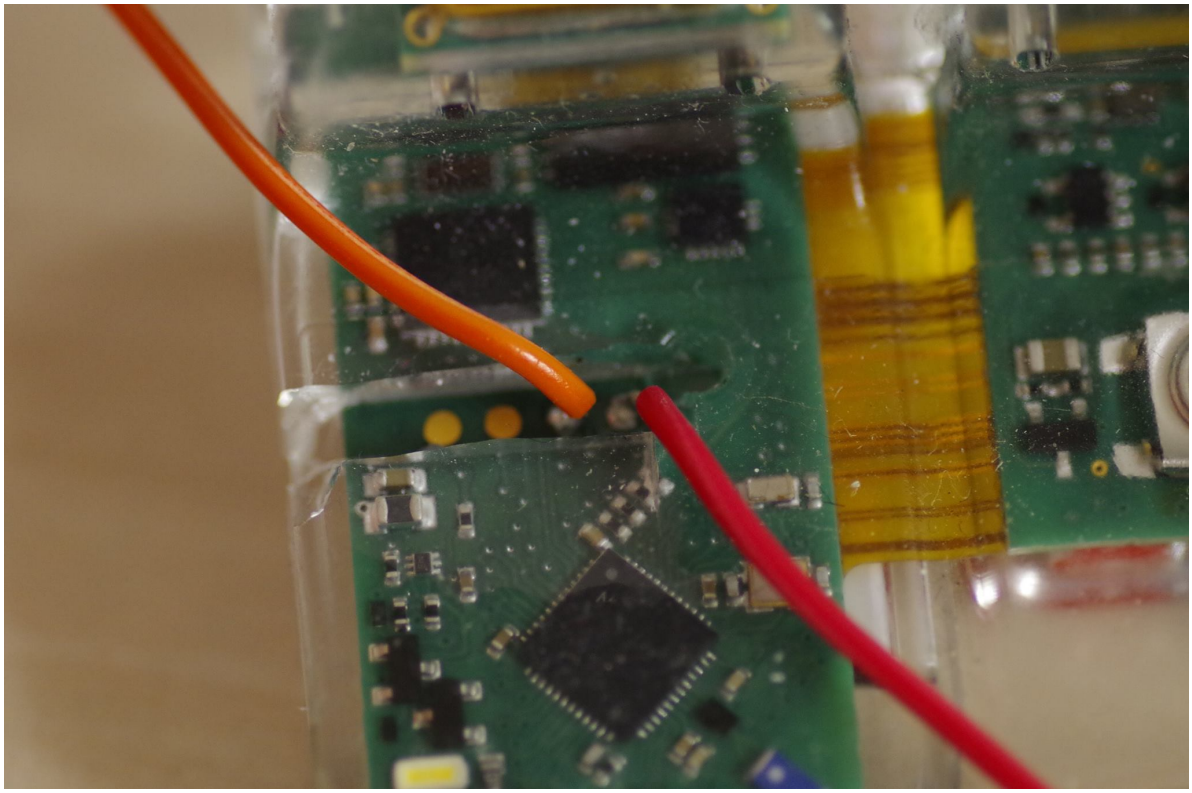
DEBUGGER:
Ok... here is our true hero. Neuroon’s Smartpack (aka Gumchuck).

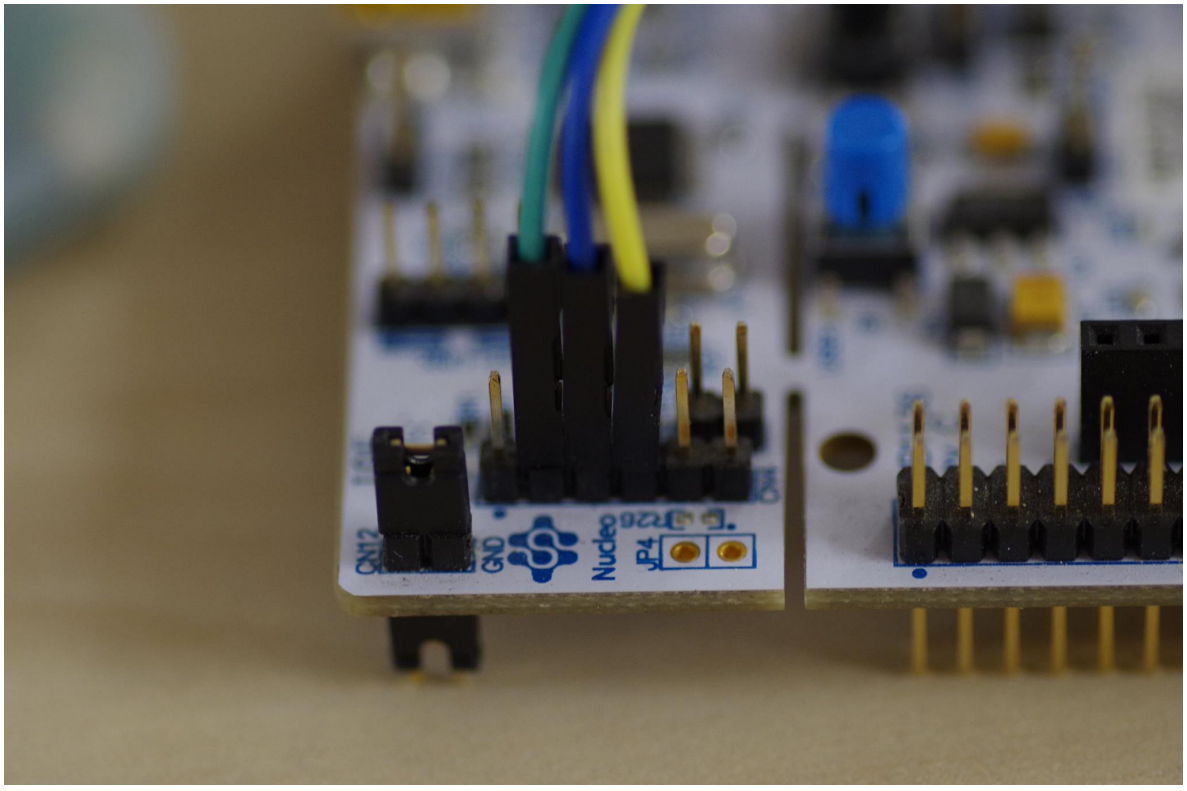
Our target are those 4 solder pads. Two pads from the right are programmer/debugger IOs (SWD).



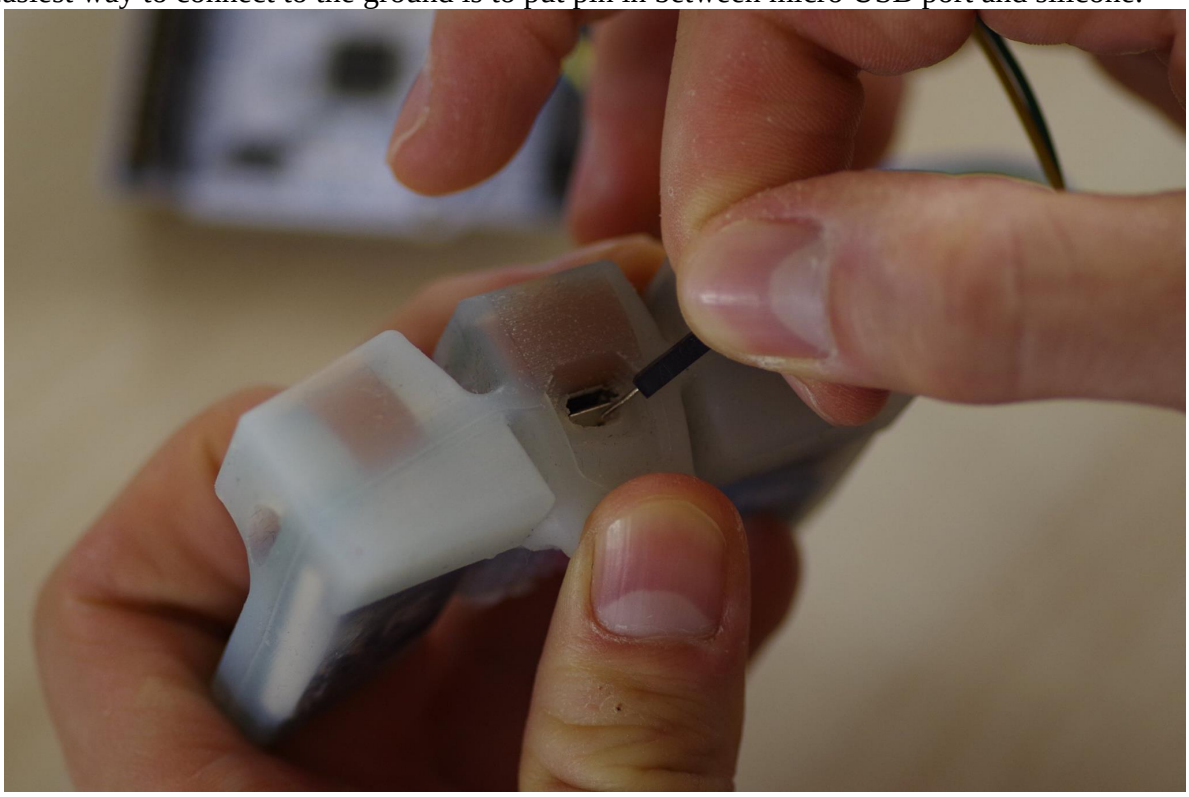
Here is purely optional solution (wires soldered to the pads). I'm using clear silicone for presentation reason. It's easier to see.



We are using a NUCLEO-F411RE ST-LINK module. You can use any other SWD debugger. Blue cable is connected to the ground. Remaining cables are SWDIO and SWCLK.



The easiest way to connect to the ground is to put pin in between micro USB port and silicone.



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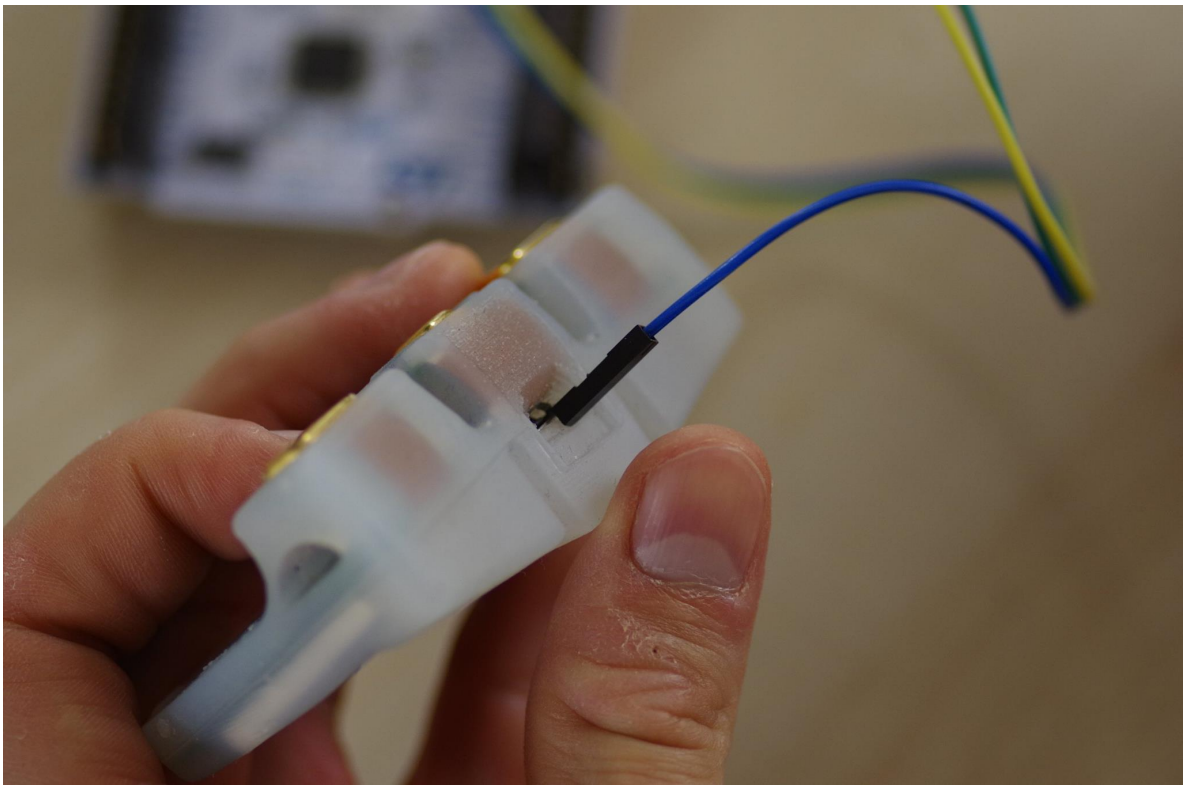
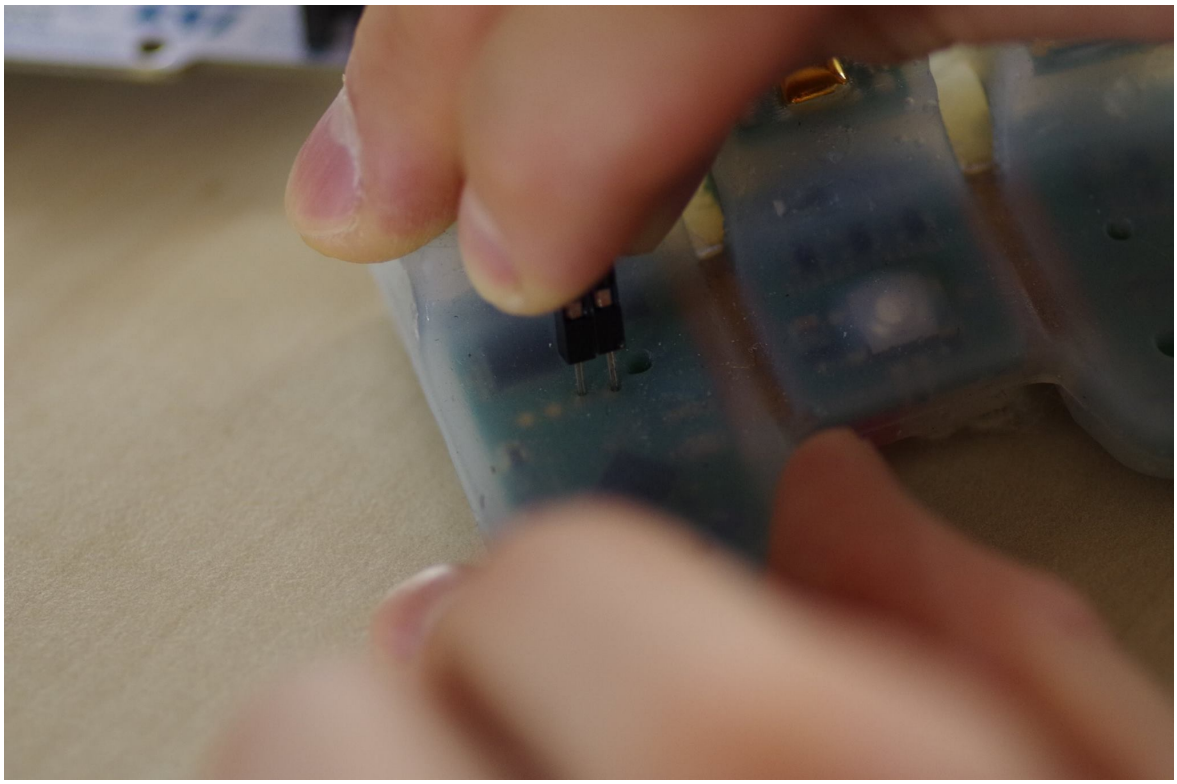
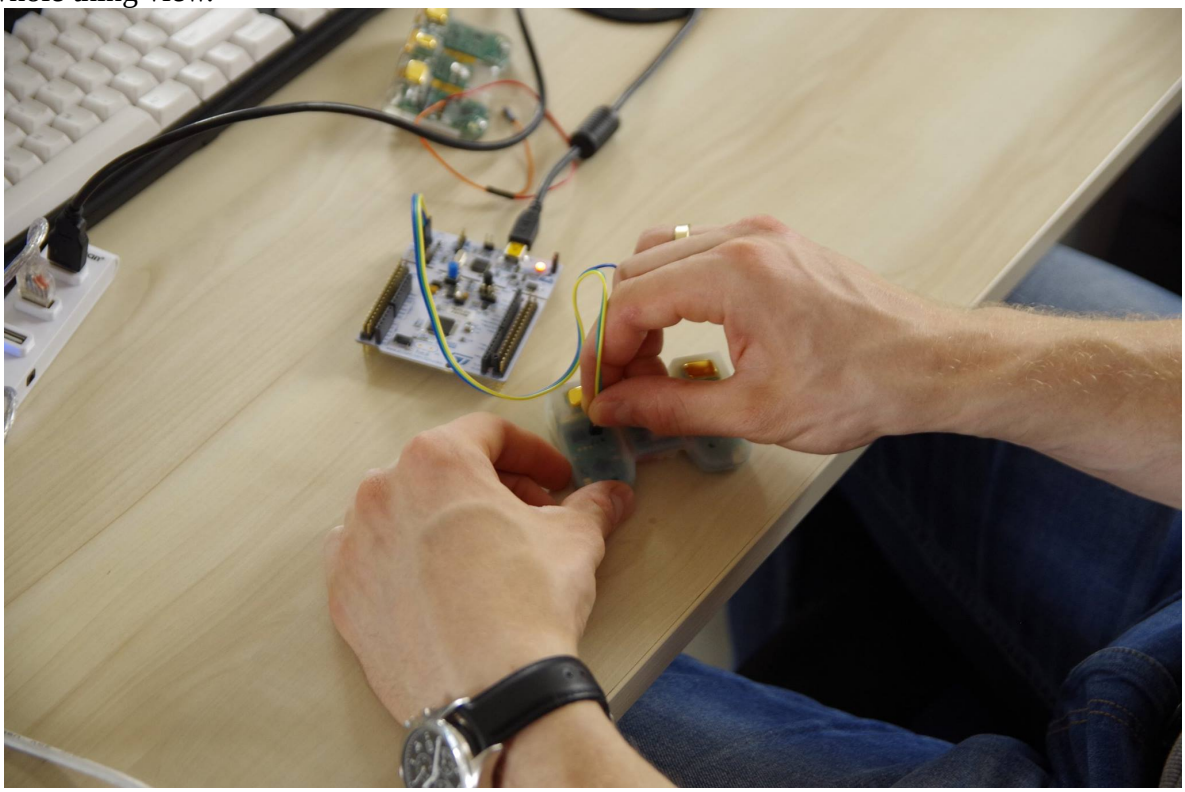


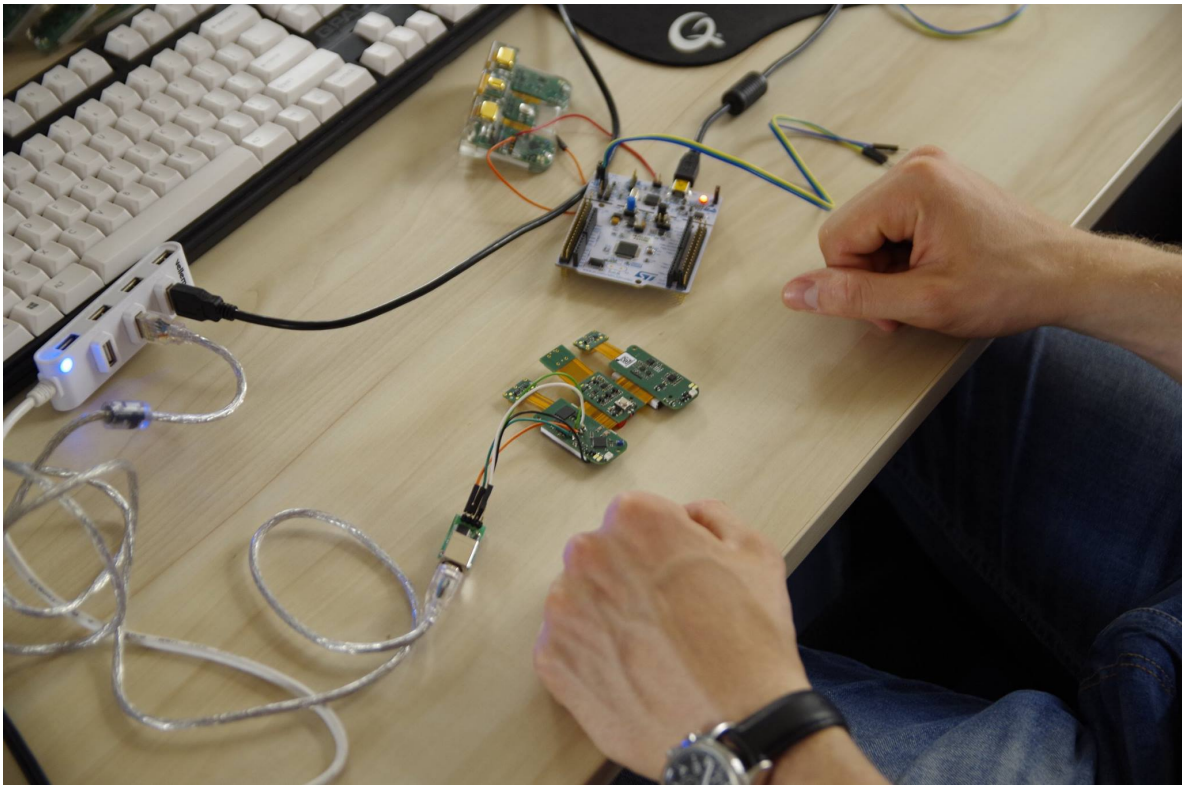
Now it's the hard part. You need to punch through silicon to solder pads. You can do it using only generic gold pins. If debugger can't "see" microcontroller, just swap pins or try to punch again (silicon may not be pierced for the first time).



The whole thing view.



UART:
You may also connect 2 remaining IOs to an uart <-> usb converter. Yes, remaining IOs are Rx and Tx of UART.



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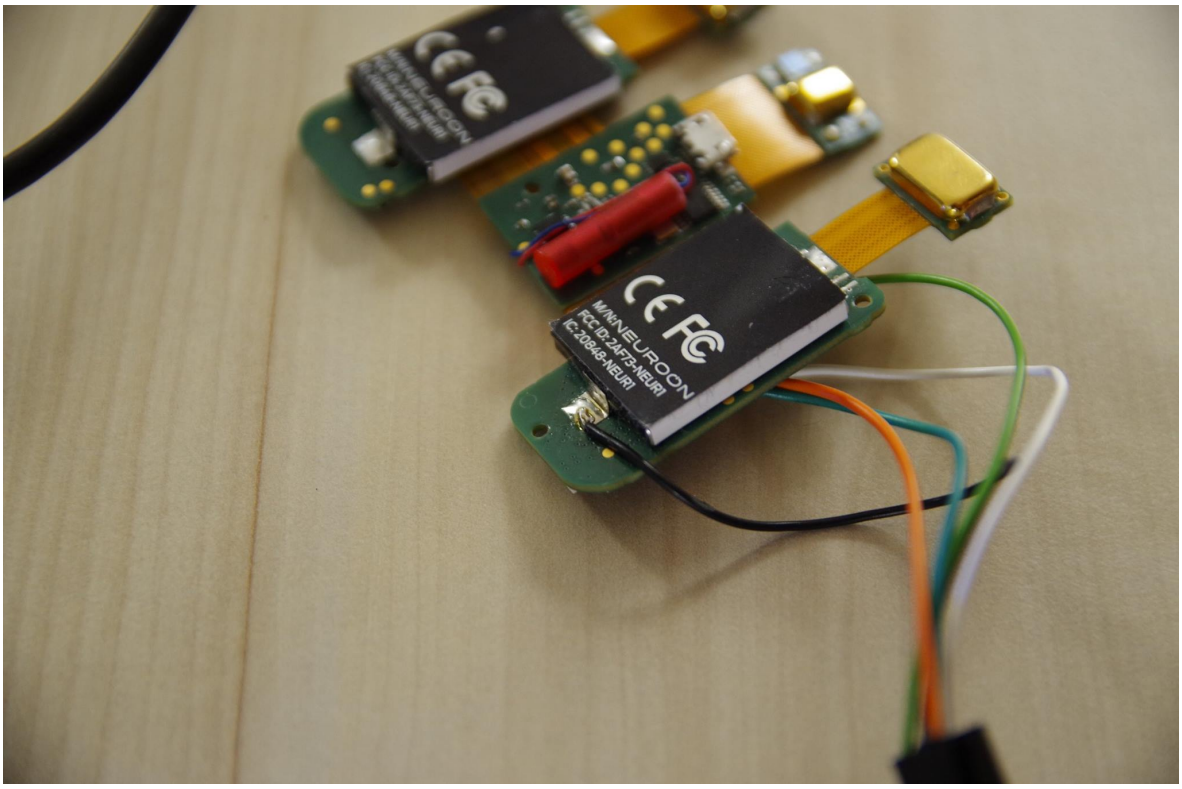

Now... You can hack neuroon!