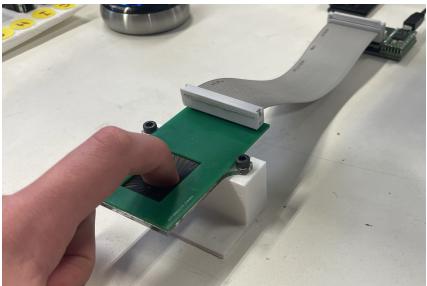
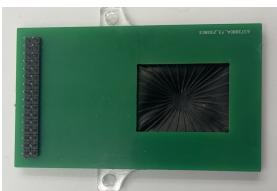
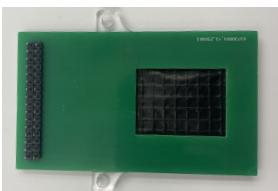
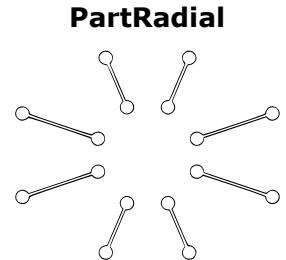
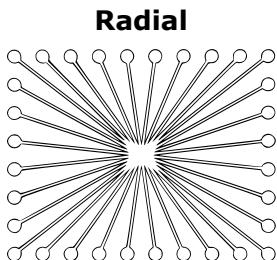
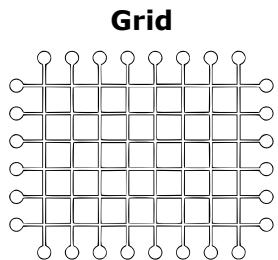
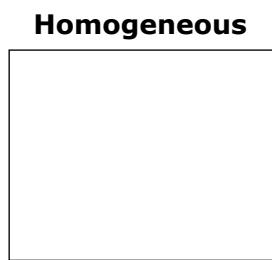
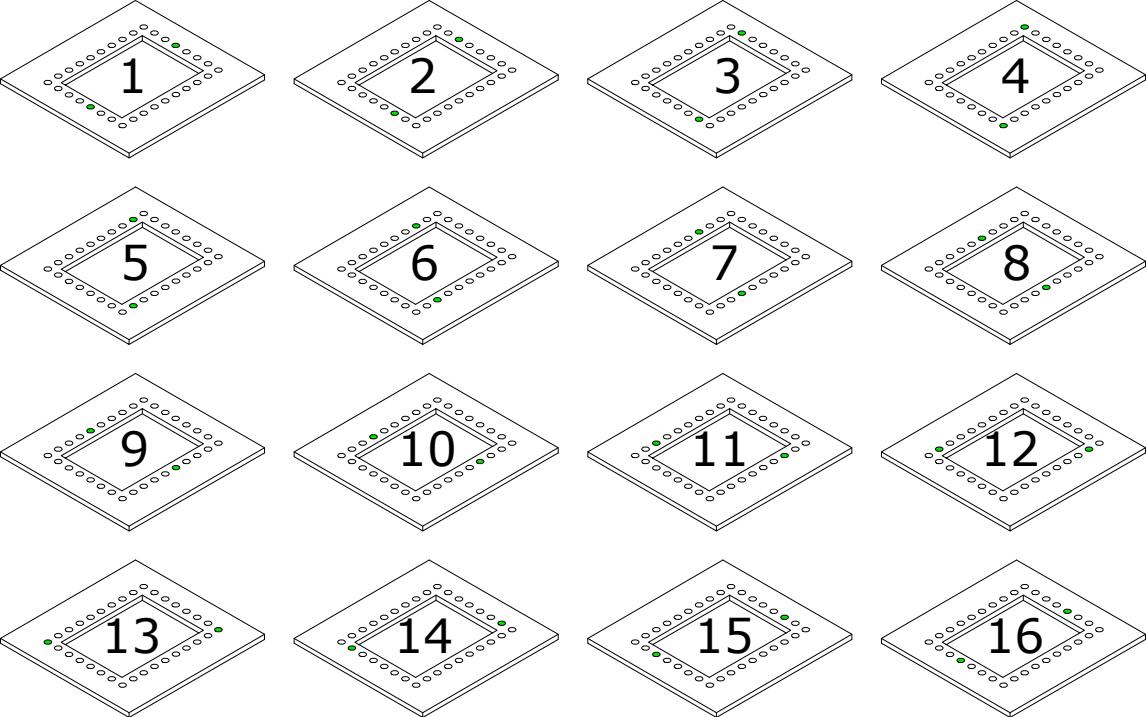




Setup: printed membranes brought into contact with 32-electrode breakout board, and acrylic frame clamped/glued on top using superglue. 4 membranes are compared in this early testing: homogeneous, grid, radial, and partradial.

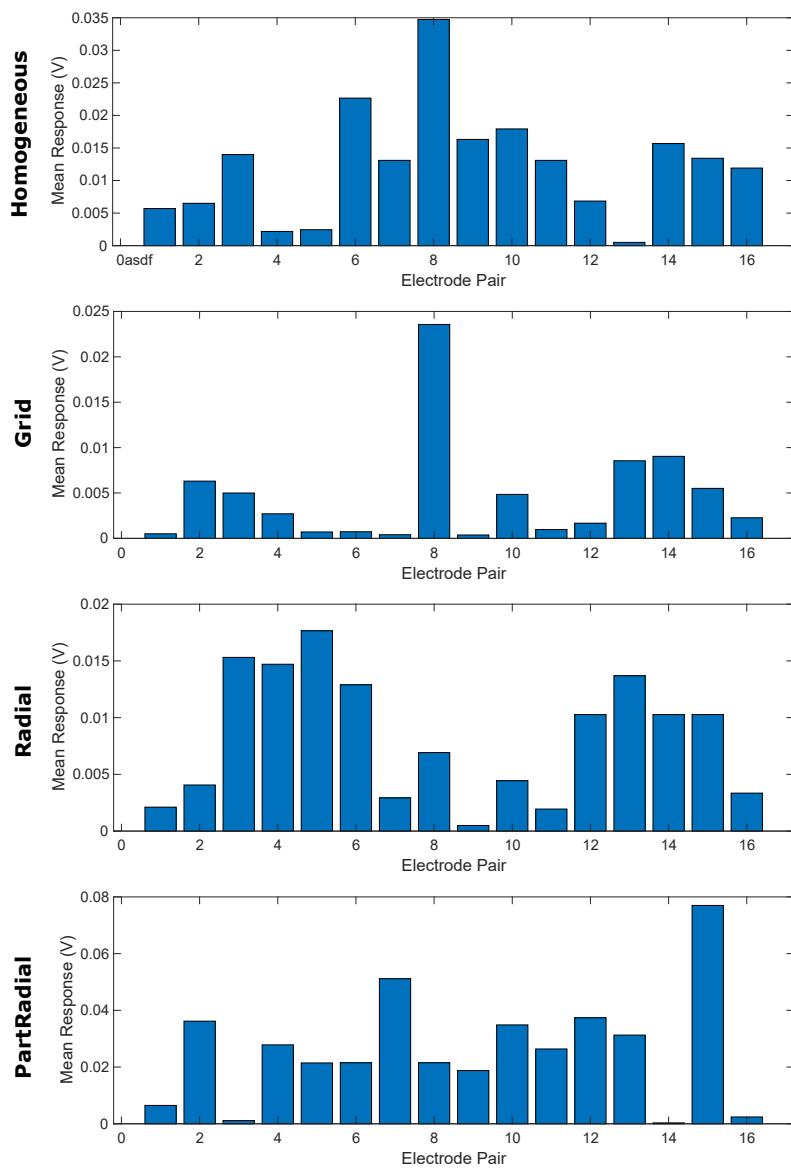


Each board is secured onto a stand and connected to a board which can quickly multiplex between tetrapolar impedance measurements at 5kHz. Stimuli currently provided by a finger either touching or pressing the membrane - note that this early approach will never be fully repeatable. Pressing too hard caused some contact to be lost, so tests were limited to gentle pressing.

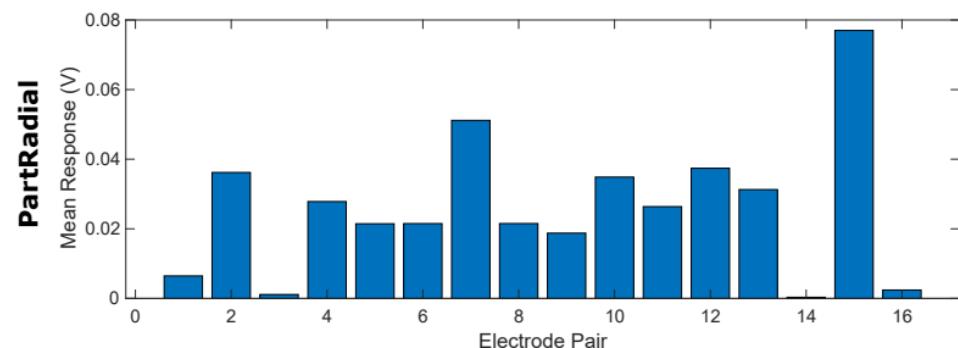
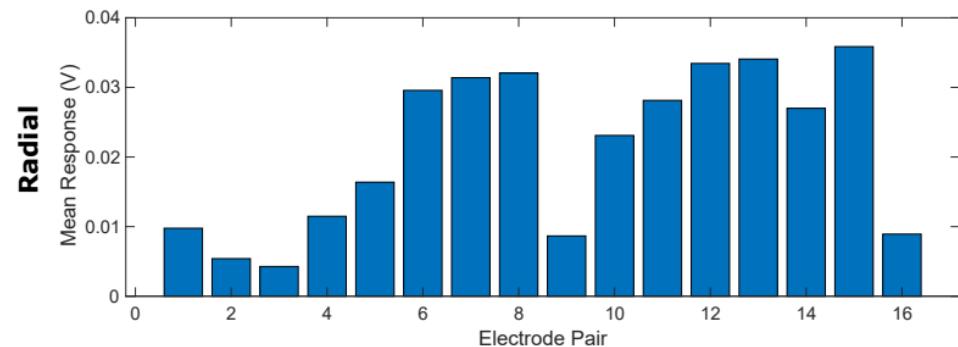
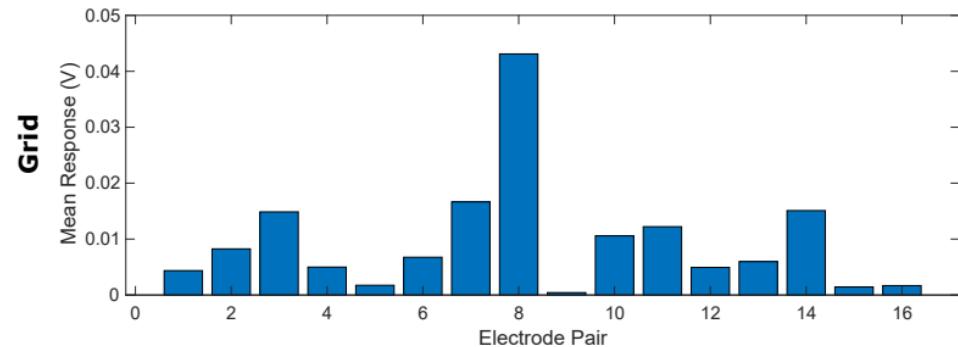
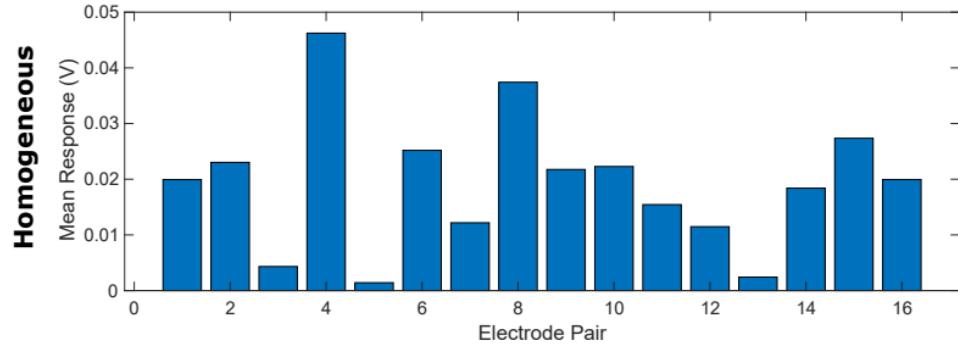


The board alternates between 16 different sites of current injection (which can be seen by zooming in on the figure above). Each is tested twice. With current being injected at each site, the resulting voltage difference between 28 adjacent electrode pairs is measured; for each dataframe, 896 measurements ($16 \times 2 \times 28$) are returned.

These plots show the average response for a central touch of the membrane with each of the 16 injection sites: these clearly change with the patterns we use. Note change in y limits.



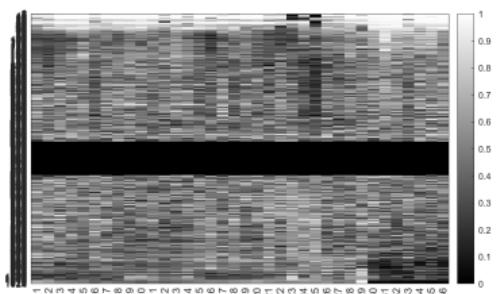
Equivalent plots for pressing in a central location:



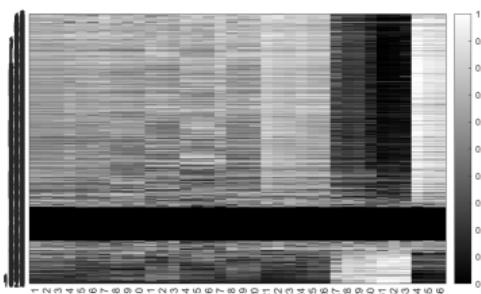
These compare the raw responses of the 896 measurements (y axis) over time (x axis) as the membrane is touched in 3 locations and pressed to 2 depths.

The central black bars account for cases where injection and measurement electrodes overlap: the board just returns zeros.

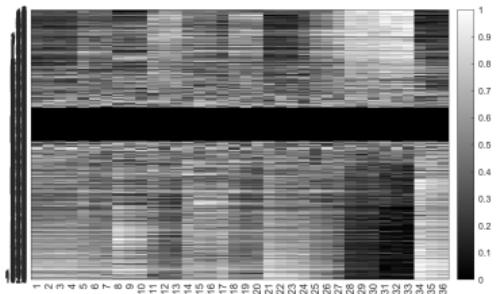
Homogeneous



Radial



Grid



PartRadial

