back reception. There are issues to consider, however, such as the influence of array angle relative to the hand on perception of focal points, or the impact of user and array movement, such as when gesturing.

## CONCLUSIONS

This paper reported two experiments that identified some of the underlying perceptual characteristics of location and movement of ultrasound feedback on the hand. By using a small array we also investigated the feasibility of a wrist-mounted array for gestural interaction. The results showed that users could localise a static point of ultrasound feedback within 8.5mm across 25cm$^2$ of the hand. Using only a single focal point, a range of feedback characteristics can provide a convincing sensation of continuous motion, but using larger distances, longer stimulus durations and stimulating more intervening points maximises movement perception. Due to the functional similarities, our results and guidelines can also be used in the design of feedback produced by larger ultrasonic feedback arrays. Passive feedback from a small array can provide as effective feedback as active investigation over large arrays, suggesting a wrist-mounted array for gestural interaction is feasible.

## ACKNOWLEDGEMENTS

This research was funded by EPSRC grant EP/J005312/1. Thanks also go to Euan Freeman and Mark McGill.

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