



MASSEY UNIVERSITY
ENGINEERING

SCHOOL OF ENGINEERING AND ADVANCED TECHNOLOGY

LITERATURE REVIEW SUPPORTING THE
Engineering Project
Submitted as part requirement for B.Eng (Hons).

Prosthetic Tactile Sensor With Force Feedback

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SUPERVISORS

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Literature Review

Prosthetic Tactile Sensor With Force Feedback

Marc Alexander Sferrazza[‡]

Abstract

1. INTRODUCTION

1.1. blah

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Progress of project: alexlvla.github.io/Prosthetic-Tactile-Research/

2. Review of Literature

2.1. blah

3. Methodology

3.1. blah

- Be thorough and inclusive of all details concerning the decision
- Be objective and not subjective to details central to the project
- Be aware of what the decision means or the outcome of the project

4. CONCLUSIONS

APPENDIX

ACKNOWLEDGMENT

References

- [1] J. Engel, J. Chen, and C. Liu, "Development of polyimide flexible tactile sensor skin," *Journal of Micromechanics and Microengineering*, vol. 13, no. 3, p. 359, 2003.
- [2] J. Lötters, W. Olthuis, P. Veltink, and P. Bergveld, "The mechanical properties of the rubber elastic polymer polydimethylsiloxane for sensor applications," *Journal of Micromechanics and Microengineering*, vol. 7, no. 3, p. 145, 1997.
- [3] S. Omata and Y. Terunuma, "New tactile sensor like the human hand and its applications," *Sensors and Actuators A: Physical*, vol. 35, no. 1, pp. 9–15, 1992.
- [4] C. Larson, B. Peele, S. Li, S. Robinson, M. Totaro, L. Beccai, B. Mazzolai, and R. Shepherd, "Highly stretchable electroluminescent skin for optical signaling and tactile sensing," *Science*, vol. 351, no. 6277, pp. 1071–1074, 2016.
- [5] J. Engel, J. Chen, Z. Fan, and C. Liu, "Polymer micro-machined multimodal tactile sensors," *Sensors and Actuators A: physical*, vol. 117, no. 1, pp. 50–61, 2005.
- [6] U. Paschen, M. Leineweber, J. Amelung, M. Schmidt, and G. Zimmer, "A novel tactile sensor system for heavy-load applications based on an integrated capacitive pressure sensor," *Sensors and Actuators A: Physical*, vol. 68, no. 1, pp. 294–298, 1998.
- [7] Y. Hasegawa, M. Shikida, D. Ogura, Y. Suzuki, and K. Sato, "Fabrication of a wearable fabric tactile sensor produced by artificial hollow fiber," *Journal of micromechanics and microengineering*, vol. 18, no. 8, p. 085014, 2008.
- [8] K. Horch, S. Meek, T. G. Taylor, and D. T. Hutchinson, "Object discrimination with an artificial hand using electrical stimulation of peripheral tactile and proprioceptive pathways with intrafascicular electrodes," *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, vol. 19, no. 5, pp. 483–489, 2011.
- [9] L. R. Huang H, Kuiken TA, "A strategy for identifying locomotion modes using surface electromyography," *IEEE Trans Biomed Eng*, vol. 1, no. 56, pp. 65–73, 2009.
- [10] S. P. Sober SJ, "Flexible strategies for sensory integration during motor planning," *Nature Neuroscience*, vol. 4, no. 8, pp. 490–497, 2005.
- [11] Z. W. J. J. R. M. et a, "Effects of carpal tunnel syndrome on adaptation of multi-digit forces to object weight for

- whole-hand manipulation,” *PloS One*, vol. 6, no. 11, 2011.
- [12] J. R. Jenmalm P, “Visual and somatosensory information about object shape control manipulative fingertip forces,” *Journal of Neuroscience*, vol. 17, no. 11, pp. 4486–4499, 1997.
 - [13] ainburg RL Ghilardi MF Poizner H Ghez C, “Control of limb dynamics in normal subjects and patients without proprioception,” *Journal of Neurophysiology*, vol. 2, no. 73, pp. 820–835, 1995.
 - [14] F. H. M. W. K. A. et al, “A neural substrate for non-painful phantom limb phenomena,” *Neuroreport*, vol. 7, no. 11, pp. 1407–1411, 2000.
 - [15] H. J. O. J. M. M. D. M. M. P. K. TA and C. KM, “Novel targeted sensory reinnervation technique to restore functional hand sensation after transhumeral amputation,” *IEEE Trans Neural Syst Rehabil Eng*, vol. 4, no. 22, pp. 765–773, 2014.