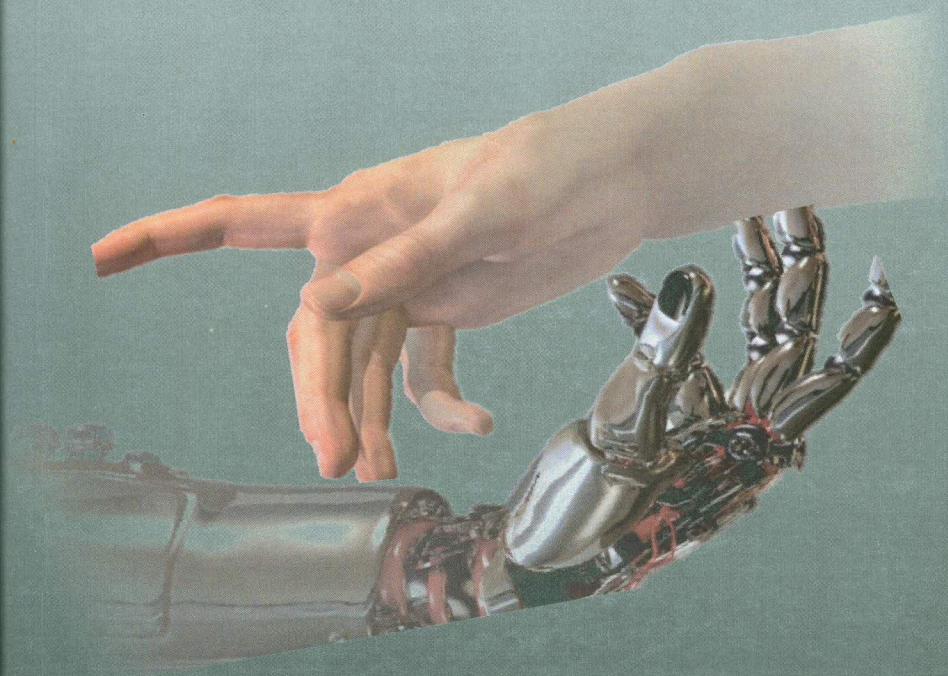
# EMG BASED CONTINUOUS THUMB-TIP FORCE MODEL
## FOR PROSTHESES DESIGN



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# EMG BASED CONTINUOUS THUMB-TIP FORCE MODEL

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Human hand functions range from precise-minute handling to heavy and robust movements. Remarkably, 50% of all hand functions are made possible by the thumb. Therefore, developing an artificial thumb which can mimic the actions of a real thumb precisely is a major achievement. The book looks into the classification of Electromyogram (EMG) signals from thumb muscles for the prediction of thumb tip force and angle during flexion motion. A 'piecewise- discretization' approach is used for continuous angle prediction and for variation in force, a different weight sets are used to deduce different thumb-tip force values exerted by the thumb. The EMG signals are taken from four different muscles that are mostly engaged in the flexion motion namely the Opponens Pollicis, Flexor Pollicis Brevis, Extensor Pollicis and the First Dorsal Interosseous. Fifteen different features of the time domain and six different features of the frequency domain are extracted from the EMG signals for classification and the most suitable feature set is determined and applied to different classifiers.

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