

Papers by Revolutionizing Prosthetics Team Members*

*The list of papers provided below is not comprehensive, and not all published articles shown were funded by the Revolutionizing Prosthetics program.

Acharya S, Mollazadeh M, Murari K, Thakor N. Spatiotemporal source tuning filter bank for multiclass EEG based brain computer interfaces. *Conf Proc IEEE Eng Med Biol Soc*, 1:327–330 (2006).

Acharya S, Aggarwal V, Tenore F, Hyun-Chool S, Etienne-Cummings R, Schieber MH, Thakor NV. Towards a brain-computer interface for dexterous control of a multi-fingered prosthetic hand. *CNE '07*, pp. 200–203, 2–5 May 2007.

Acharya S, Tenore F, Aggarwal V, Etienne-Cummings R, Schieber MH, Thakor NV. Decoding individuated finger movements using volume-constrained neuronal ensembles in the M1 hand area. *IEEE Trans Neural Syst Rehabil Eng*, 16(1):15–23 (2008).

Acharya S, Fifer MS, Benz HL, Crone NE, Thakor NV. Electrocorticographic amplitude predicts finger positions during slow grasping motions of the hand. *J Neural Eng*, 7(4):046002 (2010).

Achtman N, Afshar A, Santhanam G, Yu BM, Ryu SI, Shenoy KV. Free-paced high-performance brain-computer interfaces. *J Neural Eng*, 4(3):336–347 (2007).

Aggarwal V, Acharya S, Tenore F, Shin HC, Etienne-Cummings R, Schieber MH, Thakor NV. Asynchronous decoding of dexterous finger movements using M1 neurons. *IEEE Trans Neural Syst Rehabil Eng*, 16(1):3–14 (2008).

Aggarwal V, Singhal G, He J, Schieber MH, Thakor NV. Towards closed-loop decoding of dexterous hand movements using a virtual integration environment. *Conf Proc IEEE Eng Med Biol Soc*, 2008:1703–1706 (2008).

Aggarwal V, Tenore F, Acharya S, Schieber MH, Thakor NV. Cortical decoding of individual finger and wrist kinematics for an upper-limb neuroprosthesis. *Conf Proc IEEE Eng Med Biol Soc*, 2009:4535–4538 (2009).

Ajiboye AB, Weir RF. Muscle synergies as a predictive framework for the EMG patterns of new hand postures. *J Neural Eng*, 6(3):036004 (2009).

Andersen RA, Cui H. Intention, action planning, and decision making in parietal-frontal circuits. *Neuron*, 63(5):568–583 (2009).

Andersen RA, Hwang EJ, Mulliken GH. Cognitive neural prosthetics. *Annu Rev Psychol*, 61:169–190, C1–C3 (2010).

Armiger RS, Vogelstein RJ. Air-Guitar Hero: A real-time video game interface for training and evaluation of dexterous upper-extremity neuroprosthetic control algorithms. BioCAS 2008, pp. 121–124, 20–22 November 2008.

Armiger RS, Tenore FV, Bishop WE, Beaty JD, Bridges MM, Burck JM, Vogelstein RJ, Harshbarger SD. A real-time Virtual Integration Environment for neuroprosthetics and rehabilitation. Johns Hopkins APL Tech Dig, 30(3):198–206 (2011).

Baker JJ, Yatsenko D, Schorsch JF, DeMichele GA, Troyk PR, Hutchinson DT, Weir RF, Clark G, Greger B. Decoding individuated finger flexions with Implantable MyoElectric Sensors. Conf Proc IEEE Eng Med Biol Soc, 2008:193–196 (2008).

Baker J, Bishop W, Kellis S, Levy T, House P, Greger B. Multi-scale recordings for neuroprosthetic control of finger movements. Conf Proc IEEE Eng Med Biol Soc, 2009:4573–4577 (2009).

Baker JJ, Scheme E, Englehart K, Hutchinson DT, Greger B. Continuous detection and decoding of dexterous finger flexions with implantable MyoElectric sensors. IEEE Trans Neural Syst Rehabil Eng, 18(4):424–432 (2010).

Baldauf D, Cui H, Andersen RA. The posterior parietal cortex encodes in parallel both goals for double-reach sequences. J Neurosci, 28(40):10081–10089 (2008).

Bark K, Wheeler JW, Premakumar S, Cutkosky MR. Comparison of skin stretch and vibrotactile stimulation for feedback of proprioceptive information. Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems, pp. 71–78, 13–14 March 2008.

Batista AP, Santhanam G, Yu BM, Ryu SI, Afshar A, Shenoy KV. Reference frames for reach planning in macaque dorsal premotor cortex. J Neurophysiol, 98(2):966–983 (2007).

Bensmaia SJ. Tactile intensity and population codes. Behav Brain Res 190(2):165–173 (2008).

Bensmaia S, Kim SS, Sripathi A, Vogelstein RJ. Conveying tactile feedback using a model of mechanotransduction. BioCAS 2008, pp. 137–140, 20–22 November 2008.

Bensmaia SJ, Hsiao SS, Denchev PV, Killebrew JH, Craig JC. The tactile perception of stimulus orientation. Somatosens Mot Res, 25(1):49–59 (2008).

Benz H, Zhang H, Bezerianos A, Acharya S, Crone NE, Zheng X, Thakor NV. Connectivity analysis as a novel approach to motor decoding for prosthesis control. IEEE Trans Neural Syst Rehabil Eng, PP(99):1 (2011).

Bhandari R, Negi S, Solzbacher F. Wafer-scale fabrication of penetrating neural electrode arrays. *Biomed Microdevices*, 12(5):797–807 (2010).

Bhattacharyya R, Musallam S, Andersen RA. Parietal reach region encodes reach depth using retinal disparity and vergence angle signals. *J Neurophysiol*, 102(2):805–816 (2009).

Biermann PJ. The cosmesis: a social and functional interface. *Johns Hopkins APL Tech Dig*, 30(3):250–255 (2011).

Bishop W, Yuy BM, Santhanam G, Afshar A, Ryu SI, Shenoy KV. An efficient approximation for the real-time implementation of the Mixture of Trajectory Models decoder. BioCAS 2008, pp. 133–136, 20–22 November 2008.

Bishop W, Armiger R, Burck J, Bridges M, Hauschild M, Englehart K, Scheme E, Vogelstein RJ, Beaty J, Harshbarger S. A real-time virtual integration environment for the design and development of neural prosthetic systems. *Conf Proc IEEE Eng Med Biol Soc*, 2008:615–619 (2008).

Bishop W, Yu BM, Santhanam G, Afshar A, Ryu SI, Shenoy KV, Vogelstein RJ, Beaty J, Harshbarger S. The use of a virtual integration environment for the real-time implementation of neural decode algorithms. *Conf Proc IEEE Eng Med Biol Soc*, 2008:628–633 (2008).

Bokil HS, Pesaran B, Andersen RA, Mitra PP. A method for detection and classification of events in neural activity. *IEEE Trans Biomed Eng*, 53(8):1678–1687 (2006).

Bridges M, Beaty J, Tenore F, Para M, Mashner M, Aggarwal V, Acharya S, Singhal G, Thakor N. Revolutionizing Prosthetics 2009: dexterous control of an upper-limb neuroprosthesis. *Johns Hopkins APL Tech Dig*, 28(3):210–211 (2010).

Bridges MM, Para MP, Mashner MJ. Control system architecture for the Modular Prosthetic Limb. *Johns Hopkins APL Tech Dig*, 30(3):217–222 (2011).

Brozović M, Andersen RA. A nonparametric quantification of neural response field structures. *Neuroreport*, 17(10):963–967 (2006).

Brozovic M, Gail A, Andersen RA. Gain mechanisms for contextually guided visuomotor transformations. *J Neurosci*, 27(39):10588–10596 (2007).

Brozovic M, Abbott LF, Andersen RA. Mechanism of gain modulation at single neuron and network levels. *J Comput Neurosci*, 25(1):158–168 (2008).

Buneo CA, Batista AP, Jarvis MR, Andersen RA. Time-invariant reference frames for parietal reach activity. *Exp Brain Res*, 188(1):77–89 (2008).

Burck J, Zeher MJ, Armiger R, Beaty JD. [Developing the world's most advanced prosthetic arm using model-based design](#). *The MathWorks News & Notes* 2009.

Burck JM, Bigelow JD, Harshbarger SD. [Revolutionizing Prosthetics: systems engineering challenges and opportunities](#). *Johns Hopkins APL Tech Dig*, 30(3):186–197 (2011).

Campos M, Breznen B, Andersen RA. [A neural representation of sequential states within an instructed task](#). *J Neurophysiol*, 104(5):2831–2849 (2010).

Cassidy A, Etienne-Cummings R. [Non-linear neural spike train decoding via polynomial kernel regression](#). *Conf Proc IEEE Eng Med Biol Soc*, 2007:4102–4105 (2007).

Chatterjee A, Aggarwal V, Ramos A, Acharya S, Thakor NV. [Operation of a brain-computer interface using vibrotactile biofeedback](#). CNE '07, pp. 171–174, 2–5 May 2007.

Chatterjee A, Aggarwal V, Ramos A, Acharya S, Thakor NV. [A brain-computer interface with vibrotactile biofeedback for haptic information](#). *J Neuroeng Rehabil*, 17;4:40 (2007).

Chatterjee A, Chaubey P, Martin J, Thakor NV. [Testing a prosthetic haptic feedback simulator with an interactive force matching task](#). *J Prosthet Orthot*, 20(2):27–34 (2008).

Chatterjee A, Chaubey P, Martin J, Thakor NV. [Quantifying prosthesis control improvements using a vibrotactile representation of grip force](#). 2008 IEEE Region 5 Conference, pp. 1–5, 17–20 April 2008.

Cheng EJ, Loeb GE. [On the use of musculoskeletal models to interpret motor control strategies from performance data](#). *J Neural Eng*, 5(2):232–253 (2008).

Chestek CA, Batista AP, Santhanam G, Yu BM, Afshar A, Cunningham JP, Gilja V, Ryu SI, Churchland MM, Shenoy KV. [Single-neuron stability during repeated reaching in macaque premotor cortex](#). *J Neurosci*, 27(40):10742–10750 (2007).

Chestek CA, Cunningham JP, Gilja V, Nuyujukian P, Ryu SI, Shenoy KV. [Neural prosthetic systems: current problems and future directions](#). *Conf Proc IEEE Eng Med Biol Soc*, 2009:3369–3375 (2009).

Chestek CA, Gilja V, Nuyujukian P, Kier RJ, Solzbacher F, Ryu SI, Harrison RR, Shenoy KV. [HermesC: low-power wireless neural recording system for freely moving primates](#). *IEEE Trans Neural Syst Rehabil Eng*, 17(4):330–338 (2009).

Cho Y, Liang K, Folowosele F, Miller B, Thakor NV. [Wireless temperature sensing cosmesis for prosthesis](#). ICORR 2007, pp. 672–677, 13–15 June 2007.

Churchland MM, Shenoy KV. Temporal complexity and heterogeneity of single-neuron activity in premotor and motor cortex. *J Neurophysiol*, 97(6):4235–4257 (2007).

Clark S, Weir RF. Development of a clinically viable multifunctional underactuated hand prosthesis using differential transmissions. Proceedings of the MEC '08 Conference, New Brunswick, Canada, 13–15 August 2008.

Craig JC, Rhodes RP, Gibson GO, Bensmaia SJ. Discriminating smooth from grooved surfaces: effects of random variations in skin penetration. *Exp Brain Res*, 188(3):331–340 (2008).

Cui H, Andersen RA. Posterior parietal cortex encodes autonomously selected motor plans. *Neuron*, 56(3):552–559 (2007).

Cunningham JP, Yu BM, Gilja V, Ryu SI, Shenoy KV. Toward optimal target placement for neural prosthetic devices. *J Neurophysiol*, 100(6):3445–3457 (2008).

Cunningham JP, Gilja V, Ryu SI, Shenoy KV. Methods for estimating neural firing rates, and their application to brain-machine interfaces. *Neural Netw*, 22(9):1235–1246 (2009).

Dancause N, Schieber MH. The impact of head direction on lateralized choices of target and hand. *Exp Brain Res*, 201(4):821–835 (2010)

Davidson AG, Chan V, O'Dell R, Schieber MH. Rapid changes in throughput from single motor cortex neurons to muscle activity. *Science*, 318(5858):1934–1937 (2007).

Davoodi R, Urata C, Hauschild M, Khachani M, Loeb GE. Model-based development of neural prostheses for movement. *IEEE Trans Biomed Eng*, 54(11):1909–1918 (2007).

Davoodi R, Loeb GE. MSMS software for VR simulations of neural prostheses and patient training and rehabilitation. *Stud Health Technol Inform*, 163:156–162 (2011).

DeMichele GA, Troyk PR, Kerns DA, Weir R. An implantable myoelectric sensor based prosthesis control system. *Conf Proc IEEE Eng Med Biol Soc*, 1:2970–2973 (2006).

DeMichele GA, Troyk PR, Kerns D, Weir, RFf. IMES - implantable myoElectric sensor system: designing standardized ASICs. BioCAS 2008, pp. 117–120, 20–22 November 2008.

de Rugy A, Riek S, Oytam Y, Carroll TJ, Davoodi R, Carson RG. Neuromuscular and biomechanical factors codetermine the solution to motor redundancy in rhythmic multijoint arm movement. *Exp Brain Res*, 189(4):421–434 (2008).

Dietl H. Prostheses control based on TMR. Proceedings of the MEC '08 Conference, New Brunswick, Canada, 13–15 August 2008.

Dowden BR, Wilder AM, Hiatt SD, Normann RA, Brown NA, Clark GA. Selective and graded recruitment of cat hamstring muscles with intrafascicular stimulation. *IEEE Trans Neural Syst Rehabil Eng*, 17(6):545–552 (2009).

Dumanian GA, Ko JH, O'Shaughnessy KD, Kim PS, Wilson CJ, Kuiken TA. Targeted reinnervation for transhumeral amputees: current surgical technique and update on results. *Plast Reconstr Surg*, 124(3):863–869 (2009).

Farrell TR, Weir RF. The optimal controller delay for myoelectric prostheses. *IEEE Trans Neural Syst Rehabil Eng*, 15(1):111–118 (2007).

Farrell TR, Weir RF. A comparison of the effects of electrode implantation and targeting on pattern classification accuracy for prosthesis control. *IEEE Trans Biomed Eng*, 55(9):2198–2211 (2008).

Farrell T, Weir RF. The effects of electrode implantation and targeting on pattern classification accuracy for prosthesis control. Proceedings of the MEC '08 Conference, New Brunswick, Canada, 13–15 August 2008.

Faulring EL, Colgate JE, Peshkin MA. Cobotic architecture for prosthetics. *Conf Proc IEEE Eng Med Biol Soc*, 1:5635–5637 (2006).

Fishel JA, Santos VJ, Loeb GE. A robust microvibration sensor for biomimetic fingertips. BioRob 2008, pp. 659–663, 19–22 October 2008.

Gail A, Andersen RA. Neural dynamics in monkey parietal reach region reflect context-specific sensorimotor transformations. *J Neurosci*, 26(37):9376–9384 (2006).

Gilja V, Linderman MD, Santhanam G, Afshar A, Ryu S, Meng TH, Shenoy KV. Multiday electrophysiological recordings from freely behaving primates. *Conf Proc IEEE Eng Med Biol Soc*, 1:5643–5646 (2006).

Gunalana K, Warren DJ, Perrya JD, Normanna RA, Clark GA. An automated system for measuring tip impedance and among-electrode shunting in high-electrode count microelectrode arrays. *J Neurosci Methods*, 178(2):263–269 (2009).

Gurari N, Okamura AM. Human performance in a knob-turning task. EuroHaptics Conference 2007 and Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems, pp. 96–101, 22–24 March 2007.

Hamed SB, Schieber MH, Pouget A. Decoding M1 neurons during multiple finger movements. *J Neurophysiol*, 98(1):327–333 (2007).

Hargrove LJ, Englehart K, Hudgins B. A comparison of surface and intramuscular myoelectric signal classification. *IEEE Trans Biomed Eng*, 54(5):847–853 (2007).

Harrison RR, Kier RJ, Chestek CA, Gilja V, Nuyujukian P, Kim S, Clark GA. [A wireless neural interface for chronic recording](#). BioCAS 2008, pp. 125–128, 20–22 November 2008.

Harrison RR, Kier RJ, Chestek CA, Gilja V, Nuyujukian P, Ryu S, Greger B, Solzbacher F, Shenoy KV. [Wireless neural recording with single low-power integrated circuit](#). *IEEE Trans Neural Syst Rehabil Eng*, 17(4):322–329 (2009).

Hauschild M, Davoodi R, Loeb GE. [A virtual reality environment for designing and fitting neural prosthetic limbs](#). *IEEE Trans Neural Syst Rehabil Eng*, 15(1):9–15 (2007).

Hinton MA, Zeher MJ, Kozlowski MV, Johannes MS. [Advanced Explosive Ordnance Disposal Robotic System \(AEODRS\): a common architecture revolution](#). *Johns Hopkins APL Tech Dig*, 30(3):256–266 (2011).

Hwang EJ, Andersen RA. [Brain control of movement execution onset using local field potentials in posterior parietal cortex](#). *J Neurosci*, 29(45):14363–14370 (2009).

Hwang EJ, Andersen RA. [Cognitively driven brain machine control using neural signals in the parietal reach region](#). *Conf Proc IEEE Eng Med Biol Soc*, 2010:3329–3332 (2010).

Hwang EJ, Andersen RA. [Effects of visual stimulation on LFPs, spikes, and LFP-spike relations in PRR](#). *J Neurophysiol*, 105(4):1850–1860 (2011).

Iyer A, Lindner A, Kagan I, Andersen RA. [Motor preparatory activity in posterior parietal cortex is modulated by subjective absolute value](#). *PLoS Biol*, 8(8):e1000444 (2010).

Johannes MS, Bigelow JD, Burck JM, Harshbarger SD, Kozlowski MV, Van Doren T. [An overview of the developmental process for the Modular Prosthetic Limb](#). *Johns Hopkins APL Tech Dig*, 30(3):207–216 (2011).

Kaliki RR, Davoodi R, Loeb GE. [The effects of training set on prediction of elbow trajectory from shoulder trajectory during reaching to targets](#). *Conf Proc IEEE Eng Med Biol Soc*, 1:5483–5486 (2006).

Kaliki RR, Davoodi R, Loeb GE. [Prediction of distal arm posture in 3-D space from shoulder movements for control of upper limb prostheses](#). *Proc IEEE*, 96(7):1217–1225 (2008).

Kaplan HM, Loeb GE. [Design and fabrication of an injection tool for neuromuscular microstimulators](#). *Ann Biomed Eng*, 37(9):1858–1870 (2009).

Kellis SS, House PA, Thomson KE, Brown R, Greger B. [Human neocortical electrical activity recorded on nonpenetrating microwire arrays: applicability for neuroprostheses](#). *Neurosurg Focus*, 27(1):E9 (2009).

Kemere C, Santhanam G, Yu BM, Afshar A, Ryu SI, Meng TH, Shenoy KV. Detecting neural-state transitions using hidden Markov models for motor cortical prostheses. *J Neurophysiol*, 100(4):2441–2452 (2008).

Kim K, Colgate JE, Santos-Munne JJ, Makhlin A, Peshkin MA. On the design of miniature haptic devices for upper extremity prosthetics. *IEEE ASME Trans Mechatron*, 15(1):27–39 (2010).

Kim S, Bhandari R, Klein M, Negi S, Rieth L, Tathireddy P, Toepper M, Oppermann H, Solzbacher F. Integrated wireless neural interface based on the Utah electrode array. *Biomed Microdevices*, 11(2):453–466 (2009).

Kim SS, Mihalas S, Russell A, Dong Y, Bensmaia SJ. Does afferent heterogeneity matter in conveying tactile feedback through peripheral nerve stimulation? *IEEE Trans Neural Syst Rehabil Eng*, 19(5):514–520 (2011).

Kuiken T, Miller L, Lipschutz R, Lock B, Stubblefield K, Marasco P, Zhau P, Dumanian G. Targeted reinnervation for enhanced prosthetic arm function in a woman with a proximal amputation: a case study. *Lancet*, 369:371–380 (2007).

Kuiken TA, Li G, Lock BA, Lipschutz RD, Miller LA, Stubblefield KA, Englehart KB. Targeted muscle reinnervation for real-time myoelectric control of multifunction artificial arms. *JAMA*, 301(6):619–628 (2009).

Kuniholm J, Clark RL. Software underactuation for reduced input control of large degree of freedom structures: development of a hand control strategy for advanced upper extremity prosthetics. Proceedings of the MEC '08 Conference, New Brunswick, Canada, 13–15 August 2008.

Law AJ, Sharma G, Schieber MH. An information transmission measure for the analysis of effective connectivity among cortical neurons. *Conf Proc IEEE Eng Med Biol Soc*, 2010:3293–3296 (2010).

Lee D, Schieber MH. Serial correlation in lateralized choices of hand and target. *Exp Brain Res*, 174(3):499–509 (2006).

Levy TJ, Beaty JD. Revolutionizing Prosthetics: neuroscience framework. *Johns Hopkins APL Tech Dig*, 30(3):223–229 (2011).

Lewitus D, Vogelstein RJ, Zhen G, Choi YS, Kohn J, Harshbarger S, Jia X. Designing tyrosine-derived polycarbonate polymers for biodegradable regenerative type neural interface capable of neural recording. *IEEE Trans Neural Syst Rehabil Eng*, 19(2):204–212 (2011).

Linderman MD, Gilja V, Santhanam G, Afshar A, Ryu S, Meng TH, Shenoy KV. An autonomous, broadband, multi-channel neural recording system for freely behaving primates. *Conf Proc IEEE Eng Med Biol Soc*, 1:1212–1215 (2006).

Linderman MD, Gilja V, Santhanam G, Afshar A, Ryu S, Meng TH, Shenoy KV. Neural recording stability of chronic electrode arrays in freely behaving primates. *Conf Proc IEEE Eng Med Biol Soc*, 1:4387–4391 (2006).

Lindner A, Iyer A, Kagan I, Andersen RA. Human posterior parietal cortex plans where to reach and what to avoid. *J Neurosci*, 30(35):11715–11725 (2010).

Loeb GE. Taking control of prosthetic arms. *JAMA*, 301(6):670–671 (2009).

Loeb GE, Tsianos GA, Fishel JA, Wettels N, Schaal S. Understanding haptics by evolving mechatronic systems. *Prog Brain Res*, 192:129–144 (2011).

Love LJ, Lind RF, Jansen JF. Mesofluidic actuation for articulated finger and hand prosthetics. *IROS 2009*, pp. 2586–2591, 10–15 October 2009.

Lowery MM, Weir RF, Kuiken TA. Simulation of intramuscular EMG signals detected using implantable myoelectric sensors (IMES). *IEEE Trans Biomed Eng*, 53(10):1926–1933 (2006).

Macisaac DT, Englehart KB. The science in science fiction's artificial men. *Crosstalk* 19:4–8 (2006).

Merrill DR, Lockhart J, Troyk PR, Weir RF, Hankin DL. Development of an implantable myoelectric sensor for advanced prosthesis control. *Artif Organs*, 35(3):249–252 (2011).

Mileusnic MP, Loeb GE. Force estimation from ensembles of Golgi tendon organs. *J Neural Eng*, 6(3):036001 (2009).

Miller LA, Lipschutz RD, Stubblefield KA, Lock BA, Huang H, Williams TW 3rd, Weir RF, Kuiken TA. Control of a six degree of freedom prosthetic arm after targeted muscle reinnervation surgery. *Arch Phys Med Rehabil* 89(11):2057–2065 (2008).

Mitchell M, Weir RF. Development of a clinically viable multifunctional hand prosthesis. Proceedings of the MEC '08 Conference, New Brunswick, Canada, 13–15 August 2008.

Mollazadeh M, Murari K, Cauwenberghs G, Thakor N. From spikes to EEG: integrated multichannel and selective acquisition of neuropotentials. *Conf Proc IEEE Eng Med Biol Soc*, 2008:2741–2744 (2008).

Mollazadeh M, Aggarwal V, Singhal G, Law A, Davidson A, Schieber M, Thakor N. Spectral modulation of LFP activity in M1 during dexterous finger movements. *Conf Proc IEEE Eng Med Biol Soc*, 2008:5314–5317 (2008).

Mollazadeh M, Aggarwal V, Davidson AG, Law AJ, Thakor NV, Schieber MH. Spatiotemporal variation of multiple neurophysiological signals in the primary motor cortex during dexterous reach-to-grasp movements. *J Neurosci*, 31(43):15531–15543 (2011).

Moran CW. Revolutionizing Prosthetics 2009 Modular Prosthetic Limb–body interface: overview of the prosthetic socket development. *Johns Hopkins APL Tech Dig*, 30(3):240–249 (2011).

Mulliken GH, Musallam S, Andersen RA. Decoding trajectories from posterior parietal cortex ensembles. *J Neurosci*, 28(48):12913–129126 (2008).

Mulliken GH, Musallam S, Andersen RA. Forward estimation of movement state in posterior parietal cortex. *Proc Natl Acad Sci USA*, 105(24):8170–8177 (2008).

Murguialday AR, Aggarwal V, Chatterjee A, Cho Y, Rasmussen R, O'Rourke B, Acharya S, Thakor NV. Brain-computer interface for a prosthetic hand using local machine control and haptic feedback. ICORR 2007, pp. 609–613, 13–15 June 2007.

Musallam S, Bak MJ, Troyk PR, Andersen RA. A floating metal microelectrode array for chronic implantation. *J Neurosci Methods*, 160(1):122–127 (2007).

Negi S, Bhandari R, Rieth L, Van Wagenen R, Solzbacher F. Neural electrode degradation from continuous electrical stimulation: comparison of sputtered and activated iridium oxide. *J Neurosci Methods*, 186(1):8–17 (2010).

Orchard G, Russell A, Mazurek K, Tenore F, Etienne-Cummings R. Configuring silicon neural networks using genetic algorithms. ISCAS 2008, pp. 1048–1051, 18–21 May 2008.

Pei YC, Hsiao SS, Bensmaia SJ. The tactile integration of local motion cues is analogous to its visual counterpart. *Proc Natl Acad Sci USA*, 105(23):8130–8135 (2008).

Pei YC, Denchev PV, Hsiao SS, Craig JC, Bensmaia SJ. Convergence of submodality-specific input onto neurons in primary somatosensory cortex. *J Neurophysiol*, 102(3):1843–1853 (2009).

Pei YC, Hsiao SS, Craig JC, Bensmaia SJ. Neural mechanisms of tactile motion integration in somatosensory cortex. *Neuron*, 69(3):536–547 (2011).

Pesaran B, Nelson MJ, Andersen RA. Dorsal premotor neurons encode the relative position of the hand, eye, and goal during reach planning. *Neuron*, 51(1):125–134 (2006).

Pesaran B, Nelson MJ, Andersen RA. [Free choice activates a decision circuit between frontal and parietal cortex.](#) *Nature*, 453(7193):406–409 (2008).

Pesaran B, Nelson MJ, Andersen RA. [A relative position code for saccades in dorsal premotor cortex.](#) *J Neurosci*, 30(19):6527–6537 (2010).

Raphael G, Tsianos GA, Loeb GE. [Spinal-like regulator facilitates control of a two-degree-of-freedom wrist.](#) *J Neurosci*, 30(28):9431–9444 (2010).

Rapoport BI, Wattanapanitch W, Penagos HL, Musallam S, Andersen RA, Sarpeshkar R. [A biomimetic adaptive algorithm and low-power architecture for implantable neural decoders.](#) *Conf Proc IEEE Eng Med Biol Soc*, 2009:4214–4217 (2009).

Rincon-Gonzalez L, Warren JP, Meller DM, Tillery SH. [Haptic interaction of touch and proprioception: implications for neuroprosthetics.](#) *IEEE Trans Neural Syst Rehabil Eng*, 19(5):490–500 (2011).

Russell A, Tenore F, Singhal G, Thakor N, Etienne-Cummings R. [Towards control of dexterous hand manipulations using a silicon Pattern Generator.](#) *Conf Proc IEEE Eng Med Biol Soc*, 2008:3455–3458 (2008).

Russell AF, Armiger RS, Vogelstein RJ, Bensmaia SJ, Etienne-Cummings R. [Real-time implementation of biofidelic SA1 model for tactile feedback.](#) *Conf Proc IEEE Eng Med Biol Soc*, 2009:185–188 (2009).

Santhanam G, Linderman MD, Gilja V, Afshar A, Ryu SI, Meng TH, Shenoy KV. [HermesB: a continuous neural recording system for freely behaving primates.](#) *IEEE Trans Biomed Eng*, 54(11):2037–2050 (2007).

Santhanam G, Yu BM, Gilja V, Ryu SI, Afshar A, Sahani M, Shenoy KV. [Factor-analysis methods for higher-performance neural prostheses.](#) *J Neurophysiol*, 102(2):1315–1330 (2009).

Scherberger H, Andersen RA. [Target selection signals for arm reaching in the posterior parietal cortex.](#) *J Neurosci*, 27(8):2001–2012 (2007).

Schieber MH, Rivlis G. [Partial reconstruction of muscle activity from a pruned network of diverse motor cortex neurons.](#) *J Neurophysiol*, 97(1):70–82 (2007).

Schieber MH. [Dissociating motor cortex from the motor.](#) *J Physiol*, 589:5613–5624 (2011).

Schorsch JF, Weir RF. [Reliability of Implantable MyoElectric Sensors \(IMES\).](#) *Virtual Rehabilitation*, 2008, p. 75, 25–27 August 2008.

Schultz AE, Baade SP, Kuiken TA. Expert opinions on success factors for upper-limb prostheses. *J Rehabil Res Dev*, 44(4):483–489 (2007).

Schultz AE, Kuiken TA. Neural interfaces for control of upper limb prostheses: the state of the art and future possibilities. *PM R*, 3(1):55–67 (2011).

Sensinger JW, Weir RF. Non-backdrivable series elastic actuator for use in a prosthetic elbow. Proceedings of the MEC '05 Conference, New Brunswick, Canada, 17–19 August 2005.

Sensinger JW, Weir RF. Modeling and preliminary testing socket-residual limb interface stiffness of above-elbow prostheses. *IEEE Trans Neural Syst Rehabil Eng*, 16(2):184–190 (2008).

Sharma A, Rieth L, Tathireddy P, Harrison R, Oppermann H, Klein M, Töpper M, Jung E, Normann R, Clark G, Solzbacher F. Long term in vitro functional stability and recording longevity of fully integrated wireless neural interfaces based on the Utah Slant Electrode Array. *J Neural Eng*, 8(4):045004 (2011).

Shenoy KV, Santhanam G, Ryu SI, Afshar A, Yu BM, Gilja V, Linderman MD, Kalmar RS, Cunningham JP, Kemere CT, Batista AP, Churchland MM, Meng TH. Increasing the performance of cortically controlled prostheses. *Conf Proc IEEE Eng Med Biol Soc*, Suppl:6652–6656 (2006).

Shin HC, Aggarwal V, Acharya S, Schieber MH, Thakor NV. Neural decoding of finger movements using Skellam-based maximum-likelihood decoding. *IEEE Trans Biomed Eng*, 57(3):754–760 (2010).

Singhal G, Acharya S, Davidovics N, He J, Thakor N. Including planning activity in feature space distributes activation over a broader neuron population. *Conf Proc IEEE Eng Med Biol Soc*, 2007:5349–5352 (2007).

Singhal G, Aggarwal V, Acharya S, Aguayo J, He J, Thakor N. Ensemble fractional sensitivity: a quantitative approach to neuron selection for decoding motor tasks. *Comput Intell Neurosci*, 648202 (2010).

Smith DG, Bigelow JD. Biomedicine: Revolutionizing Prosthetics—Guest editors' introduction. *Johns Hopkins APL Tech Dig*, 30(3):182–185 (2011).

Smith RJ, Tenore F, Huberdeau D, Etienne-Cummings R, Thakor NV. Continuous decoding of finger position from surface EMG signals for the control of powered prostheses. *Conf Proc IEEE Eng Med Biol Soc*, 2008:197–200 (2008).

Smith RJ, Huberdeau D, Tenore F, Thakor NV. Real-time myoelectric decoding of individual finger movements for a virtual target task. *Conf Proc IEEE Eng Med Biol Soc*, 2009:2376–2379 (2009).

Song D, Lan N, Loeb GE, Gordon J. Model-based sensorimotor integration for multi-joint control: development of a virtual arm model. *Ann Biomed Eng*, 36(6):1033–1048 (2008).

Song D, Hendrickson P, Marmarelis VZ, Aguayo J, He J, Loeb GE, Berger TW. Predicting EMG with generalized Volterra kernel model. *Conf Proc IEEE Eng Med Biol Soc*, 2008:201–204 (2008).

Song D, Raphael G, Lan N, Loeb GE. Computationally efficient models of neuromuscular recruitment and mechanics. *J Neural Eng*, 5(2):175–184 (2008).

Tan W, Loeb GE. Feasibility of prosthetic posture sensing via injectable electronic modules. *IEEE Trans Neural Syst Rehabil Eng*, 15(2):295–309 (2007).

Taylor DM, Tillery SIH, Schwartz AB. Direct cortical control of 3D neuroprosthetic devices. *Science*, 296(5574):1829–1832 (2002).

Tenore F, Vogelstein RJ, Etienne-Cummings R, Cauwenberghs G, Lewis MA, Hasler P. A spiking silicon central pattern generator with floating gate synapses. *ISCAS 2005*, pp. 4106–4109, 23–26 May 2005.

Tenore F, Etienne-Cummings R. Biomorphic circuits and systems: control of robotic and prosthetic limbs. *BioCAS 2008*, pp. 241–244, 20–22 November 2008.

Tenore F, Armiger RS, Vogelstein RJ, Wenstrand DS, Harshbarger SD, Englehart K. An embedded controller for a 7-degree of freedom prosthetic arm. *Conf Proc IEEE Eng Med Biol Soc*, 2008:185–188 (2008).

Tenore F, Aggarwal V, White JR, Schieber MH, Thakor NV. Computational complexity versus accuracy in classification of cortical neural signals. *NER '09*, pp. 750–753, 29 April–2 May 2009.

Tenore FV, Ramos A, Fahmy A, Acharya S, Etienne-Cummings R, Thakor NV. Decoding of individuated finger movements using surface electromyography. *IEEE Trans Biomed Eng*, 56(5):1427–1434 (2009).

Tenore FV, Vogelstein RJ. Revolutionizing Prosthetics: devices for neural integration. *Johns Hopkins APL Tech Dig*, 30(3):230–239 (2011).

Tkach D, Huang H, Kuiken TA. Study of stability of time-domain features for electromyographic pattern recognition. *J Neuroeng Rehabil*, 7:21 (2010).

Troyk PR, DeMichele GA, Kerns DA, Weir RF. IMES: an implantable myoelectric sensor. *Conf Proc IEEE Eng Med Biol Soc*, 2007:1730–1733 (2007).

Velliste M, Perel S, Spalding MC, Whitford AS, Schwartz AB. Cortical control of a prosthetic arm for self-feeding. *Nature*, 453(7198):1098–1101 (2008).

Vinjamuri R, Weber DJ, Degenhart AD, Collinger JL, Sudre GP, Adelson PD, Holder DL, Boninger ML, Schwartz AB, Crammond DJ, Tyler-Kabara EC, Wang W. A fuzzy logic model for hand posture control using human cortical activity recorded by micro-ECoG electrodes. *Conf Proc IEEE Eng Med Biol Soc*, 2009:4339–4342 (2009).

Weir RFff, Troyk PR, DeMichele G, Kerns D. Technical details of the Implantable Myoelectric Sensor (IMES) system for multifunction prosthesis control. *Conf Proc IEEE Eng Med Biol Soc*, 7:7337–7340 (2005).

Weir R, Mitchell M, Clark S, Puchhammer G, Haslinger M, Grausenburger R, Kumar N, Hofbauer R, Kushnigg P, Cornelius V, Eder M, Eaton H, Wenstrand D. The intrinsic hand - a 22 degree-of-freedom artificial hand-wrist replacement. Proceedings of the MEC '08 Conference, New Brunswick, Canada, 13–15 August 2008.

Weir RF, Troyk PR, DeMichele GA, Kerns DA, Schorsch JF, Maas H. Implantable myoelectric sensors (IMESs) for intramuscular electromyogram recording. *IEEE Trans Biomed Eng*, 56(1):159–171 (2009).

Wettels N, Popovic D, Santosand VJ, Loeb GE. Biomimetic tactile sensor for control of grip. ICORR 2007, pp. 923–932, 13–15 June 2007.

Wettels N, Santos VJ, Johansson RS, Loeb GE. Biomimetic tactile sensor array. *Adv Robot*, 22:829–849 (2008).

Wilder AM, Hiatt SD, Dowden BR, Brown NAT, Normann RA, Clark GA. Automated stimulus-response mapping of high-electrode-count neural implants. *IEEE Trans Neural Syst Rehabil Eng*, 17(5):504–511 (2009).

Withrow TJ, Shen X, Mitchell JE, Goldfarb M. A forearm actuation unit for an upper extremity prosthesis. ICRA 2008, pp. 2459–2464, 19–23 May 2008.

Yau JM, Hollins M, Bensmaia SJ. Textural timbre: The perception of surface microtexture depends in part on multimodal spectral cues. *Commun Integr Biol*, 2(4):344–346 (2009).

Yu BM, Kemere C, Santhanam G, Afshar A, Ryu SI, Meng TH, Sahani M, Shenoy KV. Mixture of trajectory models for neural decoding of goal-directed movements. *J Neurophysiol*, 97(5):3763–3780 (2007).

Yu BM, Cunningham JP, Santhanam G, Ryu SI, Shenoy KV, Sahani M. Gaussian-process factor analysis for low-dimensional single-trial analysis of neural population activity. *J Neurophysiol*, 102(1):614–635 (2009).

Zeher MJ, Armiger RS, Burck JM, Moran C, Kiely JB, Weeks SR, Tsao JW, Pasquina PF, Davoodi R, Loeb G. Using a virtual integration environment in treating phantom limb pain. *Stud Health Technol Inform*, 163:730–736 (2011).

Zheng HW. Multisensor data fusion for prosthetic control. Fusion 2008, pp. 1–8, 30 June–3 July 2008.