

Bibliography

Bibliography

- [1] Ahmed, R., Tripathy, N. and Hanh, Y. B. High-performance cholesterol sensor based on the solution-gated field effect transistor fabricated with ZnO nanorods. *Biosensors and Bioelectronics*, 45: 281-286, 2013.
- [2] Barik, M.A., and Dutta, J.C. Fabrication and characterization of junctionless carbon nanotube field effect transistor for cholesterol detection. *Applied Physics Letters*, 105(5): 053509, 2014.
- [3] Barik, M.A., Deka, R. and Dutta, J.C. Carbon nanotube-based dual-gated junctionless field-effect transistor for acetylcholine detection. *IEEE Sensors Journal*, 16(2) : 280-286,2016.
- [4] Borisyuk, A. Morris–Lecar Model. In *Encyclopedia of Computational Neuroscience*, Springer New York. : 1758-1764, 2015.
- [5] Brading, A., Bulbring, E. and Tomita, T. The Effect Of Sodium and Calcium on the Action Potential of the smooth muscle of the Guinea-Pig Taenia Coli. *The Journal of Physiology*, 200(3):637-654, 1969.
- [6] Brockman, W.H. A simple electronic neuron model incorporating both active and passive responses. *IEEE Transactions on Biomedical Engineering*, 11:635-639, 1979.
- [7] Buhry ,L., Pace, M., and Saïghi ,S. Global parameter estimation of an Hodgkin–Huxley formalism using membrane voltage recordings: Application to neuromimetic analog integrated circuits. *Neurocomputing*, 81:75-85,2012.
- [8] Buhry, L., Grassia, F., Giremus, A, Grivel, E, Renaud, S, and Saïghi, S. Automated parameter estimation of the Hodgkin-Huxley model using the differential evolution algorithm: application to neuromimetic analog integrated circuits. *Neural computation*, 23 (10):2599-2625, 2011.
- [9] Buhry, L., Saighi ,S., Giremus, A., Grivel, E., and Renaud, S. Parameter estimation of the Hodgkin-Huxley model using metaheuristics: application to neuromimetic analog integrated circuits. In *IEEE Biomedical Circuits and Systems Conference (BioCAS)*, pages 173 -176, 2008.

- [10] Buhry, L., Saighi S., Giremus A., Grivel E., and Renaud S. Automated tuning of analog neuromimetic integrated circuits. In *IEEE Biomedical Circuits and Systems Conference (BioCAS)*, pages 13-16,2009.
- [11] Bulsara, A., Jacobs, E.W., Zhou, T., Moss, F., and Kiss, L. Stochastic resonance in a single neuron model: Theory and analog simulation. *Journal of Theoretical Biology*, 152(4):531-55,1991.
- [12] Burkitt, A.N. A review of the integrate-and-fire neuron model: I. Homogeneous synaptic input. *Biological cybernetics*, 95 (1):1-19,2006 .
- [13] Caras, S. and Janata, J. Field effect transistor sensitive to penicillin. *Analytical Chemistry*, 52(12): 1935-1937, 1980.
- [14] Cedersund ,G., Samuelsson O, Ball G, Tegnér J, and Gomez-Cabrero D. Optimization in biology parameter estimation and the associated optimization problem. In *Uncertainty in Biology* ,pages 177-197, ISBN:978-3-319-21296-8. Springer International Publishing, 2016.
- [15] Che, Y., Geng, L.H., Han, C., Cui, S. and Wang, J. Parameter estimation of the fitzhugh-nagumo model using noisy measurements for membrane potential. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, 22(2):023139,2012 .
- [16] Clerc, M. Particle swarm optimization. *John Wiley & Sons*, 2010.
- [17] Cole, K. S. and Hodgkin, A. L. Membrane and Protoplasm Resistance in the Squid Giant Axon. *Journal of Gen. Physiology*, 22(5):671-87, 1939.
- [18] Coutin, L., Guglielmi, J. M., and Marie, N. On a Multifractional Stochastic Hodgkin-Huxley Model. *arXiv preprint arXiv:1702.01256*,2017
- [19] Crotty, P. and Sangrey, T. Optimization of battery strengths in the Hodgkin-Huxley model. *BMC Neuro science*, 12(Suppl 1):282, 2011.
- [20] Csercsik D., Farkas I., Szederkényi G., Hrabovszky E., Liposits Z., and Hangos, K.M. Hodgkin–Huxley type modelling and parameter estimation of GnRH neurons. *Biosystems*, 100(3), 198-207, 2010.

- [21] Csercsik, D., Szederkényi, G., Hangos, K.M. and Farkas, I. Parameter estimation of Hodgkin-Huxley model of GnRH neurons. *Proceedings of the 9th International Phd. workshop: Young Generation Viewpoint* :1-3,2008.
- [22] Deb, K., Pratap, A., Agarwal, S. and Meyarivan, T.A. A fast and elitist multiobjective genetic algorithm: NSGA-II. *IEEE transactions on evolutionary computation*: 182-97, 2002.
- [23] Ditlevsen, S. and Samson, A. Parameter estimation in neuronal stochastic differential equation models from intracellular recordings of membrane potentials in single neurons: a Review. *Journal de la Société Française de Statistique*, 157 (1):6-16, 2016.
- [24] Doi, S., Onoda, Y., and Kumagai, S. Parameter estimation of various Hodgkin-Huxley-type neuronal models using a gradient-descent learning method. *Proceedings of the 41st SICE Annual Conference 2 IEEE*, pages 1685-1688, 2002.
- [25] Dutta, J.C. and Thakur, H.R., Sensitivity determination of CNT based ISFETs for different high- κ dielectric materials, *IEEE Sensors Letters*, 1:2.
- [26] Dutta, J.C. Ion sensitive field effect transistor for applications in bioelectronic sensors: A research review, *IEEE National Conference on Computational Intelligence and Signal Processing (CISP)*, 185-191, 2012.
- [27] Fister, I., Yang, X.S. and Brest, J. A comprehensive review of firefly algorithms. *Swarm and Evolutionary Computation*, 13:34-46,2013.
- [28] FitzHugh, R. Threhold and plateaus in the Hodgkin-Huxley nerve equations. *The Journal of General Physiology*, 43(5):867-896, 1960.
- [29] Gerken, W.C., Purvis, L.K. and Buteram R,J. Genetic algorithm for optimization and specification of a neuron model. *Neuro computing*, 69 (10): 1039-1042, 2006.
- [30] Gerstner, W. and Kistler, W. M. Spiking Neuron Models: Single Neurons, Population, Plasticity. Cambridge University Press, 2002.
- [31] Gotoh, M., Tamiya, E., Momoi, M., Kagawa, Y. and Karube, I. Acetylcholine Sensor Based on Ion Sensitive Field Effect Transistor and Acetylcholine Receptor. *Analytical Letters*, 20(6): 857-870, 1987.

- [32] Grassia, F., Kohno, T. and Levi, T. Digital hardware implementation of a stochastic two-dimensional neuron model. *Journal of Physiology-Paris*, 2017.
- [33] Gulrajani, R. M., and F. A. Roberge. The modelling of the Hodgkin-Huxley membrane with field-effect transistors. *Medical and Biological Engineering and Computing*, 14: 31-41,1976.
- [34] Gulrajani, R. M., Roberge, F. A. and Mathieu, P.A. A field-effect transistor analog for the study of burst-generating neurons. *Proceedings of the IEEE*, 65(5): 807-809,1977.
- [35] Gulrajani, R.M., Roberge, F. A. and Mathieu, P.A. The modelling of a burst-generating neuron with a field-effect transistor analog. *Biological cybernetics*, 25(4): 227-240,1977.
- [36] Harmon, L. D. and Lewis, R. Neural modeling. *Physiology Review* ,48:513-591, 1966.
- [37] Haupt, R. L. and Haupt, S.E. Practical genetic algorithms. *John Wiley Sons*, 2004 Jul 30.
- [38] Hight A.E. and Kalluri, R. A biophysical model examining the role of low-voltage-activated potassium currents in shaping the responses of vestibular ganglion neurons. *Journal of neurophysiology*, 116 (2):503-21,2016.
- [39] Hindmarsh, J.L., and Rose, R.M. A model of neuronal bursting using three coupled first order differential equations. *Proceedings of the Royal Society of London B: Biological Sciences*, 221 (1222):87-102,1984.
- [40] Hindmarsh, J.L., and Rose, R.M. A model of the nerve impulse using two first-order differential equations. *Nature*,296(5853):162-164,1982.
- [41] Hodgkin, A. L., and Huxley, A. F. A quantitative description of membrane current and its application to conduction and excitation in nerve. *The Journal of Physiology*,117(4):500-544,1952.
- [42] Hodgkin, A. L., and Huxley, A. F. Currents carried by sodium and potassium ions through the membrane of the giant axon of Loligo. *The Journal of Physiology*,116(4):449-472,1952.

- [43] Hodgkin, A. L., and Huxley, A. F. Ionic movements and electrical activity in giant nerve fibers. *Proceedings of the Royal Society of London, Series B, Biological Science*, 148:1-37,1957.
- [44] Hodgkin, A. L., and Huxley, A. F. The components of membrane conductance in the giant axon of Loligo. *The Journal of Physiology*,116(4): 473 -496,1952.
- [45] Hodgkin, A. L., and Huxley, A. F. The dual effect of membrane potential on sodium conductance in the giant axon of Loligo. *The Journal of Physiology*,116(4):497 -506,1952.
- [46] Hoogi, A., Subramaniam, A., Veerapaneni, R. and Rubin, D.L. Adaptive estimation of active contour parameters using convolutional neural networks and texture analysis. *IEEE transactions on medical imaging*, 6(3):781-91,2017 .
- [47] Hopfield, J. J., and Tank, D. W. “Neural” computation of decisions in optimization problems. *Biological cybernetics*, 52(3):141-152, 1985.
- [48] Horn, J., Nafpliotis, N. and Goldberg, D.E. A niched Pareto genetic algorithm for multiobjective optimization. In Evolutionary Computation, IEEE World Congress on Computational Intelligence, *In Evolutionary Computation, Proceedings of the First IEEE Conference*: 82-87,1994. IEEE
- [49] Hu, X., Duan, S., Chen, G. and Chen, L. Modeling affections with memristor-based associative memory neural networks. *Neurocomputing*, 223:129-37, 2017.
- [50] Hull, M. J., Soffe, S. R., Willshaw, D. J., and Roberts, A. Modelling feedback excitation, pacemaker properties and sensory switching of electrically coupled brainstem neurons controlling rhythmic activity. *PLoS Comput Biol*, 12(1): e1004702,2016.
- [51] Izhikevich, E. M. Simple Model of Spiking Neurons. *IEEE Transactions on Neural Network*. 14(6): 1569-1572, 2003.
- [52] Jelescu, I.O., Veraart, J., Fieremans, E. and Novikov, D.S. Degeneracy in model parameter estimation for multi-compartmental diffusion in neuronal tissue. *NMR in Biomedicine*, 29(1):33-47,2016.

- [53] Jiang, T., Gao, S., Wang, D., Ji, J., Todo, Y. and Tang, Z. A neuron model with synaptic nonlinearities in a dendritic tree for liver disorders. *IEEJ Transactions on Electrical and Electronic Engineering*, 12 (1):105-115,2017.
- [54] Jimenez, C., Bratov, A., Bartroli, J., Alegret, S. and Dominguez, C. Photosensitive polyurethanes applied to the development of CHEMFET and ENFET devices for biomedical sensing. *Biosensors Bioelectronics* ,12(7): 577-585, 1997.
- [55] Johnson, R. N. and Hanna, G. R. Membrane model: A single transistor analog of excitable membrane. *Journal of Theoretical Biology*, 22(3):401-411, 1969.
- [56] Kang, Q., Huang, B., and Zhou, M. Dynamic behavior of artificial Hodgkin–Huxley neuron model subject to additive noise. *IEEE transactions on cybernetics*, 46(9): 2083-2093, 2016.
- [57] Kennedy, J. Particle swarm optimization. In *Encyclopedia of machine learning* , 760-766, 2011.
- [58] Kharitonov, A. B., Zayats, M., Lichtenstian, A., Katz, E. and Willner, I. Enzyme monolayer-functionalized field-effect transistors for biosensor application. *Sensors and Actuators B*, 70(1), 222-231, 2000.
- [59] Kim, M., McKinnon, D., MacCarthy, T., Rosati, B. and McKinnon, D. Regulatory Evolution and Voltage-Gated Ion Channel Expression in Squid Axon: Selection Mutation Balance and Fitness Cliffs. *PLOS One*, 10(4): p.e0120785, 2015.
- [60] Lankarany, M., Zhu,W.P., and Swamy, M.N. Parameter estimation of Hodgkin-Huxley neuronal model using dual extended Kalman filter. *IEEE International Symposium on In Circuits and Systems (ISCAS)*, pages 2493-2496,2013.
- [61] Lapicque. Introduction of the Integrate-and-Fire model of neuron. The *Journal of Physiology Pathol.*, 9: 620– 635,1907.
- [62] Lecar, H. Morris-lecar model. *Scholarpedia* ,2, (10):1333 ,2007.

- [63] Lee, J., Smaill, B., and Smith, N. Hodgkin–Huxley type ion channel characterization: an improved method of voltage clamp experiment parameter estimation. *Journal of theoretical biology*, 242, (1):123-34,2006.
- [64] Lee, Y.J., Lee, J., Kim, Y.B., Ayers, J., Volkovskii, A., Selverston, A., Abarbanel, H., and Rabinovich, M. Low power real time electronic neuron VLSI design using subthreshold technique. *IEEE In Circuits and Systems, 2004. ISCAS'04. Proceedings of the 2004 International Symposium, 4 : IV-744*, 2004.
- [65] Lewis, E. R. Neuroelectric potentials derived from an extended version of the Hodgkin and Huxley model. *Journal of Theoretical Biology*, 10(1): 125IN1153-152IN3158, 1966.
- [66] Lewis, E. R. Using electronic circuits to model simple neuroelectric interactions. *Proceedings of IEEE*. 56(6), 931-949, 1968.
- [67] Lu, M., Wang, J. L., Wen, J., and Dong, X. W. Implementation of Hodgkin-Huxley neuron model in FPGAs. *In Electromagnetic Compatibility (APEMC), Asia-Pacific International Symposium*,1, 1115-1117,2016.
- [68] Maeda, Y., Yagi, E. and Makino, H. Synchronization with low power consumption of hardware models of cardiac cells. *BioSystems*,79 (1):125-31,2005.
- [69] Maisel, B., and Lindenberg, K. Channel noise effects on first spike latency of a stochastic Hodgkin-Huxley neuron. *Physical Review E*, 95 (2):022414, 2017.
- [70] Masanotti, D., Taylor, J. and Langlois, P. PSPICE models of excitable membranes. *International Conference on Signals and Electronic Systems*, pages 419-422, University of Bath, 2006.
- [71] McKenna, J.P. Reducing a Conductance-Based Neuron Model to Normal Form. *Biology and Medicine Through Mathematics Conference*,2016.
- [72] McKenna, T.M., Davis, J.L. and Zornetzer, S. F. Single Neuron Computation. *Academic Press Inc*, 2014.
- [73] Miller, R. N. and Rinzel, J. The dependence of impulse propagation speed on firing frequency, dispersion for the Hodgkin-Huxley model. *Biophysical Journal*, 34(2):227-259, 1981.

- [74] Mishra, D., Yadav, A., Ray, S. and Kalra, P.K. Exploring biological neuron models. *Directions, The Research Magazine of IIT Kanpur*, 7(3):13-22 ,2006.
- [75] Morris, C. and Lecar, H. Voltage oscillations in the barnacle giant muscle fiber. *Biophysical journal*, 35(1) :193-213,1981.
- [76] Naderi, A., Noorbakhsh, S.M. and Elahipanah, H. Temperature dependence of electrical characteristics of carbon nanotube field-effect transistors: a quantum simulation study. *Journal of Nanomaterials*: 7, 2012.
- [77] P. Bergveld. Development of an Ion-Sensitive Solid-State Device for Neurophysiological Measurements. *IEEE transaction on Biomedical Engineering*, (1): 70-71, 1970.
- [78] Poli, R, Kennedy, J and Blackwell, T. Particle swarm optimization. *Swarm intelligence*, 1(1):33-57,2007.
- [79] Press, W. H., Teokolsky, S. A., Vetterling, W. T. and Flannery, B. P. Numerical Recipes. The Art of Scientific Computing. Cambridge University Press, 2007.
- [80] Ren, G., Xu, Y. and Wang, C. Synchronization behavior of coupled neuron circuits composed of memristors. *Nonlinear Dynamics*, 88(2): 893-901,2017.
- [81] Rinzel, J. and Miller, R. Numerical calculation of stable and unstable periodic solutions to the Hodgkin–Huxley equations. *Mathematical Biosciences*, 49(1-2): 27-59, 1980.
- [82] Routh, B.N., Rathour, R.K., Baumgardner, M.E., Kalmbach, B.E.,Johnston, D., and Brager, D.H. Increased transient Na⁺ conductance and action potential output in layer 2/3 prefrontal cortex neurons of the fmrl-*y* mouse. *The Journal of Physiology*, 2017.
- [83] Roy, G. A simple Electronic Analog of the Squid Axon Membrane: The NEUROFET. *IEEE Transaction on Biomedical Engineering*. 19:60-63, 1972.
- [84] Sahoo, R. and Mishro, R. R., Simulations of Carbon Nanotube Field Effect Transistors. *International Journal of Electronic Engineering Research*, 1(2), 117-125, 2009.

- [85] Saïghi S., Buhry L., Bornat Y., N'Kaoua G., Tomas J.,and Renaud S. Adjusting the neurons models in neuromimetic ICs using the voltage-clamp technique. *IEEE International Symposium on Circuits and Systems*, pages 1564-1567, 2008.
- [86] Sangrey, T.D., Friesen, W.O., and Levy, W.B.. Analysis of the optimal channel density of the squid giant axon using a reparameterized Hodgkin–Huxley model. *Journal of neurophysiology*, 91(6), 2541-2550.,2004
- [87] Sekine, Y., Sumiyama, M., Saeki, K., and Aihara, K. A Λ -type neuron model using enhancement-mode MOSFETs. *Electronics and Communications in Japan* (Part II: Electronics),86(1):18-25,2003.
- [88] Senthilnath, J, Omkar, S.N. and Mani. V. Clustering using firefly algorithm: performance study. *Swarm and Evolutionary Computation*, 1(3):164-71,2011.
- [89] Sharma, P.K., Thakur, H.R. and Dutta, J.C. Modeling and simulation of carbon nanotube-based dual-gated enzyme field effect transistor for acetylcholine detection. *Journal of Computational Electronics*,16(3):584-592,2017.
- [90] Szlavik, R.B., Bhuiyan, A.K., Carver, A. and Jenkins, F. Neural-electronic inhibition simulated with a neuron model implemented in SPICE. *IEEE Transactions on neural systems and rehabilitation engineering*, 14(1):109-115, 2006.
- [91] Temple-Boyer, P., Le Gal, J., Pourciel-Gouzy, M.L., Sant, W. and Martinez, A. Modeling of EnFETs for the creatinine detection. *Sensors and Actuators B: Chemical*,118(1), 47-52, 2006.
- [92] Tokuda, I., Parlitz, U., Illing, L., Kennel, M., and Abarbanel, H. Parameter estimation for neuron models..*AIP Conference Proceedings*, 676,(1), pages 251-256,2003.
- [93] Tuckwell, H.C., and Ditlevsen, S. The space-clamped Hodgkin-Huxley system with random synaptic input: inhibition of spiking by weak noise and analysis with moment equations. *Neural Computation*,2016.

- [94] Vavoulis, D.V., Straub, V.A., Aston, J.A. and Feng, J. A self-organizing state-space-model approach for parameter estimation in Hodgkin-Huxley-type models of single neurons. *PLoS Comput Biol.*, 8(3):e1002401, 2012.
- [95] Wang, J., Chen, L. and Fei, X. Analysis and control of the bifurcation of Hodgkin-Huxley model. *Chaos, Solutions and Fractals*, 31(1): 247-256,2007.
- [96] Willms, A.R., Baro, D.J., Harris-Warrick, R.M. and Guckenheimer, J. An improved parameter estimation method for Hodgkin-Huxley models. *Journal of Computational Neuroscience*, 6, (2):145-68,1999.
- [97] Wilson, H.R. , and Cowan, J.D. Excitatory and inhibitory interactions in localized populations of model neurons. *Biophysical journal*, 12, (1):1-24,1972.
- [98] Wilson, H.R. and Cowan, J.D. A mathematical theory of the functional dynamics of cortical and thalamic nervous tissue. *Biological Cybernetics*. 13 (2):55-80,1973.
- [99] Wu, F., Wang, C., Jin, W. and Ma, J. Dynamical responses in a new neuron model subjected to electromagnetic induction and phase noise. *Physica A: Statistical Mechanics and its Applications*, 469:81-88,2017.
- [100] Wu, X., Ma, J., Yuan, L. and Liu, Y. Simulating electric activities of neurons by using PSPICE. *Nonlinear Dynamics*, 75(1-2):113- 26,2014.
- [101] Xu, J., Horn, J., Iwamoto, M. and Root, D. E. Large-signal FET model with multiple time scale dynamics from nonlinear vector network analyzer data. *IEEE MTT-S International Microwave Symposium Digest*, pages 417-420, 2010.
- [102] Xu, Y., Ying, H., Jia, Y., Ma, J. and Hayat, T. Autaptic regulation of electrical activities in neuron under electromagnetic induction. *Scientific Reports*, 7:43452,2017..
- [103] Yang, J., Wang, L., Wang, Y. and Guo, T. A novel memristive Hopfield neural network with application in associative memory. *Neurocomputing*, 227:142-148,2017.
- [104] Yang, X.S. and He, X. Firefly algorithm: recent advances and applications. *International Journal of Swarm Intelligence*, 1,(1):36-50,2013.

- [105] Yang, X.S. Firefly Algorithm for Multimodal Optimization. . *International symposium on stochastic algorithms*, pages 169-178, Berlin, 2009. Springer.
- [106] Yang, X.S. Firefly algorithm, Levy flights and global optimization, *Research and development in intelligent systems XXVI*. Springer London : 209-218, 2010.
- [107] Yang, X.S. Firefly algorithm, stochastic test functions and design optimisation. *International Journal of Bio-Inspired Computation*, 2(2):78-84,2010 .
- [108] Yu, X., Lewis, E. R., Studies with spike initiators: linearization by noise allows continuous signal modulation in neural networks. *IEEE Transactions on Biomedical Engineering*, 36(1): 36-43, 1989.
- [109] Yuan, Y., Pang, N., Chen, Y., Wang, Y. and Li, X. A phase-locking analysis of neuronal firing rhythms with transcranial magneto-acoustical stimulation based on the Hodgkin-Huxley neuron model. *Frontiers in Computational Neuroscience* ,11,2017.
- [110] Zhao, J. and Kim, Y.B. Circuit implementation of FitzHugh– Nagumo neuron model using field programmable analog arrays. *Circuits and Systems (MWSCAS'2007), 50th Midwest Symposium*: 772-775 ,2007.