

Maria Śmiałowska **Budowa układu nerwowego zwierząt i ludzi**

Bear M.F., Connors B.W., Paradiso M.A. (2007) Neuroscience. Exploring the brain. Lippincott Williams & Wilkins, Philadelphia.

Bochenek A., Reicher M. (1997) Anatomia człowieka, t. IV. Układ nerwowy ośrodkowy. Wydawnictwo Lekarskie PZWL, Warszawa.

Bullock T.H., Orkand R., Grinnel A. (1977) Introduction to nervous system. W.H. Freeman and Company, San Francisco.

Freund T.F i Buzsaki G. (1996) Interneurons of the Hippocampus. Hippocampus 6, 347–470.
[https://doi.org/10.1002/\(SICI\)1098-1063\(1996\)6:4<347::AID-HIPO1>3.0.CO;2-I](https://doi.org/10.1002/(SICI)1098-1063(1996)6:4<347::AID-HIPO1>3.0.CO;2-I)

Kandel E.R., Schwartz J.H., Jessel T.M. (1995) Essentials of neural science and behavior. Appleton & Lange, Norwalk, Connecticut.

Kreiner J. (1970) Biologia mózgu. PWN, Warszawa.

Grzegorz Hess **Przebieg synaptyczny i plastyczność synaptyczna**

Becherer U., Rettig J. (2006) Vesicle pools, docking, priming, and release, Cell and Tissue Research 326: 393-407. <https://doi.org/10.1007/s00441-006-0243-z>

Bliss T.V.P., Collingridge G. (1993) A synaptic model of memory: long-term potentiation in the hippocampus, Nature 341: 230-233.

Krueger S., Fitzsimonds R.M. (2006) Remodeling the plasticity debate: the presynaptic locus revisited, Physiology (Bethesda) 21: 346-351. <https://doi.org/10.1152/physiol.00013.2006>

Lisman J.E., Raghavachari S., Tsien R.W. (2007) The sequence of events that underlie quantal transmission at central glutamatergic synapses, Nature Reviews Neuroscience 8: 597-609.
<https://doi.org/10.1038/nrn2191>

Nicoll R.A. (2003) Expression mechanisms underlying long-term potentiation: a postsynaptic view, Philosophical Transactions of the Royal Society B Biological Sciences 358: 721-726.
<https://doi.org/10.1098/rstb.2002.1228>

Raghavachari S., Lisman J.E. (2004) Properties of quantal transmission at CA1 synapses, Journal of Neurophysiology 92: 2456-2467. <https://doi.org/10.1152/jn.00258.2004>

Stevens C.F. (1993) Quantal release of neurotransmitter and long-term potentiation. Cell 72 suppl.: 55-63. [https://doi.org/10.1016/S0092-8674\(05\)80028-5](https://doi.org/10.1016/S0092-8674(05)80028-5)

Zucker R.S. (1999) Calcium- and activity-dependent synaptic plasticity, Current Opinion in Neurobiology 9: 305-313. [https://doi.org/10.1016/S0959-4388\(99\)80045-2](https://doi.org/10.1016/S0959-4388(99)80045-2)

Janusz Błaszczak **Modele cybernetyczne wybranych struktur i funkcji układu nerwowego**

- Albin R., Young A., Penney J. (1989) Functional anatomy of basal ganglia disorders. Trends in Neuroscience 12: 366-375. [https://doi.org/10.1016/0166-2236\(89\)90074-X](https://doi.org/10.1016/0166-2236(89)90074-X)
- Arbib M.A. (1977) *Mózg i jego modele*. PWN, Warszawa.
- Averbeck B.B., Chafee M.V., Crowe D.A., Georgopoulos A.P. (2002) Parallel processing of serial movements in prefrontal cortex. Proceedings of National Academy of Sciences USA 99: 13172-13177. <https://doi.org/10.1073/pnas.162485599>
- Błaszczyc J.W. (2004) *Biomechanika kliniczna*. Wyd. Lekarskie PZWL, Warszawa.
- Bullock D. (2004) Adaptive neural models of queuing and timing in fluent action. Trends in Cognitive Sciences 8(9): 426-433. <https://doi.org/10.1016/j.tics.2004.07.003>
- Feldman A.G. (1986) Once more on the equilibrium-point hypothesis (λ model) for motor control. Journal of Motor Behavior 18: 17-54 <https://doi.org/10.1080/00222895.1986.10735369>
- Ghasia F.F., Meng H., Angelaki D.E. (2008) Neural correlates of forward and inverse models for eye movements: Evidence from three-dimensional kinematics. Journal of Neuroscience 28: 5082-5087. <https://doi.org/10.1523/JNEUROSCI.0513-08.2008>
- Grafton S.T., Hamilton A.F. (2007) Evidences for a distributed hierarchy of action representation in the brain. Human Movement Sciences 26(4): 590-616. <https://doi.org/10.1016/j.humov.2007.05.009>
- Grossberg S. (1978) A theory of human memory: Self-organization and performance of sensory-motor codes, maps, and plans. In: Progress in Theoretical Biology, Rosen R. and Snell F. eds, vol. 5: 233-374. Academic Press. <https://doi.org/10.1016/B978-0-12-543105-7.50013-0>
- Hinder M.R., Milner T.E. (2003) The case for an internal dynamics model versus equilibrium point control in human movement. Journal of Physiology 549(3): 953-963. <https://doi.org/10.1113/jphysiol.2002.033845>
- Hodgkin A.L., Huxley A.F. (1952) A quantitative description of ion currents and its applications to conduction and excitation in nerve membranes. Journal of Physiology 117: 500-544 <https://doi.org/10.1113/jphysiol.1952.sp004764>
- Hommel B., Musseler J., Aschersleben G., Prinz W. (2001) The theory of events coding (TEC): A framework for perception and action planning. Behavioral and Brain Sciences 24: 849-878. <https://doi.org/10.1017/S0140525X01000103>
- Kawato M. (1999) Internal models for motor control and trajectory planning. Current Opinion in Neurobiology 9: 718-727. [https://doi.org/10.1016/S0959-4388\(99\)00028-8](https://doi.org/10.1016/S0959-4388(99)00028-8)
- Kurths J. (2007) Structure-function relationship in complex brain networks expressed by hierarchical synchronization. New Journal of Physics 9, 178 <https://doi.org/10.1088/1367-2630/9/6/178>
- Sporns O., Chialvo D.R., Kaiser M., Hilgetag C.C. (2004) Organization, development and function of complex brain networks. Trends in Cognitive Sciences 8(9): 418-425. <https://doi.org/10.1016/j.tics.2004.07.008>
- Stroeve S. (1997) A learning feedback and feedforward neuromuscular control model for two degrees of freedom human arm movements. Human Movement Science 16: 621-651. [https://doi.org/10.1016/S0167-9457\(97\)00009-2](https://doi.org/10.1016/S0167-9457(97)00009-2)

Westerman G., Sirois S., Shultz T.R., Mareschal D. (2006) Modeling developmental cognitive neuroscience. Trends in Cognitive Sciences 10(5): 227-232.

<https://doi.org/10.1016/j.tics.2006.03.009>

Wolpert D.M., Kawato M. (1998) Multiple paired forward and inverse models for motor control. Neural Networks 11: 1317-1329. [https://doi.org/10.1016/S0893-6080\(98\)00066-5](https://doi.org/10.1016/S0893-6080(98)00066-5)

Wolpert D.M., Miall R.C., Kawato M. (1998) Internal models in the cerebellum. Trends in Cognitive Sciences 2(9): 338-347. [https://doi.org/10.1016/S1364-6613\(98\)01221-2](https://doi.org/10.1016/S1364-6613(98)01221-2)

Wiesław Andrzej Kamiński **Modelowanie pojedynczych komórek nerwowych**

FitzHugh R.A. (1961) Impulses and physiological states in theoretical models of nerve membrane, Biophysical Journal 1: 445-466. [https://doi.org/10.1016/S0006-3495\(61\)86902-6](https://doi.org/10.1016/S0006-3495(61)86902-6)

Gerstner W., Kistler W.M. (2002) Spiking Neuron Models: Single Neurons, Populations, Plasticity. Cambridge University Press, Cambridge. <https://doi.org/10.1017/CBO9780511815706>

Hindmarsh J.L., Rose R.M. (1982) A Model of the Nerve Impulse Using 2 1st-order Differential Equations, Nature 296: 162-164. <https://doi.org/10.1038/296162a0>

Hindmarsh J.L., Rose R.M. (1987) A Model of Neuronal Bursting Using Three Coupled First Order Differential Equations, Proceedings of the Royal Society of London, seria B, 221: 87-105. <https://doi.org/10.1098/rspb.1984.0024>

Hodgkin A.L., Huxley A.F. (1952) A Quantitative Description of Membrane Current and its Application to Conduction and Excitation in Nerve, Journal of Physiology 117: 500-544. <https://doi.org/10.1113/jphysiol.1952.sp004764>

Izhikevich E.M. (2001) Resonate-and-fire Neurons, Neural Networks 14: 883-904. [https://doi.org/10.1016/S0893-6080\(01\)00078-8](https://doi.org/10.1016/S0893-6080(01)00078-8)

Izhikevich E.M. (2003) Simple Model of Spiking Neurons, IEEE Transactions on Neural Networks 14: 1569-1572. <https://doi.org/10.1109/TNN.2003.820440>

Izhikevich E.M. (2004) Which Model to Use for Cortical Spiking Neurons, IEEE Transactions on Neural Networks 15: 1063-1070. <https://doi.org/10.1109/TNN.2004.832719>

Lapicque L. (1907) Recherches quantitatives sur l'excitation électrique des nerfs traitée comme une polarization, J. Physiol. Pathol. Gen. 9: 620-635.

Malmivuo J., Plonsey R. (1995) Bioelectromagnetism. Principles and Applications of Bioelectric and Biomagnetic Fields. Oxford University Press, Oxford. <https://doi.org/10.1093/acprof:oso/9780195058239.001.0001>

Morris C., Lecar H. (1981) Voltage oscillations in the barnacle giant muscle fibre, Biophysical Journal 35: 193-213. [https://doi.org/10.1016/S0006-3495\(81\)84782-0](https://doi.org/10.1016/S0006-3495(81)84782-0)

Nagumo J., Arimoto S., and Yoshizawa S. (1962) An active pulse transmission line simulating nerve axon, Proceedings IRE 50: 2061-2070. <https://doi.org/10.1109/JRPROC.1962.288235>

Schutter De E., Bower J.M. (1994) An active membrane model of the cerebellar Purkinje cell. I. Simulation of current clamps in slice, *Journal of Neurophysiology* 71: 375-400.
<https://doi.org/10.1152/jn.1994.71.1.375>

Schutter De E. (1998) Dendritic voltage and calcium-gated channels amplify the variability of postsynaptic responses in a Purkinje cell model, *Journal of Neurophysiology* 80: 504-519.
<https://doi.org/10.1152/jn.1998.80.2.504>

Schutter De E., Smolen P. (1998) Calcium Dynamics in Large Neuron Models, In: *Methods in Neuronal Modeling: from Ions to Networks*, C. Koch and I. Segev (eds), MIT Press, Boston: 211-250.

Maciej T. Lazarewicz **Problemy implementacji realistycznego modelu komórki nerwowej**

Ascoli G. A., J.L. Krichmar, S.J. Nasuto, and S.L. Senft (2001) Generation, description and storage of dendritic morphology data. *Philos Trans R Soc Lond B Biol Sci* 356(1412): 1131-1145, 8.
<https://doi.org/10.1098/rstb.2001.0905>

Ascoli G.A., J.L. Krichmar, R. Scorcioni, S.J. Nasuto, and S.L. Senft (2001) Computer generation and quantitative morphometric analysis of virtual neurons. *Anat Embryol (Berl)* 204(4): 283-301, 10.
<https://doi.org/10.1007/s004290100201>

Borg-Graham L. (1999) Interpretations of data and mechanisms for hippocampal pyramidal cell models. *Cerebral Cortex* 13: 19-138. https://doi.org/10.1007/978-1-4615-4903-1_2

Bower J.M. and D. Beeman (1998) *The book of GENESIS: exploring realistic neural models with the GEneral NEural Simulation System*. TELOS., Santa Clara, Calif.

Carnevale N.T. and M.L. Hines (2006) *The NEURON Book*. Cambridge University Press, Cambridge.
<https://doi.org/10.1017/CBO9780511541612>

Claiborne lab (2008) <http://www.utsa.edu/claibornelab>.

Cohen S. D. and A.C. Hindmarsh (1994) *Cvode user guide*. Lawrence Livermore National Laboratory report UCRL-MA-118618, September.

Crank J. (1975) *The mathematics of diffusion*. Clarendon Press, Oxford.

Craστο C.J., L.N. Marengo, N. Liu, T.M. Morse, K.H. Cheung, P.C. Lai, G. Bahl, P. Masiar, H.Y.K. Lam, E. Lim, H. Chen, P. Nadkarni, M. Migliore, P.L. Miller, and G.M. Shepherd (2007) Senselab: new developments in disseminating neuroscience information. *Brief Bioinform* 8(3): 150-62, 5.
<https://doi.org/10.1093/bib/bbm018>

Cvapp (2008) <http://www.compneuro.org/cdrom/docs/cvapp.html>.

Destexhe A., M. Neubig, D. Ulrich, and J. Huguenard (1998) Dendritic low-threshold calcium currents in thalamic relay cells. *J Neurosci* 18(10): 3574-88, 5. <https://doi.org/10.1523/JNEUROSCI.18-10-03574.1998>

Duke-Southampton archive of neuronal morphology (1998) <http://neuron.duke.edu/cells>.

Fitzpatrick R. (2006) *Computational physics: An introductory course*,
<http://farside.ph.utexas.edu/teaching/329/lectures/node37.html>, 3.

Guylas lab (2008) <http://www.koki.hu/gulyas/ca1cells>.

Hines M.L. and N.T. Carnevale (1997) The neuron simulation environment. *Neural Comput* 9(6): 1179-209, 8. <https://doi.org/10.1162/neco.1997.9.6.1179>

Hines M.L. and N.T. Carnevale (2001) Neuron: a tool for neuroscientists. *Neuroscientist* 7(2): 123-35, 4. <https://doi.org/10.1177/107385840100700207>

Izhikevich E.M. (2007) *Dynamical systems in neuroscience: the geometry of excitability and bursting*. MIT Press, Cambridge, MA. <https://doi.org/10.7551/mitpress/2526.001.0001>

Koch C. (1999) *Biophysics of computation: information processing in single neurons*. Oxford University Press, Oxford.

Krieger P., T. Kuner, and B. Sakmann (2007). Synaptic connections between layer 5b pyramidal neurons in mouse somatosensory cortex are independent of apical dendrite bundling. *J Neurosci* 27(43): 11473-82, 10. <https://doi.org/10.1523/JNEUROSCI.1182-07.2007>

Lazarewicz M.T., S. Boer-Iwema, and G.A. Ascoli (2002) Practical Aspects in Anatomically Accurate Simulations of Neuronal Electrophysiology. In: *Computational neuroanatomy: principles and methods*, Ascoli, G.A., eds., Humana Press, Totowa, NJ., 127-150. <https://doi.org/10.1385/1-59259-275-9:127>

Lazarewicz M.T., M. Migliore, and G.A. Ascoli (2002) A new bursting model of ca3 pyramidal cell physiology suggests multiple locations for spike initiation. *Biosystems* 67(1-3): 129-37. [https://doi.org/10.1016/S0303-2647\(02\)00071-0](https://doi.org/10.1016/S0303-2647(02)00071-0)

Lewis J.D., R.J. Theilmann, M.I. Sereno, and J. Townsend (2008) The relation between connection length and degree of connectivity in young adults: A dti analysis. *Cereb Cortex* 6. <https://doi.org/10.1093/cercor/bhn105>

Lytton W.W. and M.L. Hines (2005) Independent variable time-step integration of individual neurons for network simulations. *Neural Comput* 17(4): 903-21, 4. <https://doi.org/10.1162/0899766053429453>

Mainen Z.F. and T.J. Sejnowski (1996) Influence of dendritic structure on firing pattern in model neocortical neurons. *Nature* 382(6589): 363-6, 7. <https://doi.org/10.1038/382363a0>

Manor Y., J. Gonczarowski, and I. Segev (1991) Propagation of action potentials along complex axonal trees. model and implementation. *Biophys J* 60(6): 1411-23, 12. [https://doi.org/10.1016/S0006-3495\(91\)82178-6](https://doi.org/10.1016/S0006-3495(91)82178-6)

Manor Y., C. Koch, and I. Segev (1991) Effect of geometrical irregularities on propagation delay in axonal trees. *Biophys J* 60(6): 1424-37, 12. [https://doi.org/10.1016/S0006-3495\(91\)82179-8](https://doi.org/10.1016/S0006-3495(91)82179-8)

Menschik E.D. and L.H. Finkel (2000) Cholinergic neuromodulation of an anatomically reconstructed hippocampal ca3 pyramidal cell. *Neurocomputing* 32(33): 197-205. [https://doi.org/10.1016/S0925-2312\(00\)00164-8](https://doi.org/10.1016/S0925-2312(00)00164-8)

Migliore M., D.A. Hoffman, J.C. Magee, and D. Johnston (1999) Role of an a-type k⁺ conductance in the back-propagation of action potentials in the dendrites of hippocampal pyramidal neurons. *J Comput Neurosci* 7(1): 5-15. <https://doi.org/10.1023/A:1008906225285>

- Migliore M., E.P. Cook, D.B. Jaffe, D.A. Turner, and D. Johnston (1995) Computer simulations of morphologically reconstructed ca3 hippocampal neurons. *J Neurophysiol* 73(3): 1157-68, 3. <https://doi.org/10.1152/jn.1995.73.3.1157>
- Mitchell A.R. (1969) *Computational methods in partial differential equations*. J. Wiley, London.
- Neuroland (2008) <http://www.neuronland.org>
- Neurolucida (2008) <http://www.mbfbioscience.com/neurolucida>
- Neuromorpho (2008) <http://neuromorpho.org>
- Pinsky P.F. and J. Rinzel (1994) Intrinsic and network rhythmogenesis in a reduced traub model for ca3 neurons. *J Comput Neurosci* 1(1-2):39-60, 6. <https://doi.org/10.1007/BF00962717>
- Rall W. (1957) Membrane time constant of motoneurons. *Science* 126(3271): 454, 9. <https://doi.org/10.1126/science.126.3271.454>
- Rall W. (1969) Distributions of potential in cylindrical coordinates and time constants for a membrane cylinder. *Biophys J* 9(12): 1509-41, 12. [https://doi.org/10.1016/S0006-3495\(69\)86468-4](https://doi.org/10.1016/S0006-3495(69)86468-4)
- Rall W., I. Segev, and J. Rinzel (1995) *The Theoretical Foundation of Dendritic Function: Selected Papers of Wilfrid Rall with Commentaries*. MIT Press, Cambridge, MA.
- Rempe M.J., N. Spruston, W.L. Kath, and D.L. Chopp (2008) Compartmental neural simulations with spatial adaptivity. *Journal of computational neuroscience* 5. <https://doi.org/10.1007/s10827-008-0089-3>
- Scorcioni R., M.T. Lazarewicz, and G.A. Ascoli (2004) Quantitative morphometry of hippocampal pyramidal cells: differences between anatomical classes and reconstructing laboratories. *J Comp Neurol* 473(2):177-93, 5. <https://doi.org/10.1002/cne.20067>
- Scorcioni R., S. Polavaram, and G.A. Ascoli (2008) L-measure: a web-accessible tool for the analysis, comparison and search of digital reconstructions of neuronal morphologies. *Nat Protoc* 3(5): 866-76. <https://doi.org/10.1038/nprot.2008.51>
- Senselab (2008) <http://senselab.med.yale.edu/senselab/modeldb>
- Strang G. (2008a) Mit opencourseware, 18.085 computational science and engineering i, <http://ocw.mit.edu>
- Strang G. (2008b) Mit opencourseware, 18.086 computational science and engineering ii, <http://ocw.mit.edu>
- Stuart G., N. Spruston, and M. Hausser (2007) *Dendrites*. Oxford University Press, Oxford. <https://doi.org/10.1093/acprof:oso/9780198566564.001.0001>
- Surf-hippo (2008) <http://www.neurophys.biomedicale.univ-paris5.fr/graham/surf-hippo.html>
- Tadeusiewicz R., M.T. Lazarewicz (2000a) Postępy i sukcesy w biocybernetycznych pracach u podstaw sztucznej inteligencji. IV Krajowa Konferencja Naukowa pt. Sztuczna Inteligencja, 9-34.
- Tadeusiewicz R., M.T. Lazarewicz (2000b) Nowy paradygmat neurobiologii obliczeniowej: "Experiment in computo". Materiały V Krajowej Konferencji "Modelowanie Cybernetyczne Systemów Biologicznych", 13-40.

The center for neural informatics, structures, and plasticity (2008) <http://krasnow.gmu.edu/cn3>

VanKeken P.E., D.A. Yuen, and L.R. Petzold (1995) Daspk: A new high order and adaptive time-integration technique with applications to mantle convection with strongly temperature- and pressure-dependent rheology. *Geophys Astro Fluid* 80: 57-74.

<https://doi.org/10.1080/03091929508229763>

West R.M.E. (1996) On the Development and Interpretation of Parameter Manifolds for Biophysically Robust Compartmental Models of CA3 Hippocampal Neurons. PhD thesis, University of Minnesota.

Wong R.K. and D.A. Prince (1981) Afterpotential generation in hippocampal pyramidal cells. *J Neurophysiol* 45(1): 86-97, 1. <https://doi.org/10.1152/jn.1981.45.1.86>

Ryszard Tadeusiewicz **Modele elementów układu nerwowego w postaci sztucznych sieci neuronowych**

Domany E., Leo van Hemmen J., Schulten K. (eds.) (1994): *Models of Neural Networks II, Temporal Aspects of Coding and Information Processing in Biological Systems*, Springer Verlag, Heidelberg, Berlin, New York. <https://doi.org/10.1007/978-1-4612-4320-5>

Müller B., Reinhardt J., Strickland M.T. (1995) *Neural Networks - An Introduction*. Springer Verlag, Berlin. <https://doi.org/10.1007/978-3-642-57760-4>

Perlovski I.P. (2001) *Neural Networks and Intellect - using Model-Based Concepts*. Oxford University Press, New York & Oxford.

Tadeusiewicz R., Gąciarz T., Borowik B., Leper B. (2007) *Odkrywanie właściwości sieci neuronowych przy użyciu programów w języku C#*. Wydawnictwo Polskiej Akademii Umiejętności, Kraków.

<http://home.agh.edu.pl/~tad/>

Tadeusiewicz R. (1993) *Sieci neuronowe*. Akademicka Oficyna Wydawnicza, Warszawa,

<http://winntbg.bg.agh.edu.pl/skrypty/0001/>

Michał Strzelecki **Modele pulsujących sieci neuronowych i ich zastosowania**

Buzsaki G., Draguhn A. (2004) Neuronal Oscillations in Cortical Networks, *Science* 304, 1926-1929.

<https://doi.org/10.1126/science.1099745>

Çesmeli E., Wang D. (2001) Texture Segmentation Using Gaussian-Markov Random Fields and Neural Oscillator Networks, *IEEE Trans. on Neural Networks* 12, 2, 394-404.

<https://doi.org/10.1109/72.914533>

Eck D. (2002) A Network of Relaxation Oscillators that Finds Downbeats in Rhythms, *Psychological Research* 1, 66, 18-25. <https://doi.org/10.1007/s004260100070>

Hajek M., Dezertova M., Materka A., Lerski R. (eds) (2006) *Texture analysis for Magnetic Resonance Imaging*, Med4 Publishing, Prague.

Konig P., Schillen T.B. (1991) Stimulus-dependent assembly formation of oscillatory responses: I. Synchronization, *Neural Comp* 3, 155-166. <https://doi.org/10.1162/neco.1991.3.2.155>

- Linsay P., Wang D. (1998) Fast numerical integration of relaxation oscillator networks based on singular limit solutions, *IEEE Trans. on Neural Networks* 9, 3, 523-532.
<https://doi.org/10.1109/72.668894>
- Michalewicz Z. (1996) *Genetic Algorithms + Data Structures = Evolution Programs*, Springer-Verlag, Berlin. <https://doi.org/10.1007/978-3-662-03315-9>
- Rhouma M., Frigui H. (2001) Self-Organization of Pulse Coupled Oscillators with Application to Clustering, *IEEE Trans. on PAMI* 23, 2, 180-195. <https://doi.org/10.1109/34.908968>
- Rutkowski L. (2004) *Flexible Neuro-Fuzzy Systems*. Kluwer, Boston.
- Shareef N., Wang D., Yagel R. (1999) Segmentation of Medical Images Using LEGION, *IEEE Trans. On Med. Imaging* 18, 1, 74-91. <https://doi.org/10.1109/42.750259>
- Somers D., Kopell N. (1993) Rapid synchrony through fast threshold modulation, *Biol. Cybern.* 68, 393-407. <https://doi.org/10.1007/BF00198772>
- Strumiłło P., Durrani T.S. (1991) Simulations of cardiac arrhythmias based on dynamical interactions between neural models of cardiac pacemakers, *Proc. 2nd International Conference, Artificial Neural Networks*, Bornemouth, UK, 195-199.
- Strumiłło P., Strzelecki M. (2006) Application of Coupled Neural Oscillators for Image Texture Segmentation and Biological Rhythms Modelling, *Int. J. Appl. Math. Comput. Sci.* 16, 4, 513-523.
- Strzelecki M. (2002) Pattern Recognition Using Network of Synchronised Oscillators, *Int. Proc. of Int. Conf. of Computer Vision and Graphics*, vol. 2, September 2002, Zakopane, 716-721.
- Strzelecki M. (2004a), Texture boundary detection using network of synchronised oscillators, *Electronics Letters* 40, 8, 466-467. <https://doi.org/10.1049/el:20040330>
- Strzelecki M. (2004b), Segmentacja tekstury obrazu z wykorzystaniem neuronowych sieci oscylacyjnych i metod statystycznych, *Zeszyty Naukowe nr 946, Wydawnictwo Politechniki Łódzkiej, Łódź*.
- Strzelecki M., Materka A., Drozd J., Krzeminska-Pakula M., Kasprzak J. D. (2006) Classification and segmentation of intracardiac masses in cardiac tumor echocardiograms, *Computerized Medical Imaging and Graphics* 30, 2, 95-107. <https://doi.org/10.1016/j.compmedimag.2005.11.004>
- Strzelecki M., Kim H., Liberski P., Zalewska A. (2007a) Analysis of microscopic mast cell images based on network of synchronised oscillators, In: *Adaptive and Natural Computing Algorithms* (B. Bieliczynski, A. Dzielinski, M. Iwanowski, B. Ribeiro eds.), *Proc. of ICANNGA*, Warsaw, Poland, Springer LNCS, 346-354. https://doi.org/10.1007/978-3-540-71629-7_39
- Strzelecki M., de Certaines J., Ko S. (2007b) Segmentation of 3D MR Liver Images Using Synchronised Oscillators Network, *Proc. of ISITC 2007*, November 19-21, Jeonju, Korea, 259-263.
<https://doi.org/10.1109/ISITC.2007.13>
- Strzelecki M., Kowalski J., Kim H., Ko S. (2008) A New CNN Oscillator Model for Parallel Image Segmentation, *International Journal on Bifurcation and Chaos* 18, 7, 1999-2015.
<https://doi.org/10.1142/S0218127408021506>
- Tadeusiewicz R. (1993) *Sieci neuronowe*, Akademicka Oficyna Wydawnicza RM, Warszawa.

Tadeusiewicz R., Korohoda P. (1997) Komputerowa analiza i przetwarzanie obrazów, Wydawnictwo Fundacji Postępu Telekomunikacji, Kraków.

von der Malsburg C., Buhmann J. (1992) Sensory segmentation with coupled neural oscillators, *Biological Cybernetics* 67, 233-242. <https://doi.org/10.1007/BF00204396>

von der Malsburg C. (1999) The What and Why of Binding: The Modeler's Perspective, *Neuron* 24, 95-104. [https://doi.org/10.1016/S0896-6273\(00\)80825-9](https://doi.org/10.1016/S0896-6273(00)80825-9)

Wang D., Terman D. (1995) Locally excitatory globally inhibitory oscillators network, *IEEE Trans. on Neural Networks* 6, 1, 283-286. <https://doi.org/10.1109/72.363423>

Wang G., Terman D. (1997) Image segmentation based on oscillatory correlation, *Neural Computation* 9, 805-836. <https://doi.org/10.1162/neco.1997.9.4.805>

Wang D. (1999) Relaxation Oscillators and Networks, *Wiley Encyclopedia of Electrical and Electronics Engineering*. In: J.G. Webster (ed.) *Wiley Encyclopedia of Electrical and Electronics Engineering*, Wiley & Sons, vol. 18, 396-405. <https://doi.org/10.1002/047134608X.W2282>

Wilson H.R., Cowan J.D. (1972) Excitatory and inhibitory interactions in localized populations of model neurons. *Biophys. J.* 12, 1-24. [https://doi.org/10.1016/S0006-3495\(72\)86068-5](https://doi.org/10.1016/S0006-3495(72)86068-5)

Zalewska-Janowska R., Strzelecki M., Kwiecień A. (2004) Ocena rozległości owrzodzeń podudzi z wykorzystaniem metod komputerowej analizy obrazu, *Postępy Dermatologii i Alergologii*, XXI, 6, 291-295.

Katarzyna Blinowska, Jarosław Żygierewicz **Modele populacyjne**

Acherman P., Hartman K., Gunzinger A., Guggenbuhl W., Borbely A.A. (1994) All night sleep EEG and artificial stochastic control signals have similar correlation dimension, *Electroenceph. Clin. Neurophysiol.* 90: 384-387. [https://doi.org/10.1016/0013-4694\(94\)90054-X](https://doi.org/10.1016/0013-4694(94)90054-X)

Blinowska K.J., Malinowski M. (1991) Non linear and linear forecasting of the EEG time series, *Biol.Cyb.* 66: 159-165. <https://doi.org/10.1007/BF00243291>

Da Rosa A.C., Kemp B., Paiva T., Lopes da Silva F.H., Kamphuisen H.A. (1991) A model based detector of vertex waves and K complexes in sleep electroencephalogram, *Electroenceph. Clin. Neurophysiol.* 78: 71-79. [https://doi.org/10.1016/0013-4694\(91\)90021-U](https://doi.org/10.1016/0013-4694(91)90021-U)

David O., Friston K.J. (2003) A neural mass model for MEG/EEG: Coupling and neuronal dynamics, *Neuroimage* 20: 1743-1755. <https://doi.org/10.1016/j.neuroimage.2003.07.015>

David O., Cosmelli D., Friston K.J. (2004) Evaluation of different measures of functional connectivity using a neural mass model, *Neuroimage* 21: 659-673. <https://doi.org/10.1016/j.neuroimage.2003.10.006>

Destexhe A.I., Sejnowski T.J. (1996) Synchronized oscillations in thalamic networks: insights from modeling studies, In: *Thalamus* (Steriade M., Jones E.G., McCormick D.A. eds.), Elsevier, Amsterdam.

Freeman, W.J. (1975) *Mass action in the nervous system*. Academic Press, New York.

Grabska-Barwinska A., Żygierewicz J. (2006) A model of event-related EEG synchronization changes in beta and gamma frequency bands, *J Theor. Biology.* 238: 901-913.

<https://doi.org/10.1016/j.jtbi.2005.07.001>

Jansen B.H., Rit V.G. (1995) Electroencephalogram and visual evoked potential generation in a mathematical model of coupled cortical columns, *Biol. Cybern.* 73: 357-366.

<https://doi.org/10.1007/BF00199471>

Kaminski M., Ding M., Truccolo W., Bressler S. (2001) Evaluating causal relations in neural systems: Granger causality, directed transfer function and statistical assessment of significance, *Biol Cybern* 85: 145-57 <https://doi.org/10.1007/s004220000235>

Lopes da Silva F.H., Hoek A., Smith H., Zetterberg L.H. (1974) Model of brain rhythmic activity, *Kybernetik* 15: 27-37. <https://doi.org/10.1007/BF00270757>

Nunez P.L. (1981) *Electric fields of the brain. The neurophysics of EEG.* Oxford University Press, New York.

Nunez P.L. (1995) *Neocortical Dynamics and Human EEG Rhythms.* Oxford University Press, New York.

Pfurtscheller G., Lopes da Silva F.H. (1999) Event Related Desynchronization. In: *Handbook of Electroencephalography and Clinical Neurophysiology Vol. 6,* Elsevier, Amsterdam.

Pivkovsky A., Rosenblum M., Kurths J. (2001) *Synchronization. A universal Concept in Nonlinear Sciences,* Cambridge University Press, Cambridge. <https://doi.org/10.1017/CBO9780511755743>

Quian Quiroga R., Kraskov A., Kreuz T., Grassberger P. (2002) Performance of different synchronization measures in real data: a case study on electroencephalographic signals, *Phys.Rev., E* 65, 041903. <https://doi.org/10.1103/PhysRevE.65.041903>

Robinson P.A., Rennie C.J., Wright J.J. (1997) Propagation and stability of waves of electrocortical activity in the cerebral cortex, *Phys. Rev. E.* 56: 826-840. <https://doi.org/10.1103/PhysRevE.56.826>

Robinson P.A., Loxley P.N., O'Connor S.C., Rennie C.J. (2001) Modal analysis of corticothalamic coherence, electroencephalic spectra and evoked potentials, *Phys.Rev. E* 63: 1-13. <https://doi.org/10.1103/PhysRevE.63.041909>

Roessgen M., Zoubir A.M., Boashash B. (1998) Seizure detection of newborn EEG using a model-based approach, *IEEE Trans. Biomed. Eng.* 45: 673-685. <https://doi.org/10.1109/10.678601>

Skarda C.A., Freeman W.J. (1987) How brains make chaos in order to make sense of the word, *Behavioural and Brain Sciences* 10: 161-173. <https://doi.org/10.1017/S0140525X00047336>

Stam C.J., Pijn J.P.M., Suffczynski P., Lopes da Silva F.H. (1999) Dynamics of the human alpha rhythm: evidence for non-linearity? *Clin. Neurophysiol.* 110: 1801-1813. [https://doi.org/10.1016/S1388-2457\(99\)00099-1](https://doi.org/10.1016/S1388-2457(99)00099-1)

Suffczynski P., Kalitzin S., Pfurtscheller G. and Lopes da Silva F.H. (2001) Computational model of thalamocortical networks: dynamical control of alpha rhythms in relation to focal attention, *Int. J. Psychophysiol.* 43: 25-40. [https://doi.org/10.1016/S0167-8760\(01\)00177-5](https://doi.org/10.1016/S0167-8760(01)00177-5)

Suffczynski P., Kalitzin S., Lopes da Silva F.H. (2004) Dynamics of non-convulsive epileptic phenomena modeled by a bistable neuronal network, *Neuroscience* 126: 467-484. <https://doi.org/10.1016/j.neuroscience.2004.03.014>

Suffczynski P., Lopes da Silva F.H., Parra J., Velis D., Kalitzin S. (2005) Epileptic Transitions: Model Predictions and Experimental Validation, *J. Clin. Neurophys.* 22: 288-299.

Thomson A.M. (1997) Activity dependent properties of synaptic transmission at two classes of connections made by rat neocortical pyramidal axons in vitro, *J. Physiol.* 502: 131-147.

<https://doi.org/10.1111/j.1469-7793.1997.131bl.x>

Traub R. D., Jefferys J.G.R. (1997) Epilepsy in vitro: electrophysiology and computer modeling. In: *Epilepsy: A Comprehensive Textbook*, (J. Jr Engel, T.A. Pedley eds.), Lippincott-Raven, Philadelphia, 405-418.

Wendling F., Chauvel P. (2008) *Computational Neuroscience in Epilepsy* (I. Soltesz, K. Staley eds.), Elsevier, Academic Press.

Wilson H.R., Cowan J.D. (1972) Excitatory and inhibitory interactions in localized populations of model neurones, *Biophysical Journal* 12: 1-24 [https://doi.org/10.1016/S0006-3495\(72\)86068-5](https://doi.org/10.1016/S0006-3495(72)86068-5)

Wright J.J., Liley D.T. J. (1995) Simulation of electrocortical waves, *Biological Cybernetics* 72: 347-356.

<https://doi.org/10.1007/s004220050136>

Wright J.J., Liley D.T.J. (1996) Dynamics of the brain at global and microscopic scales. Neural networks and EEG, *Behav. Brain. Sci.* 19: 285-320. <https://doi.org/10.1017/S0140525X00042679>

Wright J.J., Bourke P.D., Chapman C.L. (2000) Synchronous oscillations in the cerebral cortex and object coherence: Simulation of basic electrophysiological findings, *Biol.Cybern.* 83: 341-353.

<https://doi.org/10.1007/s004220000155>

Grzegorz M. Wójcik **Obliczenia płynowe w modelowaniu mózgu**

Fernando C., Sojakka S. (2003) Pattern recognition in a bucket, *Proc. 7th European Conf. on Artificial Life*, 588-597. https://doi.org/10.1007/978-3-540-39432-7_63

Goldenholz D. (2002) *Liquid Computing: A Real Effect*, Technical Report BE707, Boston University, Department of Biomedical Engineering, Boston.

Jaeger H. (2001) The "echo state" approach to analysing and training recurrent neural networks, GMD Report 148, German National Research Center for Information Technology.

Legenstein R., Markram H., Maass W. (2003) Input prediction and autonomous movement analysis in recurrent circuits of spiking neurons, *Reviews in the Neurosciences (Special Issue on Neuroinformatics of Neural and Artificial Computation)* 14(1-2): 5-19.

<https://doi.org/10.1515/REVNEURO.2003.14.1-2.5>

Maass W. (2007) *Liquid Computing, Computation and Logic in the Modern World*, Lecture Notes in Computer Science 4497: 508-516. https://doi.org/10.1007/978-3-540-73001-9_53

Maass W., Markram H. (2004) On the Computational Power of Recurrent Circuits of Spiking Neurons, *Journal of Computer and System Sciences* 69(4): 593-616. <https://doi.org/10.1016/j.jcss.2004.04.001>

Maass W., Natschläger T., Markram H. (2002) Real-Time Computing without Stable States: a New Framework for Neural Computation Based on Perturbations, *Neural Computation* 14(11): 2531-2560.

<https://doi.org/10.1162/089976602760407955>

Maass W., Natschläger T., Markram H. (2004) Computational Models for Generic Cortical Microcircuits, Computational Neuroscience: a Comprehensive Approach Ch 18: 575-605. <https://doi.org/10.1201/9780203494462.ch18>

Blue Brain Project: <http://bluebrain.epfl.ch/>

GENESIS: <http://www.genesis-sim.org/GENESIS/>

Neural Microcircuits (CSIM): <http://www.lsm.tugraz.at/>

NEURON: <http://neuron.duke.edu/>

Artur Przelaskowski, Katarzyna Sklinda, Bogdan Cizek **Modelowanie subtelných zmian chorobowych mózgowia wspomagające neurodiagnostykę**

Adams H., Adams R., Del Zoppo G., Goldstein L.B. (2005) Guidelines for the early management of patients with ischemic stroke. 2005 guidelines update, A scientific statement from the Stroke Council of the American Heart Association/American Stroke Association, Stroke 36: 916-921.

<https://doi.org/10.1161/01.STR.0000163257.66207.2d>

Adams H.P., del Zoppo G., Alberts M.J. (2007) Guidelines for the early management of adults with ischemic stroke, Stroke 38: 1655-1711.

Antonini M., Barlaud M., Mathieu P., Daubechies I. (1992) Image coding using wavelet transform, IEEE Trans. Image Process IP-1: 205-220. <https://doi.org/10.1109/83.136597>

Bendszus M., Urbach H., Meyer B., Schultheiss R., Solymosi L. (1997) Improved CT diagnosis of acute middle cerebral artery territory infarcts with density-difference analysis, Neuroradiology 39(2): 127-131. <https://doi.org/10.1007/s002340050379>

Beylkin G., Torresani B. (1996) Implementation of operators via filter banks, autocorrelation shell and Hardy wavelets, Applied and Computational Harmonic Analysis 3:164-185.

<https://doi.org/10.1006/acha.1996.0014>

Bonita R., Mendis S., Truelsen T., et al. (2004) The global stroke initiative, Lancet Neurology 3: 391-393. [https://doi.org/10.1016/S1474-4422\(04\)00800-2](https://doi.org/10.1016/S1474-4422(04)00800-2)

Candès E.J. (1998) Ridgelets: theory and applications. Ph.D. Thesis, Technical Report, Department of Statistics, Stanford University.

Candès E.J., Donoho D.L. (2004) New tight frames of curvelets and optimal representations of objects with c2 singularities, Commun. Pure Appl Math 57: 219-266. <https://doi.org/10.1002/cpa.10116>

Candès E.J., Demanet L., Donoho D.L., Ying L. (2005) Fast discrete curvelet transforms, Technical Report, Cal Tech. <https://doi.org/10.1137/05064182X>

Coifman R.R., Meyer Y., Wickerhauser M.V. (1992) Wavelet Analysis and signal processing. In: Wavelets and their applications, M.B. Ruskai et al. (eds.), 153-178, Boston.

Coifman R.R., Wickerhauser M.V. (1992) Entropy based algorithms for best basis selection, IEEE Trans Image Process 32: 712-718. <https://doi.org/10.1109/18.119732>

- Da Qi, Denton E.R.E., Zwigelaar R. (2006) Semantic analysis on medical images: a case study, Proc 18th International Conference on Pattern Recognition (ICPR'06) 1260-1263.
<https://doi.org/10.1109/ICPR.2006.1042>
- Daubechies I. (1992) Ten lectures on wavelets. Society for industrial and applied mathematics, Philadelphia, Pennsylvania. <https://doi.org/10.1137/1.9781611970104>
- Daubechies I. (1993) Orthonormal bases of compactly supported wavelets II. Variations on a theme, SIAM Journal on Mathematical Analysis 24(2): 499-519. <https://doi.org/10.1137/0524031>
- DeVore R.A. (1998) Nonlinear approximation, Acta Numerica 7: 51-150.
<https://doi.org/10.1017/S0962492900002816>
- Dogan S. (2004) 3D reconstruction and evaluation of tissues by using CT, MR slices and digital images, Int Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences XXXV-B5: 323-327.
- Doi K. (2007) Computer-aided diagnosis in medical imaging: Historical review, current status and future potential, Comp Med Imag Graph 31: 198-211.
<https://doi.org/10.1016/j.compmedimag.2007.02.002>
- Do M.N., Vetterli M. (2003) Contourlets. In: Beyond Wavelets (G.V. Welland ed.), Academic Press, New York. [https://doi.org/10.1016/S1570-579X\(03\)80032-0](https://doi.org/10.1016/S1570-579X(03)80032-0)
- Donoho D.L. (1997) Wedgelets: nearly-minimax estimation of edges, Tech Report, Statist. Depart., Stanford University.
- Donoho D.L., Vetterli M., DeVore R.A., Daubechies I. (1998) Data compression and harmonic analysis, IEEE Trans. Inform. Theory, Special Issue, Inform. Theory: 1948-1998 Commemorative Issue 44(6): 2435-2476. <https://doi.org/10.1109/18.720544>
- Donoho D.L. (2000) Orthonormal ridgelets and linear singularities, SIAM Journal on Mathematical Analysis 31(5): 1062-1099. <https://doi.org/10.1137/S0036141098344403>
- Donoho D.L., Flesia A.G. (2001) Digital ridgelet transform based on true ridge functions. In: Beyond Wavelets (Stoecker J., Welland G.V. eds.), Academic Press, New York.
- Donoho D.L., Duncan M.R. (2000) Digital curvelet transform: strategy, implementation, experiments, Wavelet Applications VII, Proc SPIE 4056: 12-29. <https://doi.org/10.1117/12.381679>
- Donoho D., Huo X. (2002) Beamlets and multiscale image analysis. Multiscale and Multiresolution Methods, Springer Lecture Notes. In: Computational Science and Engineering (T.J. Barth, T. Chan, R. Haimes eds.), 20: 149-196. https://doi.org/10.1007/978-3-642-56205-1_3
- Dziadowski I., Weber J., Doerfler A., Forsting M., von Kummer R. (2004) Brain tissue water uptake after middle cerebral artery occlusion assessed with CT, J Neuroimag. 14: 42-48.
<https://doi.org/10.1177/1051228403258135>
- European guidelines in quality criteria for computed tomography (1999) Report EUR 16262, Office for Official Publications of the European Communities, Brussels.
- Floridi L. (2007) In defence of the veridical nature of semantic information, EUJAP 3(1): 31-41.
- Führ H., Demaret L., Friedrich F. (2006) Beyond wavelets: new image representation paradigms. In: Document and Image Compression (M. Barni ed.). CRC Press, Boca Raton.

Gadda D., Vannucchi L., Niccolai F., Neri A., Carmignani L., Pacini P. (2002) CT in acute stroke: improved detection of dense intracranial arteries by varying window parameters and performing a thin-slice helical scan, *Neuroradiology* 44(11): 900-906. <https://doi.org/10.1007/s00234-002-0848-1>

Grimm C., Hochmuth A., Huppertz H.J. (2005) Voxel-based CT analysis for improved detection of early CT signs in cerebral infarction, *Eur Radiol* B315-B315 (ECR-European Congress of Radiology).

Grimnes M., Aamodt A. (1996) A two layer case-based reasoning architecture for medical image understanding, *Lecture Notes in Computational Science* 1168: 164-178. <https://doi.org/10.1007/BFb0020609>

Hacke W., Kaste M., Fieschi C., et al. (1998) Randomised double-blind placebocontrolled trial of thrombolytic therapy with intravenous alteplase in acute ischaemic stroke (ECASS II), *Lancet* 352: 1245-1251. [https://doi.org/10.1016/S0140-6736\(98\)08020-9](https://doi.org/10.1016/S0140-6736(98)08020-9)

John F. (1955) *Plane waves and spherical means applied to partial differential equations*. Interscience, New York.

Kahn C.E., Channin D.S., Rubin D.L. (2006) An ontology for PACS integration, *J Digit Imag* 19(4): 316-327. <https://doi.org/10.1007/s10278-006-0627-3>

Kazantsev I.G. (1998) Tomographic reconstruction from arbitrary directions using ridge functions. *Inverse Problems* 14: 635-645. <https://doi.org/10.1088/0266-5611/14/3/014>

Lev M.H., Farkas J., Gemmete J.J., et al. (1999) Acute stroke: improved nonenhanced CT detection-benefits of soft-copy interpretation by using variable window width and center level settings, *Radiology* 213: 150-155. <https://doi.org/10.1148/radiology.213.1.r99oc10150>

Lisowska A. (2007) Second order wedgelets in image coding, *Proc EUROCON 2007 The International Conference on "Computer as a Tool"*, 237-244. <https://doi.org/10.1109/EURCON.2007.4400239>

Lodwick G.S., Haun C.L., Smith W.E., et al. (1963) Computer diagnosis of primary bone tumor, *Radiology* 80: 273-5. <https://doi.org/10.1148/80.2.273>

LoPresto S.M., Ramchandran K., Orchard M.T. (1997) Image coding based on mixture modeling of wavelet coefficients and a fast estimation-quantization framework, *Proc IEEE Data Compression Conference* 221-230.

Majkowski J. (1998) *Udary naczyniowe mózgu, diagnostyka i leczenie*. PZWL, Warszawa.

Maldjian J.A., Chalela J., Kasner S.E., Liebeskind D., Detre J.A. (2001) Automated CT segmentation and analysis for acute middle cerebral artery stroke, *AJNR Am J Neuroradiol* 22: 1050-1055.

Mallat S. (1989) A theory for multiresolution signal decomposition: the wavelet representation, *IEEE Pat Anal Mach Intell*, 11: 674-693. <https://doi.org/10.1109/34.192463>

Mallat S., Falzon F. (1998) Analysis of low bit rate image transform coding, *IEEE Trans Signal Process* 46(4): 1027-1042. <https://doi.org/10.1109/78.668554>

Mallat S. (1999) *A wavelet tour of signal processing*. Second Edition. Academic Press, London. <https://doi.org/10.1016/B978-012466606-1/50008-8>

Myers P.H., Nice C.M., Becker H.C., et al. (1964) Automated computer analysis of radiographic images, *Radiology* 83: 1029-33. <https://doi.org/10.1148/83.6.1029>

- Osborn A.G. (1994) Diagnostic Neuroradiology. Mosby-year Book, St. Louis, MO.
- Pisanelli D.M., Zaccagnini D., Capurso L., Koch M. (2003) An ontological approach to evidence-based medicine and meta-analysis, *Stud Health Technol Inform* 5: 543-548.
- Prusiński A., Domżał T.M., Kozubski W., Szczudlik A. (1999) Niedokrwiennie udary mózgu. α -medica press, Bielsko-Biała.
- Przelaskowski A., Ostrek G., Sklinda K. (2008) Monitor Udaru jako narzędzie wspomagania diagnostyki badań TK mózgu, *Elektronika* 7-8: 104-114.
- Ruderman D.L. (1997) Origins of scaling in natural images, *Vision Research Elsevier* 37(23): 3385-3398. [https://doi.org/10.1016/S0042-6989\(97\)00008-4](https://doi.org/10.1016/S0042-6989(97)00008-4)
- Sa de Camargo E.C., Koroshetz W.J. (2005) Neuroimaging of ischemia and infarction, *J Am Soc Exp NeuroTherapeutics* 2(2): 265-276. <https://doi.org/10.1007/BF03206671>
- Sardy S. (2000) Minimax threshold for denoising complex signals with waveshrink, *IEEE Trans Signal Process* 48(4). <https://doi.org/10.1109/78.827536>
- Schuijer F.J., Hossmann K.A. (1980) Experimental brain infarcts in cats. II. Ischemic brain edema, *Stroke* 11: 593-601. <https://doi.org/10.1161/01.STR.11.6.593>
- Shaw de Paredes E. (2000) Missed breast cancer: avoiding this pitfall, *Appl Radiol* 29(10): 15-30.
- Sklinda K., Bargiel P., Przelaskowski A., Bulski T., Walecki J., Grieb P. (2007) Multiscale extraction of hypodensity in hyperacute stroke, *Medical Science Monitor* 13(Suppl 1): 5-10, Proc XXXVIII Congress of the Polish Medical SOCIETY of Radiology.
- Starck J.-L., Candès E.J., Donoho D.L. (2002) The curvelet transform for image denoising, *IEEE Tran Image Process* 11(6): 670-84. <https://doi.org/10.1109/TIP.2002.1014998>
- Sweldens W. (1994) The lifting scheme: a construction of second generation wavelets. Univ. So. Carolina (preprint).
- Tadeusiewicz R., Ogiela M.R. (2004) Medical image understanding technology. Springer-Verlag, Berlin-Heidelberg. <https://doi.org/10.1007/978-3-540-40997-7>
- Tomura N., Uemura K., Inugami A., Fujita H., Higano S., Shishido F. (1988) Early CT finding in cerebral infarction: obscuration of the lentiform nucleus, *Radiology* 168: 463-7. <https://doi.org/10.1148/radiology.168.2.3393665>
- Unger E., Littlefield J., Gado M. (1988) Water content and water structure in CT and MR signal changes: Possible influence in detection of early stroke, *AJNR* 9: 687-691.
- von Kummer R. (2005) The impact of CT on acute stroke treatment. In: *Thrombolytic Therapy for Stroke* (P. Lyden ed.), Humana Press, Totowa, New Jersey, USA, 249-278. <https://doi.org/10.1385/1-59259-933-8:249>
- Wakin M.B., Romberg J.K., Choi H., Baraniuk R.G. (2006) Wavelet-domain approximation and compression of piecewise smooth images, *IEEE Trans Image Process* 15(5): 1071-1087. <https://doi.org/10.1109/TIP.2005.864175>
- Wang Y.M. Zhang J., Zhang Z., Guo B. (2004) Directional coherence interpolation for three-dimensional grey-level images, *Int J Image and Graphics (IJIG)* 4(4): 535-561. <https://doi.org/10.1142/S0219467804001531>

Welland G.V. (ed.) (2003) *Beyond Wavelets, Studies in Computational Mathematics*, vol. 10, Academic Press. Wojtaszczyk P. (2000) *Teoria falek*. Wyd. Nauk. PWN, Warszawa.

Andrzej Górecki, Marta Dziejicka-Wasylewska Fizyczne metody stosowane w badaniach molekularnych mechanizmów działania mózgu

Berg J., Stryer L., Tymoczko J.L. (2007) *Biochemia*. Wydawnictwo Naukowe PWN, Warszawa.

Grymek K., Gąska M., Łukasiewicz S., Górecki A., Dziejicka-Wasylewska M. (2008) Fluorescencyjne metody badania oligomeryzacji receptorów związanych z białkami G, *Postępy Biochemii* (4), 431-437.

Kozik A., Rąpała-Kozik M., Guevara-Lora I. (2001) *Analiza instrumentalna w biochemii. Wybrane problemy i metody instrumentalnej biochemii analitycznej*; Seria Wydawnicza IBM UJ, red. serii A. Dubin, Wyd. UJ, Kraków.

Maciejewski H., Konarski Ł., Jasińska A., Drath M. (2005) Analiza danych z mikromacierzy DNA – metody, narzędzia, *Bio-Algorithms and Med-Systems* 1 (1/2), 129–132.

Nowak J.Z. i Zawilska J. (red.) (2004) *Receptory i mechanizmy przekazywania sygnału*,. Wydawnictwo Naukowe PWN, Warszawa.

Whitford D. (2005) *Proteins: Structure and Function*. Wiley, West Sussex, UK.

Piotr Durka Badanie funkcji mózgu z wykorzystaniem elektroencefalografii

Beck A. (1890a) Die ströme der nervencentren, *Centerblatt für Physiologie*, 4: 572-573.

Beck A. (1890b) Oznaczenie lokalizacji w mózgu i rdzeniu za pomocą zjawisk elektrycznych. W: *Rozpr. Wyzd. mat.-przyr.*, nr I, Seria II, 186-232. Polska Akad. Um., 1891; przedstawiono 20 października 1890.

Berger H. (1929) Über das Elektrenkephalogramm des Menschen, *Arch. f. Psychiat.* 87: 527-570.
<https://doi.org/10.1007/BF01797193>

Brazier M.A.B. (1961) *A History of the Electrical Activity of the Brain, The First Half-Century*. Pitman Medical Publishing, London.

Connors B.W., and Long M.A. (2004) Electrical synapses in the mammalian brain, *Annual Review of Neuroscience* 27:393-418. <https://doi.org/10.1146/annurev.neuro.26.041002.131128>

Dawson G.D. (1947) Cerebral responses to electrical stimulation of peripheral nerve in man, *J Neurol Neurosurg Psychiatry* 10: 134-140. <https://doi.org/10.1136/jnnp.10.3.134>

Durka P.J. (2007) Matching pursuit. *Scholarpedia*, page 20910
<https://doi.org/10.4249/scholarpedia.2288>

Durka P.J. (2007) Matching Pursuit and Unification in EEG analysis. *Engineering in Medicine and Biology*. Artech House.

Durka P.J., A. Matysiak, E.M. Montes, P. Valdés Sosa, and K.J. Blinowska (2005) Multichannel matching pursuit and EEG inverse solutions, *Journal of Neuroscience Methods* 148(1): 49-59.
<https://doi.org/10.1016/j.jneumeth.2005.04.001>

Durka P.J., W. Szelenberger, K.J. Blinowska, W. Androsiuk, and M. Myszka (2002) Adaptive time-frequency parametrization in pharmaco EEG, *Journal of Neuroscience Methods* 117: 65-71.
[https://doi.org/10.1016/S0165-0270\(02\)00075-4](https://doi.org/10.1016/S0165-0270(02)00075-4)

Nuwer M. (1997) Assessment of digital EEG, quantitative EEG, and EEG brain mapping: report of the American Academy of Neurology and the American Clinical Neurophysiology Society, *Neurology* 49: 277-292. <https://doi.org/10.1212/WNL.49.1.277>

Pfurtscheller G. and A. Arnibar (1979) Evaluation of event-related desynchronization (ERD) preceding and following voluntary self-paced movements, *Electroencephal. Clin. Neurophysiol.* 46: 128-146.
[https://doi.org/10.1016/0013-4694\(79\)90063-4](https://doi.org/10.1016/0013-4694(79)90063-4)

Ramírez R.R. and S. Makeig (2008) Source localization. Scholarpedia, page
<https://doi.org/10.4249/scholarpedia.1733>

Rechtschaffen A. and A. Kales (eds) (1968) A manual of standardized terminology, techniques and scoring system for sleep stages in human subjects, Number 204 in National Institutes of Health Publications. US Government Printing Office, Washington DC.

Szelenberger W. (2000) Potencjały wywołane. Wydawnictwo Elmiko, Warszawa.

Talairach J. and P. Tournoux (1988) Co-Planar Stereotaxic Atlas of the Human Brain. Thieme Medical Publishers, New York,

Yeung N., R. Bogacz, C.B. Holroyd, and J.D. Cohen (2004) Detection of synchronized oscillations in the electroencephalogram: An evaluation of methods, *Psychophysiology* 41: 822-832.
<https://doi.org/10.1111/j.1469-8986.2004.00239.x>

Strony internetowe

<http://scholarpedia.org> – Internetowa encyklopedia pisana przez specjalistów, zawierająca wiele informacji na tematy poruszane w tym rozdziale

<http://bci.fuw.edu.pl> – otwarty projekt oprogramowania dla interfejsów mózg–komputer

<http://bci.durka.info> – informacje o interfejsach mózg–komputer w języku polskim

<http://eeg.pl> – pierwszy w Polsce portal neuroinformatyczny

<http://signalml.org> – metajęzyk opisu biomedycznych szeregów czasowych SignalML

<http://svarog.pl> – wolne oprogramowanie do wyświetlania i analizy EEG

<http://durka.info> – strona domowa autora rozdziału

<http://brain.fuw.edu.pl> – strona Zakładu Fizyki Biomedycznej Uniwersytetu Warszawskiego, prowadzącego badania w opisywanej tematyce

<http://uni.durka.info> – informacje o książce (Durka 2007)

<http://neuroinformatyka.pl> – pierwsze na świecie studia pierwszego stopnia w dziedzinie neuroinformatyki

Marta Dziedzicka-Wasylewska **Biochemiczne podstawy chorób mózgu**

Bijak M. i W. Lasoń (red.) (2000) Neuropsychofarmakologia dziś i jutro. Instytut Farmakologii PAN, Kraków.

Bilikiewicz A., S. Pużyński, J. Rybakowski, J. Wciórka (red.) (2002) Psychiatria, t. I: Podstawy psychiatrii. Wydawnictwo Medyczne Urban & Partner, Wrocław.

Dziedzicka-Wasylewska M. (red.) (2001) Genetyka molekularna chorób układu nerwowego, XVIII Szkoła Zimowa Instytutu Farmakologii PAN, Kraków.

Dziedzicka-Wasylewska M. (2005) Zagadkowość choroby Huntingtona, Wykłady Monograficzne Instytutu Farmakologii PAN, Kraków.

Longstaff A. (2006) Neurobiologia. Wydawnictwo Naukowe PWN, Warszawa.

Przewłocka B. (red.) (1999) Choroba Parkinsona, XVI Szkoła Zimowa Instytutu Farmakologii PAN, Kraków.

Przewłocka B. (red.) (2002) Schizofrenia: patogeneza i terapia, badania przedkliniczne i kliniczne, XIX Szkoła Zimowa Instytutu Farmakologii PAN, Kraków.

Walsh K. (2000) Neuropsychologia kliniczna. Wydawnictwo Naukowe PWN, Warszawa.

Włodzisław Duch Architektury kognitywne, czyli jak zbudować sztuczny umysł

Anderson J.A., P. Allopenna, G.S. Guralnik, D. Sheinberg, J.A. Santini, Jr., D. Dimitriadis, B.B. Machta, and B.T. Merrit (2007) Programming a Parallel Computer: The Ersatz Brain Project. In: Duch W., Mandziuk J. (red.), Challenges to Computational Intelligence. Springer, Berlin 61-88.
https://doi.org/10.1007/978-3-540-71984-7_4

Anderson J.R. (1998) Uczenie się i pamięć. Integracja zagadnień. WSiP, Warszawa.

Anderson J.R., C. Lebiere (2003) The Newell test for a theory of cognition. Behavioral and Brain Science 26, 587-637. <https://doi.org/10.1017/S0140525X0300013X>

Anderson J.R. (2007) How can the human mind occur in the physical universe? Oxford University Press, New York. <https://doi.org/10.1093/acprof:oso/9780195324259.001.0001>

Baars B.J. (1988) A Cognitive Theory of Consciousness. Cambridge University Press, New York.

Barsalou L.W. (2008) Grounding symbolic operations in the brain's modal systems. In G.R. Semin&E.R.

Smith (Eds.), Embodied grounding: Social, cognitive, affective, and neuroscientific approaches (pp. 9-42). New York: Cambridge University Press.

Brooks R. (1986) Elephants don't play chess. Robotics and Autonomous Systems 6, 3-15.
[https://doi.org/10.1016/S0921-8890\(05\)80025-9](https://doi.org/10.1016/S0921-8890(05)80025-9)

Brooks R., L.A. Stein (1994) Building Brains for Bodies. Autonomous Robotics 1, 7-25.
<https://doi.org/10.1007/BF00735340>

Carpenter R., J. Freeman (2005) Computing Machinery and the Individual: the Personal Turing Test, paper available at <http://www.jabberwacky.com/>.

- Cassimatis N.L. (2007) Adaptive Algorithmic Hybrids for Human-Level Artificial Intelligence. *Advances in Artificial General Intelligence*, B. Goertzel, P. Wang (Eds.). IOS Press, Amsterdam, 94-110.
- Dehaene S., L. Cohen, M. Sigman, F. Vinckier (2005) The neural code for written words: a proposal. *Trends in Cognitive Science* 9, 335-341. <https://doi.org/10.1016/j.tics.2005.05.004>
- Duch W. (1994) A solution to the fundamental problems of cognitive sciences. *International Philosophical Preprint Exchange, WWW Archive*.
- Duch W. (1996) From cognitive models to neurofuzzy systems - the mind space approach. *Systems AnalysisModelling-Simulation* 24, 53-65.
- Duch W. (2005) Brain-inspired conscious computing architecture. *Journal of Mind and Behavior* 26(1-2), 1-22.
- Duch W. (2007) Intuition, Insight, Imagination and Creativity. *IEEE Computational Intelligence Magazine* 2(3), 40-52. <https://doi.org/10.1109/MCI.2007.385365>
- Duch W. (2007a) Towards comprehensive foundations of computational intelligence. In: W. Duch and J. Mandziuk, *Challenges for Computational Intelligence*. Springer Studies in Computational Intelligence, 63, 261-316. https://doi.org/10.1007/978-3-540-71984-7_11
- Duch W., Adamczak R., Grąbczewski K. (2001) A new methodology of extraction, optimization and application of crisp and fuzzy logical rules. *IEEE Transactions on Neural Networks*, 12, 277-306. <https://doi.org/10.1109/72.914524>
- Duch W., Mandziuk J. (2004) Quo Vadis Computational Intelligence? In: *Machine Intelligence. Quo Vadis? Advances in Fuzzy Systems - Applications and Theory - Vol. 21*, World Scientific, 3-28. https://doi.org/10.1142/9789812562531_0001
- Duch W., P. Matykiewicz, J. Pestian (2007) Towards Understanding of Natural Language: Neurocognitive Inspirations. *Lecture Notes in Computer Science* 4669, 953-962. https://doi.org/10.1007/978-3-540-74695-9_97
- Duch W., R.J. Oentaryo, M. Pasquier (2008) Cognitive architectures: where do we go from here? In: *Artificial General Intelligence*, P. Wang, B. Goertzel, and S. Franklin (Eds.), IOS Press, Amsterdam, 122-136.
- Duch W., Pilichowski M. (2007) Experiments with computational creativity. *Neural Information Processing - Letters and Reviews* 11, 123-133.
- Edelman G.M. (1993) Neural Darwinism: Selection and reentrant signaling in higher brain function. *Neuron* 10, 115-125. [https://doi.org/10.1016/0896-6273\(93\)90304-A](https://doi.org/10.1016/0896-6273(93)90304-A)
- Edelman G.M. (1999) *Przenikliwe powietrze, jasny ogień. O materii umysłu*. PIW, Warszawa.
- Feigenbaum E.A. (2003) Some Challenges and Grand Challenges for Computational Intelligence. *J. of the ACM* 50(1), 32-40. <https://doi.org/10.1145/602382.602400>
- Firby R.J. (1989) *Adaptive Execution in Complex Dynamic Worlds*. Ph.D. Thesis, Yale University.
- Franklin S. (2006) The LIDA architecture: Adding new modes of learning to an intelligent, autonomous, software agent. In: *Proc. of the Int. Conf. on Integrated Design and Process Technology*. Society for Design and Process Science, San Diego, CA.
- Gardner H. (1993) *Multiple intelligences: The theory in practice*. Basic Books, New York.

- Gluck K.A., R.W. Pew (Eds.) (2005) Modeling Human Behavior with Integrated Cognitive Architectures: Comparison, Evaluation. Lawrence Erlbaum Associates, Philadelphia, PA. <https://doi.org/10.4324/9781410613257>
- Goertzel B. (1997) From Complexity to Creativity. Plenum Press, New York.
- Goertzel B. (2006) The Hidden Pattern, BrownWalker Press, Boca Raton, FL, USA.
- Goertzel B., C. Pennachin, N. Geissweiller, M. Looks, A. Senna, W. Silva, A. Heljakka, C. Lopes (2008) An Integrative Methodology for Teaching Embodied Non-Linguistic Agents, Applied to Virtual Animals in Second Life. In: Artificial General Intelligence, P. Wang, B. Goertzel, and S. Franklin (Eds.), IOS Press, Amsterdam, 161-175
- Grąbczewski K., Jankowski N. (2007) Versatile and Efficient Meta-Learning Architecture: Knowledge Representation and Management in Computational Intelligence. IEEE Symposium Series on Computational Intelligence (SSCI 2007), Honolulu, HI, IEEE Press, 51-58. <https://doi.org/10.1109/CIDM.2007.368852>
- Haikonen P. (2007) Robot brains; circuits and systems for conscious machines. Wiley & Sons, Hoboken, NJ. <https://doi.org/10.1002/9780470517871>
- Hawkins J., Blakeslee S. (2004) On intelligence: How a New Understanding of the Brain will Lead to the Creation of Truly Intelligent Machines. Times Books, New York. Wyd. polskie: Istota inteligencji, Helion, Gliwice 2005.
- Hecht-Nielsen R. (2007) Confabulation Theory: The Mechanism of Thought. Springer, Berlin.
- Hoya T. (2005), Artificial Mind System. Kernel Memory Approach. Springer, Berlin.
- Just M.A., S. Varma (2007) The organization of thinking: What functional brain imaging reveals about the neuroarchitecture of complex cognition. Cognitive, Affective, and Behavioral Neuroscience 7, 153-191. <https://doi.org/10.3758/CABN.7.3.153>
- Kaelbling L.P., M.L. Littman, A.W. Moore (1996) Reinforcement learning: A survey. Journal of Artificial Intelligence Research 4, 237-285. <https://doi.org/10.1613/jair.301>
- Kaminka G.A., C.R. Burghart (Eds.) (2007) Evaluating Architectures for Intelligence. Technical Report WS07-04, AAAI Press, Menlo Park.
- Korner E., G. Matsumoto (2002) Cortical architecture and self-referential control for brain-like computation. <https://doi.org/10.1109/MEMB.2002.1044182>
- IEEE Engineering in Medicine and Biology Magazine, 21(5), 121-133.
- Laird J.E., P.S. Rosenbloom, A. Newell (1987) SOAR: An architecture for general intelligence. Artificial Intelligence 33, 1-64. [https://doi.org/10.1016/0004-3702\(87\)90050-6](https://doi.org/10.1016/0004-3702(87)90050-6)
- Laird J.E. (2008) Extending the SOAR Cognitive Architecture. In: Frontiers in Artificial Intelligence and Applications, vol. 171, P. Wang, B. Goertzel, and S. Franklin (Eds.), 224-235.
- Lamb S. (1999) Pathways of the Brain: The Neurocognitive Basis of Language. J. Benjamins Publishing Co, Amsterdam. <https://doi.org/10.1075/cilt.170>
- Langley P. (2005) An adaptive architecture for physical agents. In: Proc. of the 2005 IEEE/WIC/ACM Int. Conf. on Intelligent Agent Technology. IEEE Computer Society Press, Compiegne, 18-25. <https://doi.org/10.1109/IAT.2005.36>

- Langley P., Choi D. (2006) Learning recursive control programs from problem solving. *J. of Machine Learning Res.* 7, 493-518.
- Larvac N., Dzeroski S. (1994) *Inductive Logic Programming: Techniques and Applications*. Ellis Horwood, New York.
- Mahon B.Z., Caramazza A. (2008) A critical look at the Embodied Cognition Hypothesis and a new proposal for grounded conceptual content. *Journal of Physiology - Paris*, 102, 59-70.
<https://doi.org/10.1016/j.jphysparis.2008.03.004>
- Manning C.D., Schütze H. (1999) *Foundations of Statistical Natural Language Processing*. MIT Press, Cambridge.
- McClelland J.L., Rumelhart D.E. and the PDP Research Group (1986) *Parallel Distributed Processing: Explorations in the Microstructures of Cognition*. MIT Press, Cambridge.
<https://doi.org/10.7551/mitpress/5236.001.0001>
- Meeter M., J.M.J. Murre (2005) TraceLink: A model of consolidation and amnesia. *Cognitive Neuropsychology* 22 (5), 559-587. <https://doi.org/10.1080/02643290442000194>
- Meyer D.E., D.E. Kieras (1997) A computational theory of executive cognitive processes and multiple-task performance: Part 1. Basic mechanisms. *Psychological Review* 104(1), 3-65.
<https://doi.org/10.1037/0033-295X.104.1.3>
- Minsky M. (1975) A Framework for Representing Knowledge. In: P.H. Winston, Ed. *The Psychology of Computer Vision*. McGraw-Hill, New York.
- Minsky M. (1986) *The Society of Mind*. Simon and Schuster, New York.
- Mitchell T.M., R. Keller, S. Kedar-Cabelli (1986), Explanation-based generalization: A unifying view. *Machine Learning* 1, 47-80. <https://doi.org/10.1007/BF00116250>
- Nester A., Kokinov B. (2004) Towards Active Vision in the DUAL Cognitive Architecture. *International Journal on Information Theories and Applications* 11, 9-15.
- Newell A. (1990) *Unified Theories of Cognition*. Harvard University Press, Cambridge, MA.
- Newell A., Simon H.A. (1963) GPS: A program that simulates human thought. In: E.A. Feigenbaum and J. Feldman (Eds.), *Computers and Thought*. McGraw-Hill, New York.
- Newell A., Simon H.A. (1976) Computer Science as Empirical Inquiry: Symbols and Search, *Communications of the ACM*, 19(3), 113-126 <https://doi.org/10.1145/360018.360022>
- Nilsson N. (2005) Human-Level Artificial Intelligence? Be Serious! *The AI Magazine* 26(4), 68-75.
- O'Reilly R.C., T.S. Braver, J.D. Cohen (1999) Abiologically-based computational model of working memory. In: A. Miyake i P. Shah (Eds.), *Models of Working Memory*. Cambridge University Press, Cambridge, 375-411. <https://doi.org/10.1017/CBO9781139174909.014>
- O'Reilly R.C., Munakata Y. (2000) *Computational Explorations in Cognitive Neuroscience: Understanding of the Mind by Simulating the Brain*. MIT Press, Cambridge.
<https://doi.org/10.7551/mitpress/2014.001.0001>
- Panton K., C. Matuszek, D. Lenat, D. Schneider, M. Witbrock, N. Siegel, Shepard B. (2006) Common Sense Reasoning - From Cyc to Intelligent Assistant. In: Y. Cai and J. Abascal (Eds.): *Ambient Intelligence in Everyday Life*, LNAI 3864, 1-31. https://doi.org/10.1007/11825890_1

- Pulvermuller F. (2003) *The Neuroscience of Language. On Brain Circuits of Words and Serial Order.* Cambridge University Press, Cambridge. <https://doi.org/10.1017/CBO9780511615528>
- Rosbe J., R.S. Chong, Kieras D.E. (2001) *Modeling with Perceptual and Memory Constraints: An EPIC-SOAR Model of a Simplified Enroute Air Traffic Control Task*, SOAR Technology Inc. Report, Ann Arbor, Michigan. <https://doi.org/10.1037/e446312006-001>
- Russell S., Norvig P. (2003) *Artificial Intelligence: A Modern Approach.* 2nd ed. Prentice Hall, NJ.
- Shanahan M.P. (2006) A cognitive architecture that combines internal simulation with a global workspace. *Consciousness and Cognition* 15, 157-176. <https://doi.org/10.1016/j.concog.2005.11.005>
- Shapiro S.C., Rapaport W.J., Kandefer M., Johnson F.L., Goldfain A. (2007) Metacognition in SNePS, *AI Magazine* 28, 17-31.
- Shastri L., Ajjanagadde V. (1993) From simple associations to systematic reasoning: A connectionist encoding of rules, variables, and dynamic bindings using temporal synchrony. *Behavioral & Brain Sciences* 16(3), 417-494. <https://doi.org/10.1017/S0140525X00030910>
- Sowa J.F. (1984) *Conceptual Structures.* Addison-Wesley, Reading.
- Sun R., Alexandre F. (1997) *Connectionist symbolic integration.* Hillsdale, NJ: Erlbaum.
- Sun R., E. Merrill, T. Peterson (2001) From implicit skills to explicit knowledge: A bottom-up model of skill learning. *Cognitive Science*, 25(2), 203-244. https://doi.org/10.1207/s15516709cog2502_2
- Sun R., X. Zhang (2004) Top-down versus bottom-up learning in cognitive skill acquisition. *Cognitive Systems Research* 5, 63-89. <https://doi.org/10.1016/j.cogsys.2003.07.001>
- Szymański J., T. Sarnatowicz, W. Duch (2008) Towards Avatars with Artificial Minds: Role of Semantic Memory. *Journal of Ubiquitous Computing and Intelligence* 2, 1-11.
- TOSCA: A comprehensive brain-based cognitive architecture: Biologically-Inspired Cognitive Architecture (BICA) Phase 1 Architecture Report, DARPA-IPTO 2006.
- Turing A. (1950) Computing Machinery and Intelligence, *Mind* 49, 433-460. <https://doi.org/10.1093/mind/LIX.236.433>
- Veloso M.M., Carbonell J.G. (1990) Integrating analogy into a general problem-solving architecture. In: M. Zemankova & Z. Ras (Eds.), *Intelligent Systems* (29-51). Ellis Horwood, Chichester.
- Vernon D., Metta G., Sandini G. (2007) A survey of artificial cognitive systems: Implications for the autonomous development of mental capabilities in computational agents. *IEEE Transactions on Evolutionary Computation* 11(2), 151-180. <https://doi.org/10.1109/TEVC.2006.890274>
- Wallace R. (2003) *The Elements of AIML Style*, ALICE A.I. Foundation.
- Wang P. (2006) *Rigid flexibility. The Logic of Intelligence.* Springer, Berlin.
- Weng J., W.S. Hwang (2006) From Neural Networks to the Brain: Autonomous Mental Development. *IEEE Computational Intelligence Magazine* 1(3), 15-31. <https://doi.org/10.1109/MCI.2006.1672985>