

**Leonid I. Perlovsky.**  
**List of Publications in English (since 1980)**

**Books**

Perlovsky, L.I. (2001). *Neural Networks and Intellect: using model-based concepts*. Oxford University Press, New York, NY (3<sup>rd</sup> printing).

Mayorga, R., Perlovsky, L.I., Eds. (2007). *Sapient Systems*. Springer, London, UK.

Perlovsky, L.I., Kozma, R., Eds. (2007). *Neurodynamics of Higher-Level Cognition and Consciousness*. ISBN 978-3-540-73266-2, Springer-Verlag, Heidelberg, Germany.

**Book Chapters**

Perlovsky, L.I. (1998). *Cramer-Rao Bound for Tracking in Clutter*. Chapter in Probabilistic Multi-Hypothesis Tracking, Ed. R.L. Streit, NUWC Press, Newport, RI, pp.77-84

Perlovsky, L.I., Webb, V.H., Bradley, S.A., Hansen, C.A (1998). *Improved ROTH Detection and Tracking using MLANS*. Chapter in Probabilistic Multi-Hypothesis Tracking, Ed. R.L. Streit, NUWC Press, Newport, RI, pp.245-254.

Perlovsky, L.I. (2005). *Evolving Agents: Communication and Cognition*. Chapter in Autonomous Intelligent Systems: Agents and Data Mining. Eds: V. Gorodetsky, J. Liu, V.A. Skormin. Springer-Verlag GmbH, pp.37-49

Perlovsky, L.I. (2006). *Modeling Field Theory of Higher Cognitive Functions*. Chapter in Artificial Cognition Systems, Eds. A. Loula, R. Gudwin, J. Queiroz. Idea Group, Hershey, PA, pp.64-105.

Perlovsky, L.I. (2006). *Symbols: Integrated Cognition and Language*. Chapter in Semiotics and Intelligent Systems Development. Eds. R. Gudwin, J. Queiroz. Idea Group, Hershey, PA, pp.121-151.

Perlovsky, L.I. (2007). *Neural Networks, Fuzzy Models and Dynamic Logic*. Chapter in Aspects of Automatic Text Analysis (Festschrift in Honor of Burghard Rieger), Eds. R. Köhler and A. Mehler, Springer, Germany, pp.363-386.

Perlovsky, L.I. (2007). *Sapience, Consciousness, and the Knowledge Instinct. (Prolegomena to a Physical Theory)*. In *Sapient Systems*, Eds. Mayorga, R., Perlovsky, L.I., Springer, London.

Perlovsky, L.I. and Mayorga, R. (2007). *Preface*. Chapter in *Sapient Systems*, Eds. Mayorga, R., Perlovsky, L.I., Springer, London.

Perlovsky, L., Kozma, R. (2007). *Editorial - Neurodynamics of Cognition and Consciousness*, Chapter in *Neurodynamics of Cognition and Consciousness*, Perlovsky, L., Kozma, R. (eds), ISBN 978-3-540-73266-2, Springer Verlag, Heidelberg, Germany.

Perlovsky, L.I. (2007). *Neural Dynamic Logic of Consciousness: the Knowledge Instinct*. Chapter in *Neurodynamics of Higher-Level Cognition and Consciousness*, Eds. Perlovsky, L.I., Kozma, R. ISBN 978-3-540-73266-2, Springer Verlag, Heidelberg, Germany.

### **Tutorials, Invited Lectures, Editorials (since 2003)**

Perlovsky, L.I. (2009). *Language, cognition, and cultural evolution*. Keynote Talk at the International Conference on Neural Computation (ICNC'09). Oct 2009 4-7, Madeira, Portugal.

Perlovsky, L.I. (2009). *Cognitive computational intelligence: data mining, financial prediction, tracking, fusion, language, cognition, and cultural evolution*. Tutorial, the IASTED International Conference on Computational Intelligence (CI 2009). Aug 2009 17-19, Honolulu, HI.

Perlovsky, L.I. (2009). *Detecting weak signals and predicting cultures*. Plenary Lecture at 2009 IEEE Symposium on Computational Intelligence for Security and Defense Applications (CISDA), July 8-10, 2009, Ottawa, Canada.

Perlovsky, L.I. (2009). *Inverse problems, a mathematical breakthrough*. Invited Lecture at AFRL/RV, 7 April, 2009, Hanscom AFB, MA.

Perlovsky, L.I. (2009). *Modeling evolution of the mind and cultures*. Invited Plenary Lecture at SPIE Security and Defense Symposium, Orlando, FL.

Perlovsky, L.I. (2009). *Maximum likelihood joint association, tracking, and fusion in strong clutter*. Invited Lecture at the Engineering Seminar, University of Connecticut, Storrs, CT.

Perlovsky, L.I. (2009). *Nonlinear physics of the mind: Concepts, emotions, consciousness*. Invited Lecture at the Engineering Seminar, University of California, San Diego, CA.

Perlovsky, L.I. (2008). *Aristotle, Zadeh, & fuzzy logic: From engineering to the mind and evolution of cultures*. Invited Lecture at Berkeley Initiative in Soft Computing (BISC) Seminar, University of California, Berkeley CA.

Perlovsky, L.I. (2008). *Religion from purely scientific point of view*. Invited Lecture at Science and Religion Seminar Workshop, University of Arizona, Tempe AZ.

Perlovsky, L.I. (2008). *Cognitive algorithms: concepts, emotions, cultures*. Invited Lecture at Cognitive Aspects of Decision Making Research Workshop, Washington DC.

Perlovsky, L.I. (2008). *Need for Knowledge = Knowledge Instinct: The Mind, Concepts, Emotions, Cognition, Language, Conscious, Unconscious, and Evolution of Cultures*, University of Chicago, Cognitive and Social Neuroscience Institute, Chicago, IL.

Perlovsky, L.I. (2008). *Joint Evolution of Cognition, Language, and Music*, Neuro Science Institute, San Diego, CA.

Perlovsky, L.I. (2008). *Language, Cognition, Consciousness, Cultural Evolution, challenge to prove experimentally*, University of California Los Angeles, Brain Imaging Center, Los Angeles, CA.

Perlovsky, L.I. (2008). *Improved Tracking and ISR Using Cognitive Neural Networks*, NAECON, Dayton, OH.

Perlovsky, L.I. (2008). *Toward Physics of the Mind: Concepts, Emotions, Consciousness, and Symbols*. Invited Plenary Lecture, WSEAS Applied Mathematics Conference, Cambridge, MA.

Perlovsky, L.I. (2008). *Language, Cognition, and Cultural Evolution*. Invited Lecture, Alignment in Communication Seminar, University of Bielefeld, Bielefeld, Germany.

Perlovsky, L.I. (2008). *The Knowledge Instinct, Cognitive Algorithms, Modeling Of Language And Cultural Evolution*. Invited Plenary Lecture, SPIE Defense and Security Symposium, Orlando FL.

Perlovsky, L.I. (2008). *Language, Cognition, Consciousness and Cultural Evolution – Experimental Challenges*. Invited Lecture, Joint Seminar, Harvard University and MIT Brain Imaging Center at Massachusetts General Hospital, Charlestown, MA

Perlovsky, L.I. (2008). *The Knowledge Instinct Cognitive Algorithms for Engineering, Modeling of Language and Cultural Evolution*. Invited Lecture, IEEE Computational Intelligence Section Boston Chapter Technical Seminar jointly with Grey Thumb Harvard-MIT Seminar, Cambridge, MA

Perlovsky, L.I. (2008). *Dynamic logic, neural fields, engineering applications, and the mind*. Invited Lecture, Physics of Complex Systems Seminar, The Weizmann Institute of Science, Israel.

Perlovsky, L.I. (2008). *Language, Cognition, and Cultural Evolution*. Invited Lecture, Sciences Seminar, Tel-Aviv University, Israel.

Perlovsky, L.I. (2008). *Evolution of Languages, Consciousness, and Cultures*. Invited Lecture, Institute of Evolution Seminar, University of Haifa, Israel.

Perlovsky, L.I. (2008). *Dynamic Logic, Neural Fields, Engineering Applications, and the Mind*. Invited Lecture, Humanities and Social Sciences Seminar. Bar-Ilan University, Israel.

Perlovsky, L.I. (2008). *Language, Cognition, and Cultural Evolution*. Invited Lecture, Department of Physics Seminar. Ben Gurion University, Israel.

Perlovsky, L.I. (2008). *Language, Cognition and Cultural Evolution*. Invited Lecture, Interdisciplinary Distinguished Seminar Series, North Carolina State University, Raleigh, NC.

Perlovsky, L.I. (2007). *Bio-inspired and Cognitive Computing for data mining, tracking, fusion, financial prediction, language understanding, web search engines, and diagnostic modeling of cultures*. IEEE fall course, Central New England Council.

Perlovsky, L.I. (2007). *Neural Modeling Fields: engineering of cognition, language, consciousness, and evolution*. Gabor Invited Lecture, International Joint Conf. on Neural Networks, Orlando, FL.

Perlovsky, L.I. (2007). *Toward Physics of the Mind: Concepts, Emotions, Consciousness, and Symbols*. Karolinska Institutet, Stockholm, Sweden.

Perlovsky, L.I. (2007). *Cognitive neural networks for recognition, data mining, tracking, fusion, prediction, and language understanding*. Tutorial lecture at International IEEE and INNS Joint Conference on Neural Networks (IJCNN'07). Orlando, FL.

Perlovsky, L.I. (2007). *Evolution of the Mind, Language, and Cultures*. Seminar, Institute for Information Transmission Russian Academy of Sciences, Moscow.

Perlovsky, L.I. (2007). *Consciousness and Music*. St. Petersburg University for Philosophy and Religion, Invited Lecture, St. Petersburg, Russia.

Perlovsky, L.I. (2007). *Cognitive Algorithms: Engineering, Dynamic Logic, Neural Fields, and the Mind*. Invited Plenary Lecture, SPIE Defense and Security Conference, Orlando, FL

Perlovsky, L.I. (2007). *Cognitive Algorithms for Tracking*. Invited Lecture, Arizona State University, Tempe, AZ.

Perlovsky, L.I. (2007). *Physics of the Mind: Inverse Scattering, Higher Cognitive Functions, and Engineering Applications*. Invited Lecture, University of Arizona, Tucson, AZ.

Perlovsky, L.I. (2007). *Concurrent learning and fusion*. Guest Editorial. Information Fusion, **8**, pp.224-226.

Perlovsky, L.I. (2006). *Bio-inspired and Cognitive Algorithms - For Recognition, Data Mining, Tracking, Fusion, Prediction, And Language Understanding*. IEEE fall course, Central New England Council.

Perlovsky, L.I. (2006). *Computations in the Mind*. Plenary lecture at the International Association of Science and Technology Development Conference on Computational Intelligence. San Francisco, CA.

Perlovsky, L.I. (2006). *Biologically Inspired Methods For Array Signal Processing*. Plenary Distinguished Lecturer at Fourth IEEE Workshop on Sensor Array and Multichannel Processing (SAM 06), Waltham, MA.

Perlovsky, L.I. (2006). *Co-evolution of Consciousness, Cognition, Language, and Music*. Tutorial lecture course at Biannual Cognitive Science Conference, St. Petersburg, Russia.

Perlovsky, L.I. (2006). *Integration of Cognition and Language*. St. Petersburg Inst. Informatics & Automation, Russian Academy of Sciences.

Perlovsky, L.I. (2006). *Co-Evolution of Cognition and Music*. Art Theory Inst., Russian Academy of Sciences, Moscow.

Perlovsky, L.I. (2006). *Co-evolution of Cognition and Language*. Systems Analysis Inst., Russian Academy of Sciences. Moscow.

Perlovsky, L.I. (2006). *Neural Network Mechanisms for Cognition and Language*. The Official Seminar, Russian Neural Networks Society.

Perlovsky, L.I. (2006). *Joint Evolution of Cognition, Consciousness, and Music*. Lectures in Musicology, School of Music, University of Ohio, Columbus.

Perlovsky, L.I. (2006). *Non-linear Evolutionary Dynamics of Cognition, Emotions, Consciousness, and Music*. Santa Fe Institute. Santa Fe, NM.

Perlovsky, L.I. (2006). *Computational Intelligence and Higher Cognitive Functions*. Daniel D. McCracken Computational Sciences Seminar Series, Central Washington University.

Perlovsky, L.I. (2005). *Computational Intelligence: Natural Information Processing*. IEEE XELL Project (Multi media corporate tutorial series).

Perlovsky, L.I. (2005). *Bio-inspired and Cognitive Algorithms - For Recognition, Data Mining, Tracking, Fusion, Prediction, And Language Understanding*. IEEE fall course, Central New England Council.

Perlovsky, L.I. (2005). *Computational Intelligence. Role of Conceptual and Emotional Processing in Perception and Cognition*. Invited Lecture, University of Arizona, Tempe, AZ.

Perlovsky, L.I. (2005). *Biologically-Inspired Cognitive Architectures*. Tutorial Lecture at IEEE Int. Conf. On Integration of Knowledge Intensive Multi-Agent Sys., Waltham, MA.

Perlovsky, L.I. (2005). *Bio-Inspired High Level Sensor Fusion: Sensing and Communication*. Keynote Plenary Lecture at IEEE Int. Conf. On Integration of Knowledge Intensive Multi-Agent Sys., Waltham, MA.

Perlovsky, L.I. (2005). *Bio-Inspired Integration Of Sensing And Communication*. Defense Applications of Signal Processing Workshop. Invited Lecture, Midway, Utah, 27 March – 1 April, 2005.

Perlovsky, L.I. (2005). *Integrating Language and Cognition*. Tutorial lecture at International IEEE and INNS Joint Conference on Neural Networks (IJCNN'05). Montreal, Quebec, Canada.

Perlovsky, L.I. (2004). *Emotions and Concepts in Cognition and Language*. Invited Lecture, University of Edinburgh, Edinburgh, UK

Perlovsky, L.I. (2004). *Integration of Information in Human Brain. Current Ideas in Computational Intelligence*. IEEE fall course, Central New England Council.

Perlovsky, L.I. (2004). *Integrating Language and Cognition*. Tutorial Lecture at IEEE Joint Robotic and Automation and Computational Intelligence Chapter Meeting.

Perlovsky, L.I. (2004). *Computational Intelligence: Integrating Language and Cognition*. Invited Lecture at Mitsubishi Electronic Research Laboratory, Cambridge, MA.

Perlovsky, L.I. (2004). *The Mind: Language and Cognition*. Invited Lecture, University of Arkansas, Fayetteville, AR.

Perlovsky, L.I. (2003). *Structures Of The Mind: Concepts, Emotions, Instincts, Conscious And Unconscious*. Tutorial, Int. Conf. On Integration of Knowledge Intensive Multi-Agent Systems, Cambridge, MA Oct.1-3, 2003.

Perlovsky, L.I. (2003). *The Mind: Structure and Evolution*. Series of Lectures, Novosibirsk University, October, 2003.

Perlovsky, L.I. (2003). *Mathematics of Intelligence and Emotions*. Invited Plenary Talk, 7<sup>th</sup> JCIS, Cary, NC, USA Sept. 26-31, 2003.

Perlovsky, L.I. (2003). *Integration of Sensory and Language Data*. Plenary Keynote Lecture, The 2003 International Conference on Information Systems and Engineering (ISE 2003), Montreal, Quebec, Canada, July 20 - 25, 2003.

Perlovsky, L.I. (2003). *Integration of Language and Cognition at Pre-Conceptual Level*. Keynote Plenary Lecture, Int. Conf. On Integration of Knowledge Intensive Multi-Agent Systems, Cambridge, MA Oct.1-3, 2003.

### **Refereed Papers in Journals and Scientific Collections**

Perlovsky, L.I. (1986). *Scattering of Seismic Waves by Shear Modulus Fluctuations Due to Rigid-Nonrigid Phase Transition*. Bollettino de Giofisica Teorica ed Applicata, **XXVIII** (109), pp. 3-13.

Perlovsky, L.I. (1988a). *Cramer-Rao Bounds for the Estimation of Means in a Clustering Problem*. Pattern Recognition Letters **8**, 1-3.

Perlovsky, L.I. (1988b). *Frequency Estimates for Simple Oscillating Systems Under Random Forcing*. In Linear Algebra in Signals, Systems and Control, ed. B.N. Datta et al, SIAM.

Perlovsky, L.I. (1989b). *Cramer-Rao Bounds for the Estimation of Normal Mixtures*. Pattern Recognition Letters, **10**, 141-148.

- Perlovsky, L.I. & Vinkovetsky, Y.A. (1989). *The Role of Pressure in the Generation and Preservation of Hydrocarbons*. Bollettino di Geofisica Teorica ed Applicata, **XXXI** (122), pp. 87-90.
- Perlovsky, L.I. (1991). *Acoustic Critical Opalescence of the Transitional Under-Ice Layer in the Arctic*. Bollettino di Geofisica Teorica ed Applicata, **XXXIII** (132), pp. 237-256.
- Perlovsky, L.I. & McManus, M.M. (1991). *Maximum Likelihood Neural Networks for Sensor Fusion and Adaptive Classification*. Neural Networks **4** (1), pp. 89-102.
- Clark, L.G., Perlovsky, L.I., Schoendorf, W.H., Plum, C.P. and Keller, T.L. (1992). *Evaluation of Forward-Looking Infrared Sensors for Automatic Target Recognition Using an Information-Theoretic Approach*. Optical Engineering, **31** (12), pp. 2618-2627.
- Perlovsky, L.I. & Marzetta, T.L. (1992). *Estimating a Covariance Matrix from Incomplete Independent Realizations of a Random Vector*. IEEE Trans. on SP, **40** (8), pp. 2097-2100.
- Perlovsky, L.I. (1994a). *Computational Concepts in Classification: Neural Networks, Statistical Pattern Recognition, and Model Based Vision*. Journal of Mathematical Imaging and Vision, **4** (1), pp. 81-110.
- Perlovsky, L.I. (1994b). *A Model Based Neural Network for Transient Signal Processing*, Neural Networks, **7**(3), pp. 565-572.
- Perlovsky, L.I., Coons, R. P., Streit, R.L., Luginbuhl, T.E., Greineder, S. (1994). *Application of MLANS to Signal Classification*. Journal of Underwater Acoustics, **44** (2), pp.783-809.
- Perlovsky, L.I. & Jaskolski, J.V. (1994). *Maximum Likelihood Adaptive Neural Controller*. Neural Networks, **7** (4), pp. 671-680.
- Perlovsky, L.I., Chernick, J.A. & Schoendorf, W.H. (1995). *Multi-Sensor ATR and Identification Friend or Foe Using MLANS*. Neural Networks, **8** (7/8), pp.1185-1200.
- Garvin, L. & Perlovsky, L.I. (1995). *Statistical Quantum Theory and Statistical Pattern Recognition. Current Topics in Pattern Recognition Research*. Ed. Pandalai. Research Trends, Trivandrum, India.
- Perlovsky, L.I., Schoendorf, W.H., Tye, D.M., Chang, W. (1995). *Concurrent Classification and Tracking Using Maximum Likelihood Adaptive Neural System*. Journal of Underwater Acoustics, **45**(2), pp.399-414.
- Perlovsky, L.I. (1997). *Cramer-Rao Bound for Tracking in Clutter and Tracking Multiple Objects*. Pattern Recognition Letters, **18**(3), pp.283-288.
- Perlovsky, L.I. (1997). *Physical Concepts of Intellect*. Proceedings of Russian Academy of Sciences, **354**(3), pp. 320-323.

- Perlovsky, L.I., Plum, C.P., Franchi, P.R., Tichovolsky, E.J., Choi, D.S., & Weijers, B. (1997). Einsteinian Neural Network for Spectrum Estimation. *Neural Networks*, **10**(9), pp.1541-46.
- Perlovsky, L.I., Schoendorf, W.H., Garvin, L.C., Chang. (1997). *Development of Concurrent Classification and Tracking for Active Sonar*. *Journal of Underwater Acoustics*, **47**(2), pp.375-388.
- Perlovsky, L.I., Schoendorf, W.H., Burdick, B.J. & Tye, D.M. (1997). *Model-Based Neural Network for Target Detection in SAR Images*. *IEEE Trans. on Image Processing*, **6**(1), pp.203-216.
- Perlovsky, L.I. (1998). *Conundrum of Combinatorial Complexity*. *IEEE Trans. PAMI*, **20**(6) pp. 666-670.
- Perlovsky, L.I., Webb, V.H., Bradley, S.R. & Hansen, C.A. (1998). *Improved ROTH Detection and Tracking Using MLANS*. *AGU Radio Science*, **33**(4), pp.1034-44.
- Perlovsky, L.I. (2002). *Physical Theory of Information Processing in the Mind: concepts and emotions*. *SEED On Line Journal*, 2002 **2**(2), pp. 36-54.
- Perlovsky, L.I. (2002). Aesthetics and mathematical theory of intellect. *Russian Academy of Sciences, Moscow, Russia: Iskusstvoznanie, Journal of History and Theory of Art*, **2**, 558-594 (Russian).
- Perlovsky, L.I. (2002). *Statistical Limitations on Molecular Evolution*. *Journal of Biomolecular Structure & Dynamics*, **19**(6), pp.1031-43.
- Perlovsky, L.I. (2004). *Integrating Language and Cognition*. *IEEE Connections*, Feature Article, **2**(2), pp. 8-12.
- Fontanari, J.F. and Perlovsky, L.I. (2004). *Solvable null model for the distribution of word frequencies*. *Physical Review E* **70**, 042901 (2004).
- Deming, R., Perlovsky, L.I. (2005). *A Mathematical Theory for Learning, and its Application to Time-varying Computed Tomography*. *New Math. and Natural Computation*. **1**(1), pp.147-171.
- Perlovsky, L.I. (2005). *Music – The First Principle. Role of music in evolution of consciousness*. *Musical Theater*, E-journal, [http://www.ceo.spb.ru/libretto/kon\\_lan/ogl.shtml](http://www.ceo.spb.ru/libretto/kon_lan/ogl.shtml)
- Perlovsky, L.I. (2006). *Toward Physics of the Mind: Concepts, Emotions, Consciousness, and Symbols*. *Phys. Life Rev.* **3**(1), pp.22-55.
- Perlovsky, L.I. (2006). *Fuzzy Dynamic Logic*. *New Math. and Natural Computation*, **2**(1), pp.43-55.



- Tikhanoff, V., Fontanari, J. F., Cangelosi, A. & Perlovsky, L. I. (2006). Language and cognition integration through modeling field theory: category formation for symbol grounding. In *Book Series in Computer Science, v. 4131*, Heidelberg: Springer.
- Deming, R.W. and Perlovsky, L.I. (2007). Concurrent multi-target localization, data association, and navigation for a swarm of flying sensors, *Information Fusion*, **8**, pp.316-330.
- Perlovsky, L.I. and Deming, R.W. (2007). *Neural Networks for Improved Tracking*, IEEE Trans. Neural Networks, **18(6)**, pp. 1854-1857.
- Perlovsky, L.I. (2007). *Cognitive high level information fusion*, Information Sciences, **177**, pp. 2099-2118.
- Fontanari, J.F. and Perlovsky, L.I. (2007). Evolving Compositionality in Evolutionary Language Games. *IEEE Transactions on Evolutionary Computations*, **11(6)**, pp. 758-769; doi:10.1109/TEVC.2007.892763
- Robert Linnehan, David Brady, John Schindler, Leonid Perlovsky, Muralidhar Rangaswamy. (2007). On the Design of SAR Apertures Using the Cram'er-Rao Bound. *IEEE Transactions on Aerospace and Electronic Systems*, **43(1)**, pp. 344-355.
- Perlovsky, L.I. (2007). *Evolution of Languages, Consciousness, and Cultures*. IEEE Computational Intelligence Magazine, **2(3)**, pp.25-39
- Perlovsky, L.I. (2007). *The Mind vs. Logic: Aristotle and Zadeh*. Society for Mathematics of Uncertainty, Critical Review, **1(1)**, pp. 30-33.
- Levine, D.S., Perlovsky, L.I. (2008). *Neuroscientific Insights on Biblical Myths: Simplifying Heuristics versus Careful Thinking: Scientific Analysis of Millennial Spiritual Issues*. Zygon, Journal of Science and Religion, **43(4)**, 797-821.
- Fontanari, J.F. and Perlovsky, L.I. (2008). How language can help discrimination in the Neural Modeling Fields framework. *Neural Networks*, **21(2-3)**, pp. 250–256
- Fontanari, J.F. and Perlovsky, L.I. (2008). *A game theoretical approach to the evolution of structured communication codes*, Theory in Biosciences, **127**, pp.205-214. e-version <http://dx.doi.org/10.1007/s12064-008-0024-1>.
- Perlovsky, L.I. (2008). *Music and Consciousness*, Leonardo, Journal of Arts, Sciences and Technology, **41(4)**, pp.420-421.
- Deming R., Schindler J., Perlovsky L. (2009). *Multitarget/Multisensor Tracking using only Range and Doppler Measurements*, IEEE Transactions on Aerospace and Electronic Systems, **45(2)**, pp. 593-611.
- Perlovsky, L.I. (2009). *Neural Mechanisms of the Mind, Aristotle, Zadeh, & fMRI*, IEEE Trans. Neural Networks, submitted 27-Jun-2008.

Fontanari, J.F., Tikhanoff, V., Cangelosi, A., Ilin, R., and Perlovsky, L.I. (2009). Cross-situational learning of object<sup>1</sup>-word mapping using Neural Modeling Fields. *Neural Networks*, 22, pp. 579-585.

Perlovsky, L.I. (2009). Language and Cognition. *Neural Networks*, 22(3), 247-257.  
doi:10.1016/j.neunet.2009.03.007.

Perlovsky, L.I. (2009). Language and Emotions: Emotional Sapir-Whorf Hypothesis. *Neural Networks*, in print. doi:10.1016/j.neunet.2009.06.034

Kozma, R., Puljic, M., and Perlovsky, L. (2009). *Modeling goal-oriented decision making through cognitive phase transitions*, New Mathematics and Natural Computation, in print.

Kovalerchuk, B. & Perlovsky, L.I. (2009). Dynamic Logic of Phenomena and Cognition. IJCNN 2009, Atlanta; Submitted for journal publication.

Perlovsky, L.I. (2009). *Science and Religion: Scientific Understanding of Emotions of Religiously Sublime*. Submitted for publication.

Perlovsky, L.I. (2009). 'Vague-to-Crisp' Neural Mechanism of Perception. IEEE Trans. Neural Networks, in print.

Perlovsky, L.I. (2009). Intersections of Mathematical, Cognitive, and Aesthetic Theories of Mind. *Psychology of Aesthetics, Creativity, and Art*, in print.

Perlovsky, L.I. (2009). Maximum Likelihood Joint Tracking and Association in a Strong Clutter. IEEE Transactions on AES, submitted 22July 2009.

Perlovsky, L.I. & Ilin, R. (2009). Computational Foundations for Perceptual Symbol System. Submitted for publication, 10-Sep-2009

Perlovsky, L.I. (2010). *The Role of Music in Evolution of the Mind and Consciousness*. Phys. Life Rev. Submitted.

## **Papers and Conference Presentations**

Perlovsky, L.I. (1980). *On Estimates of the Parameters of the Autoregressive Process: Spectrum vs. Autocorrelation Function*. American Statistical Association Annual Meeting, Houston, Texas.

Perlovsky, L.I. and Van Gelder, P. (1980). *The Biological Clock Hypothesis and Eye Movements*. Society for Mathematical Psychology Annual Meeting, Madison, Wisconsin.

Perlovsky, L.I. (1982a). *Full Waveform Sonic Log Processing*. Exxon Research Memo, Houston, Texas.

- Perlovsky, L.I. (1982b). *Lithology Identification from Sonic Waveform Log Data*. Exxon Research Report, Houston, Texas.
- Perlovsky, L.I. (1984). *Fracture Identification from Sonic Waveform Log Data*, Exxon Research Report, Houston, Texas.
- Perlovsky, L.I. (1985). *Critical Opalescence of Seismic Waves*. Distinguished Lecturer's Seminar, Columbia University, New York.
- Perlovsky, L.I. (1986b). *Efficient Estimators for Autoregressive Parameters*. SIAM meeting on Linear Systems, Boston, MA.
- Perlovsky, L.I. (1986c). *Akaike Information Criterion for Estimating the Number of Clusters*. Unpublished.
- Perlovsky, L.I. (1987a). *Antisimulation for Penetration Aids*. Final Report for Period 16 July 1986 - 15 January 1987, Phase I SBIR, for HQ, Ballistic Missile Office.
- Perlovsky, L.I. (1987b). *Multiple Sensor Fusion and Neural Networks*. DARPA Neural Network Study, MIT/Lincoln Laboratory, Lexington, MA.
- Perlovsky, L.I. (1987c). *Robust Estimates for Parameters of Oscillating Systems*. SIAM 35th Anniversary Meeting, Denver, CO.
- Perlovsky, L.I. (1987d). *Pitfalls of Yule-Walker Equations*. SIAM 35th Anniversary Meeting, Denver, CO.
- Perlovsky, L.I. (1988a). *Neural Networks for Pattern Recognition and Cramer-Rao Bounds*. Boston University Engineering Seminar, Boston, MA.
- Perlovsky, L.I. (1988b). *Neural Networks for Sensor Fusion and Adaptive Classification*. First Annual International Neural Network Society Meeting, Boston, MA.
- Perlovsky, L.I. (1988e). *Field Theoretical Model of Acoustic Propagation with Rough Boundaries*. Report # NRC-TR-88-103, prepared for the Navy under contract No. N66001-88-C-0150.
- Perlovsky, L.I. (1989a). *Antisimulation for Penetration Aids*. Technical Report for Period of 16 May 1988 - 15 May 1989, Phase II SBIR, for HQ, Ballistic Systems Division.
- Perlovsky, L.I. (1989c). *Neural Network for Adaptive Processing of Quantum Limited Images*. Optical Society of America Topical Meeting on Quantum Limited Image and Information Processing II, North Falmouth, MA.
- Perlovsky, L.I. (1989d). *Neural Networks with Maximal Adaptive Efficiency*. Proceedings of the 1989 IEEE International Conference on Systems, Man, and Cybernetics, Cambridge, MA.

Garvin, L., Marzetta, T. and Perlovsky, L. (1989). *Fusion and Effects of Fusion on Exoatmospheric Discrimination (U)*, Proceedings of 1989 Tri-Service Data Fusion Symposium.

Perlovsky, L.I. & Marzetta, T.L. (1989). *Estimating a Covariance Matrix in a Sensor Fusion Problem*. Proceedings of Second Biennial Acoustics, Speech, and Signal Processing Mini Conference, IEEE Central New England Council.

Perlovsky, L.I. & McManus, M.M. (1989). *Maximum Likelihood Neural Network for Adaptive Classification*. International Joint Conference on Neural Networks, Washington, DC.

Perlovsky, L.I. (1990a). *Self-learning ATR Based on Maximum Likelihood Artificial Neural System*. Research Conference on Neural Networks for Automatic Target Recognition, Boston University, Tyngsboro, MA.

Perlovsky, L.I. (1990b). *Development of Neural Networks for Adaptive Classification and Sensor Fusion*. Ballistic Missile Discrimination Workshop, MIT/Lincoln Laboratory, Lexington, MA.

Perlovsky, L.I. (1990c). *Application of Neural Networks to Transient Signal Classification*. Government Neural Network Application Workshop, NOSC, San Diego, CA.

Perlovsky, L.I. (1990d). *ATR Performance Prediction Model Development using Maximum Likelihood Artificial Neural System*. ATR System and Technology Conference, NWSC, Silver Springs, MD.

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