CURRICULUM VITAE

Ausra Saudargiene

PERSONAL INFORMATION

Work address: Laboratory of Biophysics and Bioinformatics, Institute of Neurosciences of the Lithuanian University of Health Sciences, Eiveniu street 4, LT-50009, Kaunas, Lithuania

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EDUCATION

2001   PhD Informatics, Institute of Mathematics and Informatics, Vilnius University, Vilnius, Lithuania

ACADEMIC EMPLOYMENT

2016 –   Researcher, Laboratory of Biophysics and Bioinformatics, Institute of Neuroscience, Lithuanian University of Health Sciences, Kaunas, Lithuania

2017 –   Professor, Department of Informatics, Vytautas Magnus University, Kaunas, Lithuania

2007–2017   Associate Professor, Department of Informatics, Vytautas Magnus University, Kaunas, Lithuania;
Associate Professor, Faculty of Natural Sciences, Vilnius University, Vilnius, Lithuania

2004–2007   Lecturer, Department of Informatics, Vytautas Magnus University, Kaunas, Lithuania

2002–2004   Researcher, Computational Neuroscience group, Institute of Neuronal Computational Intelligence and Technology, University of Stirling, Scotland, UK.

SELECTED PUBLICATIONS

ISI WOS journals:

1. Hasselmo ME, Alexander AS, Hoyland A, Robinson JC, Bezaire MJ, Chapman GW, Saudargiene A, Carstensen LC, Dannenberg H. The unexplored territory of neural models: Potential guides for exploring the function of metabotropic neuromodulation. Neuroscience. 2020 Apr 8.
2. Bunevicius A, Laws ER, Saudargiene A, Tamasauskas A, Iervasi G, Deltuva V, Smith TR, Bunevicius R. Common genetic variations of deiodinase genes and prognosis of brain tumor patients. Endocrine. New York : Humana Press. ISSN 1355-008X. eISSN 1559-0100. 2019, vol. 66, no. 3, p. 563-572.
3. Raskinis G., Paskauskaite G., Saudargiene A., Kazlauskiene A., Vaiciunas A. Comparison of phonemic and graphemic word to sub-word unit mappings for Lithuanian automatic speech recognition. Informatica. 2019; Vol. 30, No. 3, 573-593.
4. Butnorienė J, Steiblienė V, Saudargienė A, Bunevičius A. Does Presence of Metabolic Syndrome Impact Anxiety and Depressive Disorder Screening Results in Middle Aged and Elderly Individuals? A Population Based Study. BMC Psychiatry. 2018; 8(1): 1-10.
5. Saudargienė A, Cobb S, Graham BP. A computational study on plasticity during theta cycles at Schaffer collateral synapses on CA1 pyramidal cells in the hippocampus. Hippocampus. 2015; 25(2):208-18.
6. Saudargienė A, Graham BP. Inhibitory control of site-specific synaptic plasticity in a model CA1 pyramidal neuron. Biosystems. 2015; 130:37-50.
7. Butnorienė J, Bunevičius A, Saudargienė A, Nemeroff CB, Norkus A, Cicėnienė V, Bunevičius R. Metabolic syndrome, major depression, generalized anxiety disorder, and ten-year all-cause and cardiovascular mortality in middle aged and elderly patients. International Journal of Cardiology. 2015; 16;190:360-366.
8. Graham BP, Saudargienė A, Cobb S. Spine head calcium as a measure of summed postsynaptic activity for driving synaptic plasticity. Neural Computation. 2014; 26(10):2194-222.
9. Saudargienė A, Porr B, Wörgötter F. Local learning rules: predicted influence of dendritic location on synaptic modification in spike-timing-dependent plasticity. Biolical Cybernetics. 2005; 92(2):128-138.
10. Saudargienė A, Porr B, Wörgötter F. Synaptic modifications depend on synapse location and activity: a biophysical model of STDP. Biosystems. 2005; 79(1-3):3-10.
11. Saudargienė A, Porr B, Wörgötter F. How the shape of pre- and postsynaptic signals can influence STDP: A biophysical model. Neural Computation. 2004; 16:595-626.
12. Raudys Š, Saudargiene A. First-order tree-type dependence between variables and classification performance. IEEE Transactions on Pattern Analysis and Machine Intelligence. 2001; 23(2):233-239.
13. Saudargienė A. Structurization of the covariance matrix by process type and block-diagonal models in the classifier design. Informatica, Inst. of Mathematics and Informatics press, Vilnius, 1999; 10(2):245-269.

Other peer-reviewed journals

1. Jackevicius R, Saudargiene A, Graham BP. Influence of NMDA and GABA synaptic dysfunction on the evoked gamma oscillations in a computational model of schizophrenia. Biologija. 2017. 63 (2): 202–210.

2. Saudargiene A, Jackevicius R, Graham BP. Interplay of STDP and Dendritic Plasticity in a Hippocampal CA1 Pyramidal Neuron Model. Proc. of the 26th International Conference on Artificial Neural Networks, 11-15 September 2017, Alghero, Sardinia, Italy. Springer-Verlag Lecture Notes in Computer Science, 381-388.

3. Havela R, Manninen T, Saudargiene A, Linne ML. Modeling Neuron-Astrocyte Interactions: Towards Understanding Synaptic Plasticity and Learning in the Brain. Proc. of the 2017 International Conference on Intelligent Computing, 7-10 August 2017, Liverpool, UK. Springer-Nature volume: Lecture Notes in Computer Sciences.

4. Graham BP, Saudargiene A, Cobb S, Vida, I. Associational learning in cortical pyramidal cells. Proc. of the 11th UK Workshop onComputational Intelligence, Manchester, UK, 7-9 September 2011. University of Manchester, 2011; 74-79.

5. Jackevicius R, Saudargiene A. Computational modelling of dependence of synaptic plasticity on NMDA subunit type. Proc. of the International conference Virtual Instruments in Biomedicine, Klaipeda, Lithuania, 20 May 2011. Klaipeda University, 2011; 140-146

6. Demcenko A, Tamosiunaite M, Vidugiriene A, and Saudargiene A. Vehicle's Steering Signal Predictions Using Neural Networks. Proc. of the 2008 IEEE Intelligent Vehicles Symposium, 2008, Eindhoven, Netherlands, June 4-6, 2008, New York, USA, 2008; 1181-1186.

7. Mikalauskas V, Kulakiene I, Saudargiene A. Static 99mTc-tetrofosmin scintigraphy predicts chemotherapy response in small cell lung cancer. European Journal of Nuclear Medicine and Molecular Imaging, 2006; 14 (33), p.26.

8. Wörgötter F, Porr B, Saudargiene A. Analytical calculation of weights in temporal sequence learning. Proc. of the 6th International Workshop Neural Coding, Marburg, Germany, 23-28 August, 2005; 16-19.

9. Porr B, Saudargiene A, Wörgötter F. Analytical solution of spike-timing dependent plasticity based on synaptic biophysics. Advances in Neural Information Processing Systems 16, MIT Press. 2004; 1343-1350.

10. Saudargiene A, Porr B, Wörgötter F. Biologically inspired artificial neural network algorithm which implements local learning rules. Proc. of the IEEE International Symposium on Circuits and Systems, Vancouver, Canada, 23-26 May, 2004.

11. Wörgötter F, Porr B, Saudargiene A. A biophysical model of Spike-timing-dependent plasticity. Proc. of the 5th International Workshop Neural Coding, Aula, Italy, 2003; 16-19.

12. Saudargiene A, Wörgötter F, Porr B. A model of Spike-timing-dependent plasticity based on the Isotropic sequence order learning algorithm. Proc. of the Sixth IBRO World Congress of Neuroscience, Prague, Czech Republic. 2003; p.428.

13. Saudargiene A, Porr B, Wörgötter F. Biophysical evaluation of a linear model for temporal sequence learning: ISO-learning revisited. Proc. of the 29th Göttingen Neurobiology Conference and the 5th Meeting of the German Neuroscience Society darbai, Giottingen, Germany, 2003; 716-717.

14. Saudargiene A, and Korsakas S. Artificial neural networks for assessment of sudden cardiac death risk markers. Proc. of International Conference Medical and Biological Engineering and Computing, Pula, Croatia, 12 June, 2001; 858-861.
15. Raudys S, Saudargiene A, and Povilonis E. A bias evaluation in model selection. Proc. of the 2nd International Conference Neural Networks and Artificial Intelligence, Minsk, Belarus, 2-5 October, 2001; 153-157.
16. Raudys S, and Saudargiene A. A tree-type dependence model in statistical and neural classification. Proc. of the 5th Conference Neural Networks and Soft Computing, Zakopane, Poland, 6-10 June, 2000; 273-278.
17. Raudys S. and Saudargiene A. Structures of the covariance matrix in the classifier design. Advances in Pattern Recognition (Proc. SPR'98, Sydney, Australia, August 1998 Springer publication), 1998; 583-592.
18. Saudargiene A, Raudys S. Integration of the statistical and neural approaches used to build a linear classifier. Proc. of the NATO conference Modulation of Neuronal Signaling: Implications for Visual Perception darbai, Nida, Lithuania, 2000; 72.

Book chapter:

Saudargienė A, Graham BP. Factors affecting STDP learning rules in the dendrites of CA1 pyramidal cells. Hippocampal Microcircuits: A Computational Modeler's Resource Book. Springer Series in Computational Neuroscience. 2018.

Textbooks:

1. Vaitkevičius, R., Saudargienė A. (2010). Analysis of psychological data. Textbook. Kaunas: Vytautas Magnus University, ISBN 9789955125617.
2. Vaitkevičius, R., Saudargienė A. (2006). Statistics with SPSS. Textbook. – Kaunas: Vytautas Magnus University, ISBN 9955-12-138-6.

INVITED TALKS

1. Saudargienė A. Modeling synaptic plasticity at molecular, celular and network levels. Workshop Synaptic Plasticity, European Institute for Theoreical Neuroscience, Paris, France, 14-15 January 2020.
2. Saudargienė A. Learning, memory and synaptic plasticity in dendrites. 7th Baltic-Nordic Summer School on Neuroinformatics 'Modeling Healthy and Diseased Brain: From Dendrites to Neurons and Networks', Frankfurt Institute for Advanced Studies, Frankfurt, Germany, 28-30 August 2019.
3. Saudargienė A. Mathematics in Neuroscience. LIX Conference of Lithuanian Mathematical Society, Kaunas, Lithuania, 18 June 2018.
4. Saudargienė A. Learning, memory and synaptic plasticity. 6th Baltic-Nordic Summer School on Neuroinformatics Baltic-Nordic Summer School on Neuroinformatics 'Understanding the Brain: from Neuroscience to Deep Learning'. Ventspils University of Aplied Sciences, Ventspils, Latvia, 11-13 June 2018.

5. Saudargienė A. Learning in hippocampal CA1 associative networks. Hippocampal Neuronal Oscillations: mechanisms and functionality. Computational Neuroscience Meeting, Antwerpen, Belgium, 15-20 July 2017.
6. Saudargienė A. Synaptic plasticity in health and disease: computational models. 4th Baltic-Nordic Summer School on Neuroinformatics 'Understanding neurons, cognition and behaviour in health and disease through neuroinformatics'. Nencki institute of experimental biology, University of Warsaw, Poland, 15-18 June 2016.
7. Saudargienė A. Models of synaptic plasticity. 3rd Baltic-Nordic Summer School on Neuroinformatics 'Multiscale Computational Neuroscience: Neurons, Networks and Systems'. University of Tartu, Estonia, 15-19 June 2015.
8. Saudargienė A. Computational evidence for inhibitory control of learning during theta cycles at Shaffer collateral synapses on CA1 pyramidal cells. Spring Hippocampal Research Conference. Taormina, Sicily, Italy, 7-11 June 2015.
9. Saudargiene A, Linne ML. The Human Brain Project: advancing future neuroscience, medicine and computing. 6th Annual Conference of Lithuanian Neuroscience Association, Vilnius, Lithuania, 5 December 2014.
10. Saudargienė A. Computational modeling of learning and memory. 2nd Baltic-Nordic Summer School on Neuroinformatics 'Integrating Multimodal, Multidimensional Data into Models'. Tampere, Finland, 10-13 June 2014.
11. Saudargienė A. Models of synaptic plasticity. 1st Baltic-Nordic Summer School on Neuroinformatics: Computations in the Brain and Translational Neuroscience, Kaunas, Lithuania, 29-31 May 2013.
12. Saudargienė A., Graham P.B. Synaptic plasticity during theta cycles at the CA3-CA1 synapses: a multiscale modelling approach. 2nd UK INCF (Neuroinformatics) Node Congress, Edinburgh, UK, 24-27 March 2012.
13. Saudargienė A. A biophysical model of Spike-timing-dependent plasticity. 5th International Workshop Neural Coding, Aulla, Italy, 20-25 September 2003.
14. Saudargienė A. Local rules of synaptic modification. International conference Spike-Timing Dependent Plasticity, Monte Verità, Askona, Switzerland, 29 February-5March 2004.
15. Saudargienė A. Synaptic modifications depend on synapse location and activity: a biophysical model of STDP. International conference Neural Coding, Aula, Italy, 20-25 September 2003.

REVIEWER

Journal of Biological Dynamics, PLOS Computational Biology, European Journal of Neuroscience, Frontiers in Neuroinformatics, Informatica.

RESEARCH GRANTS/PROJECTS

Current:

2020-2023   Multiscale Modelling of Impaired Learning in Alzheimer's Disease and Innovative Treatments", FLAG-ERA, the Flagship ERA-NET Joint Transnational Call JTC 2019 in synergy with the Human Brain Project (Coordinator).

2019-2020   Multiscale Hippocampal Models for Neuronal Plasticity: Integration to the Brain Simulation Platform - HippoPlasticity, EU programme Horizon 2020 Human Brain Project Partnering Project

2020-2021   Determinants of quality of life in Lithuanian students: problematic usage of the Internet and neuropsychological profile, funded by the Research Council of Lithuania under the National Research Program „Welfare society".

Past:

2018-2019   Mobile internet application for mindfulness based cognitive behavioural therapy. Research Council of Lithuania, No 09.3.3-LMT-K-712-10-0194 (Principlal Investigator).

2018   Synaptic and dendritic dysfunction in Alzheimer's disease: computational and experimental neuroscience perspectives in understanding the dynamics of neurodegenerative processes. German Academic Exchange Service (DAAD), funds from the Foreign Office of the Federal Republic Germany (Principal Investigator).

2016-2018   Network models including neuron-glia interactions. Project name: EU FET Flagship Human Brain Project. Project ID: 650003. Call: H2020-FETFLAG-2014. Programme:H2020. Coordinator: Ecole Polytechnique Federale de Lausanne, Switzerland. Beneficiary: Tampere University of Technology, Finland. Official collaborator of the SubProject SP4 Theoretical Neuroscience, Work package P4.2 Generic Models of Brain Circuits, Task 4.2.2 Network models including neuron-glia interactions.

2017   5th Baltic-Nordic Summer School on Neuroinformatics BNNI 2017 Theoretical modelling of brain functions in neurological and psychiatric disorders: Advancing future neuroscience and medicine through Neuroinformatics methods, Lithuanian University of Health Sciences, Kaunas, Lithuania, 6-7 October 2017 (Principal Investigator).

2014-2015   Models of neuron-astrocyte interaction. Project name: EU FET Flagship Human Brain Project. Project ID: 650003. Call: H2020-FETFLAG-2014. Programme: H2020. Coordinator: Ecole Polytechnique Federale de Lausanne, Switzerland. Beneficiary: Tampere University of Technology, Finland. Official collaborator of the SubProject SP4 Theoretical Neuroscience, Work package P4.2 Generic Models of Brain Circuits, Task 4.2.2 Models of neuron-astrocyte interaction.

2010-2011   Computational modelling of synaptic plasticity in hippocampal CA1 pyramidal neuron. Research Council of Lithuania, No MIP-93/2010 (Principal Investigator).

2007-2008   Learning to emulate perception action cycles in a driving school scenario (DRIVSCO, FP6-IST-FET, contract 016276-2), 6th Framework Program.

PROFESSIONAL DEVELOPMENT

1. Research visit at the Center for Memory and Brain, Boston University, Boston, US, funded through the Research Council of Lithuania, 19 September – October 1, 2019.
2. First Lithuanian Brain-machine Interface symposium & Workshop "Stepping into the Future – a Multi-Disciplinary Approach to Brain-Machine Interaction", Vilnius, Lithuania, 4-5 May 2018.
3. 2nd meeting of Baltic Physiological Societies New frontiers in neurophysiology and neurology, 23-24 March 2017, Kaunas, Lithuania.
4. Human Brain Project Workshop Neuron-glia interaction, European Institute of Theoretical Neuroscience, Paris, France, 10-11 December 2015.
5. XIVth Annual Scientific Conference in Memory of Doctor Habilitus Robertas Bunevicius: The Future of Psychoneuroendocrinology in Lithuania, Palanga, Lithuania, 24 April 2014.
6. International Neuroinformatics Coordinating Facility Short Course on Neuroinformatics, Technical University of Munich, Germany, 7-8 September, 2013.
7. Practical course EEG and evoked potentials, Faculty of Natural Sciences, Vilnius University, 26-28 September 2013.
8. Summer Institute in Cognitive Neuroscience, Santa Barbara, USA, 22 June - July 4, 2009.
9. Observership, Prof. O.Paulsen's Laboratory on Network Oscillations and Synaptic Plasticity in Cortical Circuits, Department of Physiology, Anatomy and Genetics, Univerity of Oxford, UK, 30 March - 2 April 2009.
10. International Symposium Looking at the gene orchestra: tools for timing, international conference Genes at work on time, Turin, Italy, 15-17 October 2008.
11. Summer School of Dendrites, Hebrew University of Jerusalem, Jerusalem, Israel, 9-14 April 2005.
12. Okinawa Computational Neuroscience Course Bayesian Brain: Probabilistic Approaches to Neural Coding and Learning, Okinawa, Japon, 9-19 November 2004.
13. IBRO Summer School Advanced Course in Computational Neuroscience, Obidos, Portugal, 15 August – 11 Spetember 2004.
14. International conference Modelling of Neuronal Dendritic Trees: Application of Mathematics to Neural Dynamics and Computation. Edinburgh, UK , 18 June 2004.

AWARDS

2013   INCF (International Neuroinformatics Coordination Facility) scholarship to attend the INCF Short Course in Munich, Germany.
2012   Fields Institute, University of Toronto scholarship to attend a programme 'Towards Mathematical Modeling of Neurological Disease from Cellular Perspectives', University of Toronto, Canada.
2009   Vilnius University scholarship to attend Summer Institute in Cognitive Neuroscience, University of California, US.
2008   Swiss Foundation scholarship to attend the international conference Computations in Cortical Circuits, Monte Verità, Askona, Switzerland.

2005 The Hebrew University of Jerusalem scholarship to attend School of Dendrites, Jeruzalem, Israel.

2004 Organization for Computational Neuroscience scholarship to attend Summer School Okinawa Computational Neuroscience Course: Bayesian Brain, Okinawa, Japan.

2004 IBRO scholarship to attend Summer School Advanced Course in Computational Neuroscience, Obidos, Portugal.

ORGANIZATIONAL ACTIVITIES

1. 8th Baltic-Nordic Summer School on Neuroinformatics 'Neuroscience of Learning and Decision Making', Royal Institute of Technology, Stockholm, Sweden, December 2020. Member of the organizing and scientific committee.

2. XI Annual Conference of Lithuanian Neuroscience Association, Kaunas, Lithuania, 6 December 2019. Member of the organizing committee.

3. 7th Baltic-Nordic Summer School on Neuroinformatics 'Modeling Healthy and Diseased Brain: From Dendrites to Neurons and Networks', Frankfurt Institute for Advanced Studies, Frankfurt, Germany, 28-30 August 2019. Member of the organizing and scientific committee.

4. X Annual Conference of Lithuanian Neuroscience Association, Vilnius, Lithuania, 30 October-1 December 2018. Member of the organizing committee.

5. International workshop 'Understanding dynamics of neurodegenerative diseases: integrating computational and experimental neuroscience', Lithuanian University of Health Sciences, Kaunas, Lithuania, 20 September 2018. Organizer.

6. 6th Baltic-Nordic Summer School on Neuroinformatics ' Understanding the Brain: from Neuroscience to Deep Learning' . Ventspils University of Technology, Ventspils, Latvia, 11-13 June 2017. Member of the organizing and scientific committee.

7. IX Annual Conference of Lithuanian Neuroscience Association, Lithuanian University of Health Sciences, Kaunas, Lithuania, 1 December 2017. Member of the organizing committee.

8. 5th Baltic-Nordic Summer School on Neuroinformatics 'Theoretical modelling of brain functions in neurological and psychiatric disorders: Advancing future neuroscience and medicine through Neuroinformatics methods' . Lithuanian University of Health Sciences, Kaunas, Lithuania, 6-7 October 2017. Chair of the organizing committee.

9. 4th Baltic-Nordic Summer School on Neuroinformatics 'Understanding neurons, cognition and behaviour in health and disease through neuroinformatics'. Nencki institute of experimental biology, University of Warsaw, Poland, 15-18 June 2016. Member of the organizing and scientific committee.

10. International Human Brain Project workshop Neuromorphic systems and Models of Neuron-Astrocyte Interactions, Vilnius, 25 November 2015. Chair of the organizing committee.

11. 3rd Baltic-Nordic Summer School on Neuroinformatics 'Multiscale Computational Neuroscience: Neurons, Networks and Systems'. University of Tartu, Estonia, 15-19 June 2015. Member of the organizing and scientific committee.

12. 2nd Baltic-Nordic Summer School on Neuroinformatics 'Integrating Multimodal, Multidimensional Data into Models'. Tampere University of Technology, Finland, 10-13 June 2014. Member of the organizing and scientific committee.
13. 1st Baltic-Nordic Summer School on Neuroinformatics: Computations in the Brain and Translational Neuroscience, Vytautas Magnus University, Kaunas, Lithuania, 29-31 May 2013. Member of the organizing and scientific committee.
14. INCF International Workshop Neuroscience and Information Technology. Vytautas Magnus University, Kaunas, Lithuania, 2 February 2012. Chair of the organizing committee.

PROFESSIONAL SOCIETIES

2016 –   Member of International Neuroinformatics Coordinating Facility Training and
               Education Committee
2009 –   Lihuanian Neuroscience Associaction
2011   Organization for Computational Neuroscience
2016, 2018   Society fo Neuroscience

RESEARCH INTERESTS

Cognitive and Computational Neuroscience, Statistical Data Analysis, Artificial Neural Networks