

Arkady Zgonnikov

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Education

Ph.D. in Computer Science and Engineering, October 2011 – September 2014, University of Aizu, Japan

Specialist (M.Sc.) in Applied Mathematics and Computer Science, September 2004 – June 2009, Saint-Petersburg State University, Russia

Academic work experience

Postdoctoral Researcher

AiTech and Department of Cognitive Robotics, Faculty 3mE, Delft University of Technology
June 2019 – ...

Postdoctoral Researcher

School of Computer Science and Engineering, University of Aizu
October 2014 – September 2015, August 2017 – March 2019

Postdoctoral Researcher

School of Psychology, National University of Ireland, Galway
October 2015 – August 2017

Journal papers

Boyce, W.P., Lindsay, T., Zgonnikov, A., Rano, I., Wong-Lin, K. (2020) Optimality and limitations of audio-visual integration for cognitive systems. *Frontiers in Robotics and AI*, 7, 94.

Atiya, N.*, Zgonnikov, A.*, O'Hora, D., Schoemann, M., Scherbaum, S., Wong-Lin, K. (2020) Changes-of-mind in the absence of new post-decision evidence. *PLoS Computational Biology*, 16(2), e1007149

*co-first authors

Zgonnikov, A., Atiya, N., Rano, I., O'Hora, D., Wong-Lin, K. (2019) Beyond reach: Do symmetric changes in motor costs affect decision making? A registered report. *Judgment and Decision Making*, 14(4), 455–469

Zgonnikov, A., Aleni, A., Piironen, P.T., O'Hora, D., di Bernardo, M. (2017) Decision landscapes: visualizing mouse-tracking data. *Royal Society Open Science*, 4(11), 170482

Zgonnikov, A., Lubashevsky, I. (2015) Double-well dynamics of noise-driven control activation in human intermittent control: the case of stick balancing. *Cognitive Processing*, 16(4), 351–358

Zgonnikov, A., Lubashevsky, I., Kanemoto, S., Miyazawa, T., and Suzuki, T. (2014) To react or not to react? Intrinsic stochasticity of human control in virtual stick balancing. *Journal of the Royal Society Interface* 11(99), 20140636

Zgonnikov, A. and Lubashevsky, I. (2014) Unstable dynamics of adaptation in unknown environment due to novelty seeking. *Advances in Complex Systems* 17(03n04), 1450013

Zgonnikov, A. and Lubashevsky, I. (2014) Extended phase space description of human-controlled systems dynamics. *Progress of Theoretical and Experimental Physics* 2014(3), 033J02

Manuscripts under review

Zgonnikov, A., Abbink, D., Markkula, G. Should I stay or should I go? Evidence accumulation drives decision making in human drivers, *under review*, preprint available at <https://psyarxiv.com/p8dxn/>

- Roche, J., Zgonnikov, A., Ferguson, A. *Tit-for-Tat: The Effect of Miscommunication on Language Processing Effort and Decision Making Complexity*, *under review*, preprint available at <https://psyarxiv.com/saj4z/>
- Garcia-Guerrero, S., O'Hora, D., Zgonnikov, A., Scherbaum, S. *Action dynamics of approach-avoidance in decision making*, *under review*, preprint available at <https://psyarxiv.com/4658p/>
- Suzuki, T., Lubashevsky, I., Zgonnikov, A. *Complexity of human response delay in intermittent control: The case of virtual stick balancing*, *under review*, preprint available at <https://arxiv.org/abs/1808.05002>

Selected peer-reviewed conference papers

- Zgonnikov, A. and Markkula, G. (2018) *Evidence accumulation account of human operators' decisions in intermittent control during inverted pendulum balancing*. *IEEE International Conference on Systems, Man and Cybernetics (SMC)*, pp. 712-717
- O'Hora, D., Redfern, S., Duran, N., Zgonnikov, A. and Sweeney, D. (2018) *In-Game Motion Dynamics Provide a Means of Exploring the Cognitive Dynamics of Deception*. *IEEE Games, Entertainment, Media Conference (GEM)*, pp. 463-470
- Zgonnikov, A., Aleni, A., Piironen, P.T., and O'Hora, D. (2017) *Using mouse-tracking data to visualise decision landscapes*, *Annual Conference of the Cognitive Science Society (CogSci)*, pp. 1424 – 1429
- Zgonnikova, I., Zgonnikov, A. and Kanemoto, S. (2016) *Stick must fall: Using machine learning to predict human error in virtual balancing task*. *IEEE International Conference on Data Mining (ICDM), Workshop on Data Mining for the Analysis of Performance and Success*, pp. 173-177
- Zgonnikov, A., Lubashevsky, I., Kanemoto, S., and Suzuki, T. (2015) *How the type of visual feedback affects actions of human operators: the case of virtual stick balancing*. *IEEE International Conference on Systems, Man and Cybernetics (SMC)*, pp. 1100-1103
- Zgonnikov, A., Lubashevsky, I., Kanemoto, S. (2014) *To react or not to react? A double-well potential model of event-driven human control*, *Annual Conference of the Cognitive Science Society (CogSci)*, pp. 3155–3160
- Zgonnikov, A., Lubashevsky, I. (2013) *Intrinsically motivated reinforcement learning in socio-economic systems: the dynamical analysis*, *IEEE International Conference on Development and Learning and Epigenetic Robotics (ICDL-EPIROB)*, pp. 1–2
- Zgonnikov, A., Lubashevsky, I. (2013) *Unstable dynamics of intrinsically motivated learning*, *Annual Conference of the Cognitive Science Society (CogSci)*, pp. 3853-3857
- Zgonnikov, A., Lubashevsky, I. (2013) *Choice oscillations caused by boredom effect in human learning model*, *IEEE Conference on Systems, Man and Cybernetics (SMC)*, pp. 1785–1787

See the complete list of publications and presentations at <http://zgonnikov.net/publications>

Grants & awards

- GPU Research Grant** by NVidia corporation, €3K, 2019
- Government of Ireland Postdoctoral Fellowship** by Irish Research Council, 2015 – 2017, €94K
Rated in the top 80 of 535 applicants (15% success rate)
- PhD Scholarship (Monbukagakusho)** by the Ministry of Education of Japan, 2011–2014, €54K
- Diploma cum laude**, average grade 4.9 out of 5, Saint-Petersburg State University, 2009

Teaching

Guest lecturer, School of Computer Science and Engineering, University of Aizu

Discrete mathematics, 2015 (3 lectures), 2018 (1 lecture)

Probability and statistics, 2018 (3 lectures)

Applied statistics, 2018 (2 lectures)

Computer simulation of stochastic processes, 2018 (2 lectures)

Teaching assistant, Faculty 3mE, TU Delft

Human controller (2019–2020)

Applied experimental methods (2019–2020)

Teaching assistant, School of Computer Science and Engineering, University of Aizu

Discrete mathematics (2012–2013), Distributed computing (2011–2013)

Supervision

Co-supervisor of **2 PhD students**

Takashi Suzuki (School of Computer Science and Engineering, University of Aizu, 2017 – 2019)

Santiago Garcia-Guerrero (School of Psychology, NUI Galway, 2015 – 2017)

Daily supervisor of **8 BSc** and **7 MSc students**

Department of Cognitive Robotics, Faculty 3mE, TU Delft, 2020 – ...

School of Computer Science and Engineering, University of Aizu, 2012 – 2019

School of Psychology and School of Mathematics, Statistics & Applied Maths, NUI Galway, 2016 – 2017

Academic service

Organizer of **AiTech Agora seminars**, TU Delft, Netherlands, 2020

Organizer of **1st AiTech Symposium**, TU Delft, Netherlands, 2019

Organizer of **Special Session on Computational Awareness**, IEEE International Conference on Systems, Man, and Cybernetics, Miyazaki, Japan, 2018

Organizer of **36th Meeting of the European Group of Process Tracing Studies**, Galway, Ireland, 2017

Ad-hoc reviewer for journals: *Journal of the Royal Society Interface*, *Cognition*, *Behavior Research Methods*, *Advances in Complex Systems*, *IEEE Access*

Regular reviewer for conferences: *Annual Meeting of the Cognitive Science Society (CogSci)*, *IEEE International Conference on Systems, Man, and Cybernetics (SMC)*, *ACM CHI Conference on Human Factors in Computing Systems (SIGCHI)*

Industry experience

Three years of experience in software development as an engineer and systems analyst.

Head of Systems Analysis, Ittilan, Saint-Petersburg, Russia, August 2010–September 2011

Systems Analyst, PetroMS, Saint-Petersburg, Russia, October 2008–December 2009

Software Engineer, Exigen Services, Saint-Petersburg, Russia, August 2007–March 2008