

# Sofia Krasovskaya

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## Personal

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## Education

- PhD programme 2018 - present  
HSE University, University of Iceland (Psychophysiology)  
Supervisors: W. J. MacInnes and Á. Kristjánsson  
Thesis title: “Improvement of Spatiotopic Models of Vision with Retinotopic Input and Vector-based Saccadic Generation”
- Master’s programme 2016 - 2018  
HSE University (Cognitive Sciences and Technologies: from Neuron to Cognition)  
Supervisor: W. J. MacInnes  
Thesis title: “Deep Learning Neural Nets as a Model of Saccadic Generation”
- Undergraduate programme 2009 - 2013  
Moscow State Linguistic University (Linguistics)  
Supervisor: N. B. Tsibulya  
Thesis title: “The Correlation Between Prosodic and Non-Verbal Means in Cross-cultural Communication”

## Research Experience

- HSE University – Research Assistant  
During the study period, I aided Dr. Joseph MacInnes in organizational issues, as well as data collection and eye-tracking research within the project for the creation of salient models of vision.
- HSE University – member of the ‘Attention, Computational Models and Eye Movements’ Research and Study Group’  
Contributed to research regarding salience, Leaky integrate-and-fire algorithms and eyetracking.

- HSE University – member of the Vision Modelling Laboratory

## Teaching Experience

- Introduction to Psychology for Bachelors (Linguists, 2 year) (Nov-Dec 2020)
- Vision Modelling Lab seminars (2018 – present)
- Icelandic Vision Lab seminars (2019-present)
- Eyetracking Methods and Techniques: Practical Seminars
- Invited lecturer for the Sirius Programme Eyetracking in reading class

## Work Experience

Junior researcher Vision Modelling Lab, HSE University	2021 - present
Research Assistant Vision Modelling Lab, HSE University	2018 - 2021
Foreign Affairs Manager, Interpreter “Moscow’s Media Dome” (former LLC “Synthesis”, Tesla.Place)	October 2014 – March 2016
Assistant International Events Manager “Moscow Raceway” Racetrack	March 2014 – October 2014
Analyst, Translator Construction and Design Bureau “Almaz-Antei”	August 2013 – November 2013
English language tutor (Freelance)	2010 – present
Translator/Interpreter (Freelance)	2009 – present

## Publications

- Krasovskaya S., Kristjánsson Á., MacInnes W. J. (In prep.) Microsaccade Suppression as a Measure of Oculomotor Inhibition in the Antisaccade Task.
- Krasovskaya S., Kristjánsson Á., MacInnes W. J. (In press). The Effect of Task Difficulty on the Dynamics of Functional Field of View Adaptability. *43rd European Conference on Visual Perception ECVP, 2021.*

- Krasovskaya S., Zhulikov G., MacInnes W. J. (2021). Deep Learning Neural Networks as a Model of Saccadic Generation. *Center for Open Science. Series "PsyArXiv Preprints"*.
- Merzon L., Malevich T., Zhulikov G., Krasovskaya S., MacInnes W. J. (2020). Temporal limitations of the standard Leaky integrate and fire model. *Brain Sciences. Vol. 10. No. 1. P. 1-19*
- Krasovskaya S., Kristjánsson Á., MacInnes W. J. (2019). The Effect of the Antisaccade Task on Microsaccade Suppression in the Posner Cueing Paradigm. *Book of abstracts: XVI European congress of psychology (ECP 2019) (2–5 July, 2019, Lomonosov Moscow State University, Moscow). M. : Moscow University Press, 2019. Ch. 3. P. 1866-1866.*
- Krasovskaya S., Kristjansson A., MacInnes W. J. (2019). Poster Session I, Poster 06, Microsaccade suppression during antisaccade generation in the posner cueing paradigm. *European Conference on Eye-Movements ECEM 2019, Alicante, Spain., 2019. Ch. 3. P. 207-207.*
- Krasovskaya S., MacInnes W. J. (2019). Saliency models: a computational cognitive neuroscience review. *Vision. Vol. 3. No. 4. P. 1-24.*
- Merzon L., Zhulikov G., Malevich T., Krasovskaya S., MacInnes W. J. (2018). Temporal Limitations Of The Standard Leaky Integrate And Fire Model. *NRU HSE Publishing House. Series WP BRP "PSYCHOLOGY". No. 94/PSY/2018.*
- Krasovskaya S., Zhulikov G., MacInnes W. J. (2018). Deep Learning Neural Networks as a Model of Saccadic Generation. *NRU HSE Publishing House. Series WP BRP "PSYCHOLOGY". No. 93/PSY/2018.*
- Krasovskaya S., Zhulikov G., Merzon L., MacInnes W. J. (2018). Temporal distribution of saccades with deep learning saliency maps. *41st European Conference on Visual Perception ECVP. Trieste, Italy, 2018*
- Krasovskaya, S., Zhulikov G., MacInnes, W. J. (2017). Training restricted Boltzmann machines to generate human-like eye movements. *European Conference of Visual Perception 2017, Berlin, Germany.* Retrieved from: <http://journals.sagepub.com/page/pec/collections/ecvp-abstracts/index/ecvp-2017>

## Conferences

- Poster presentation at the 40th European Conference on Visual Perception, *ECVP* (Berlin, Germany, 2017):  
*Presentation:* Training restricted Boltzmann machines to generate human-like eye movements.
- Poster presentation at the 41st European Conference on Visual Perception, *ECVP* (Trieste, Italy, 2018):  
*Presentation:* Temporal distribution of saccades with deep learning saliency maps

- XVI European Congress of Psychology, *ECP* (Moscow, Russia, 2019):  
*Presentation:* The Effect Of the Antisaccade Task on Microsaccade Suppression in The Posner Cueing Paradigm
- 20th European Conference on Eye Movements, *ECEM* (Alicante, Spain, 2019):  
*Presentation:* Microsaccade suppression during antisaccade generation in the Posner cueing paradigm
- Psychonomics Annual Meeting (online, 2020):  
*Presentation:* Microsaccade Suppression as a Measure of Oculomotor Inhibition in the Antisaccade Task
- 43rd European Conference on Visual Perception, *ECVP* (online, 2021):  
*Presentation:* The Effect of Task Difficulty on the Dynamics of Functional Field of View Adaptability

## **Summer Schools and other events**

- Transylvanian Machine Learning Summer School (TMLSS) (Cluj-Napoca, Romania, 2018).  
*Presentation:* Deep-Learning Neural Networks as a Model of Saccadic Generation.
- Neuromatch Academy (online, July 2020)
- Oxford Autumn School in Neuroscience (online, September 2020)
- Applied Cognitive Science Autumn School (online, October-November 2020)

## **Language Skills**

- Russian (fluent);
- English (fluent);
- French (intermediate);
- Icelandic (elementary. Currently studying);
- Malay (elementary).

## **Computer and Technical Skills**

- **MatLab:** created a deep-learning neural network for saccadic generation. Knowledge of eyetracking experiment setup using Psychtoolbox. Ability to perform debugging, data computation and analysis.

- **OpenSesame:** eyetracking experiment building and running with Eyelink 1000.
- **Python:** basic experience with neural network building using Tensorflow. Elementary computational modelling skills (in the process of learning). Experiment setup using OpenSesame, PsychoPy, which run on Python.
- **R:** knowledge of libraries such as data.table, ggplot2, car, clusterperm, BayesFactor, Rmisc, lme4, lmerTest, emmeans, dplyr, caTools . Worked on microsaccade research using the microsaccade detection toolbox by Engbert et al. (2015). Able to perform basic statistical analyses using GLME's and analysis of variance. Worked with arrays and data tables. Creating projects using R Markdown.
- **Java:** Basic knowledge of function creation in Eclipse; ability to write a small experiment with a division into trials; solving logical problems and working with strings; file reading and processing skills; basic drawing and animation skills using JPanel and Graphics2D.
- **Amos:** basic knowledge permitting to perform a confirmatory factor analysis.
- **Eyelink** eye-tracking software: able to calibrate and set up an eye-tracking experiment on human participants.
- **MatLab BrainStorm** toolbox: basic knowledge of data preprocessing, artifact rejection, ERPs, induced activity analysis and source modelling.
- **SPM12:** basic fMRI data analysis, including realignment, coregistration, segmentation, model creation and estimation and using the contrast manager.

## Other Academic Achievements

- I participated and won the HSE Olympiad Competition for University Students and Graduates in 2016.
- I am currently doing my PhD under a joint PhD programme between HSE University and the University of Iceland.
- I am a participant of the full-time Advanced Doctoral Programme at HSE University.
- I am a member of the Young Faculty Support Program (Group of Young Academic Professionals) at HSE University.

## **Other Interests**

Besides scientific interests, I enjoy improving my skills and acquiring knowledge in other various spheres of life. Some examples are:

- I am a dedicated athlete and have participated in official state swimming and squash competitions in Malaysia. I am currently a competing powerlifter in Russia;
- I am a car enthusiast, and take satisfaction in building and improving my car in my free time;
- I enjoy travelling and seeing the various wonders this planet has to offer. Besides, I love learning more about the customs, language, non-verbal behaviour and history of other cultures;
- I like gaming, knitting, meditating, reading and listening to audiobooks and podcasts in my free time.