

Ivan Sosnovik

PhD student, University of Amsterdam

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Research Interests

Computer Vision, Machine Learning, Invariance and Equivariance in Neural Networks, Representation Learning, Structured Neural Networks

Education

2017 – Present	PhD, Computer Vision , University of Amsterdam, Amsterdam, The Netherlands <i>“Learning Symmetries in Computer Vision”</i>
2015 – 2017	MSc with Honors, Applied Mathematics and Physics , Moscow Institute of Physics and Technology, Moscow, Russia Skolkovo Institute of Science and Technology, Moscow, Russia <i>“Neural Networks for Topology Optimization”</i>
2011 – 2015	BSc with Honors, Applied Mathematics and Physics , Moscow Institute of Physics and Technology, Moscow, Russia <i>“Two-dimensional system for the prior positioning of the STM”</i>

Highlights

Scholarships	<i>“Foundation for the Development of Innovation Education”</i> (2012 – 2014)
Awards	BMVC 2021 Best Paper Award [link] Kaggle <i>“Leaf Classification”</i> competition [interview] National Physics Olympiad for Students 2013 Moscow Physics Olympiad 2011 Phystech Mathematical Olympiad 2011 Phystech Physics Olympiad 2011 Moscow Mathematical Olympiad 2010 Moscow Physics Olympiad 2010

Academic Experience

Teaching	MSc course Applied Machine Learning , University of Amsterdam, 2017 – 2020 MSc, PhD course iOS Game Development , Skolkovo Institute of Science and Technology, 2016
Reviewing	ICML INNF+ 2021, ICCV 2021, ICLR 2021, WACV 2021, CVPR 2018, Computer Vision and Image Understanding, Engineering Optimization, Computer Methods in Applied Mechanics and Engineering, The Visual Computer

Academic Experience (continued)

Supervision Cees Kaandorp, Lucas Meijer, Dario E. Shehni Abbaszadeh, Dave Meijdam, Jonne Goedhart, Daan Ferdinandusse, Gongze Cao, Michał Szmaja, Jan Jetze Beitler

Work Experience

06.2021 – 10.2021 **Amazon MLSL**, Applied Science Intern
Worked on representation learning for 3D garment reconstruction.

08.2016 – 09.2016 **SAP Labs**, Intern
Developed prototypes for a smart fleet management system. Designed software and hardware solutions for tracking the engine's and the vehicle's parameters.

02.2016 – 08.2016 **Teachbase**, iOS Developer
Developed a client-server iOS application for watching educational courses. [\[link\]](#)

09.2014 – 06.2015 **P.L. Kapitza Institute for Physical Problems**, Laboratory Assistant
Studied nano-structured materials. Designed a system for the prior positioning of the needle of the scanning tunneling microscope.

Skills

Coding Python, Objective-C, Swift, C

Technical Cryogenics, Vacuum Equipment, Scanning Tunneling Microscopy

Publications

2021 S. Gulshad*, I. Sosnovik*, A. Smeulders, “*Wiggling Weights to Improve the Robustness of Classifiers*”, Preprint, 2021 [\[pdf\]](#)

 I. Sosnovik, A. Moskalev, A. Smeulders, “*DISCO: accurate Discrete Scale Convolutions*”, BMVC (**Oral**), 2021, **Best Paper Award** [\[pdf\]](#)[\[code\]](#)

 A. Moskalev, I. Sosnovik, A. Smeulders, “*Two is a Crowd: Tracking Relations in Videos*”, Preprint, 2021 [\[pdf\]](#)

 I. Sosnovik, A. Moskalev, A. Smeulders, “*How to Transform Kernels for Scale-Convolutions*”, ICCV VIPriors Workshop, 2021 [\[pdf\]](#)[\[code\]](#)

 A. Moskalev, I. Sosnovik, A. Smeulders, “*Relational Prior for Multi-Object Tracking*”, ICCV VIPriors Workshop (**Oral**), 2021 [\[link\]](#)

 S. Gulshad*, I. Sosnovik*, A. Smeulders, “*Built-in Elastic Transformations for Improved Robustness*”, Preprint, 2021 [\[pdf\]](#)

Publications (continued)

- 2020 I. Sosnovik*, A. Moskalev*, A. Smeulders, “*Scale Equivariance Improves Siamese Tracking*”, WACV, 2021 [[pdf](#)][[code](#)]
- 2019 I. Sosnovik, M. Szmaja, A. Smeulders, “*Scale-Equivariant Steerable Networks*”, ICLR, 2020 [[pdf](#)][[code](#)]
- A. Atanov, A. Volokhova, A. Ashukha, I. Sosnovik, D. Vetrov, “*Semi-Conditional Normalizing Flows for Semi-Supervised Learning*”, ICML INNF, 2019 [[pdf](#)][[code](#)]
- I. Sosnovik, I. Oseledets, “*Neural Networks for Topology Optimization*”, Russian Journal of Numerical Analysis and Mathematical Modelling, 34(4) [[pdf](#)][[code](#)]
- 2018 J.J. Beitler, I. Sosnovik, A. Smeulders, “*PIE: Pseudo-Invertible Encoder*” [[pdf](#)]