Jurijs Nazarovs

UW - Madison
Department of Statistics
Madison, WI 53703

Website: **jurijsnazarovs.github.io**
Google Scholar
E-mail: **nazarovs@wisc.edu**

RESEARCH EXPERIENCE

Amazon Alexa AI, Applied Scientist Internship May 2022 - September 2022
Robustness of Vision Language Models to linguistic variations and image manipulation. First author paper.

Microsoft Research (MSR), Research Internship May 2021 - August 2021
Developed temporal probabilistic deep learning methods for defensive cyber domain. First author paper/patent.

NEC Labs America, Research Internship May 2020 - August 2020
Proposed a new triplet-based loss function and a framework for ordinal time series classification problem robust against missing labels. First author paper and patent.

Publications

Functional NODE. Proposed a new Functional NODE framework which allows to sample trajectories in a VAE-like procedure and perform statistical inference. Under submission.

Improving Robustness of VQA Models by Adversarial and Mixup Augmentation. Proposed an adversarial objective function to improve robustness of VQA to linguistic variations and visual manipulations. Under submission.

Understanding Uncertainty Maps in Vision with Statistical Testing, CVPR 2022 (25% acceptance rate). Proposed the framework based on Warping Neural ODE and Random Fields theory to derive significant regions of the Uncertainty Maps obtained from probabilistic Deep Neural Networks.

Image2Gif: Generating Continuous Realistic Animations with Warping NODEs, CVPR 2022 (AI4CC workshop). Proposed a new framework based on Warping Neural ODE to generate GIF between two conceptually far apart frames.

Mixed Effects Neural ODE: A variational approximation for analyzing the dynamics of panel data, UAI 2021 (26% acceptance rate). Proposed the Mixed-Effect Neural ODE model and the new ELBO-based loss, which allows to model uncertainty like SDE, but use ODE solvers, for trajectory prediction.

Graph Reparameterization for enabling 1000+ Monte Carlo Iterations in Bayesian Deep Neural Networks, UAI 2021 (26% acceptance rate). Proposed a new framework to construct an MC estimator for the KL term, which significantly decreases GPU memory needed to run VI version of Bayesian Neural networks and improves runtime. Memory savings allow us to run up to 1000 or more MC iterations on a single GPU.

Radial Spike and Slab Bayesian Neural Networks for Sparse Data in Ransomware Attacks, Under submission and filed U.S. Patent.

Ordinal Quadruplet: Retrieval of Missing Labels in Ordinal Time Series, U.S. Patent.

Expanded encyclopaedias of DNA elements in the human and mouse genomes, Nature.

Perspectives on ENCODE, Nature.

EDUCATION

University of Wisconsin - Madison, Madison, WI
PhD, Statistics 2016 - 2022 [Expected]
MS, Computer Science 2018 - 2019

Duke University, Durham, NC 2014-2016
Master of Arts, Economics

Higher School of Economics, Moscow, Russia 2010-2014
Bachelor of Science, Applied Mathematics and Computer Science

SKILLS

Computer Vision, Deep / Machine Learning, Trajectory Prediction, Probabilistic Models

Programming: Python (PyTorch, TensorFlow), R, Bash, Matlab, Java, C++