

Victor Prokhorov

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WORK EXPERIENCE

Postdoctoral Researcher, University of Edinburgh, [ExLab](#) Apr 2022 - Apr 2024

- working with [Siddharth N.](#) and [Ivan Titov](#), conducted a research on deep generative models with interpretable latent representations see [project](#) [**tl;dr:** *the objective is to build an interpretable latent variable model for visual and language modalities by grounding the latent representation in the images.*]
- was responsible for leading of the project (e.g., defining current priorities, managing work with an external collaborator), a mathematical formulation of a variational autoencoder model, its implementation [[code](#)] and communicating the findings via a publication [[paper](#)]

Research Internship, Montreal Institute for Learning Algorithms (MILA) Sep 2020 - Dec 2020

- working with [Siva Reddy](#), conducted a research on deep generative models with symbolic latent representations for text [**tl;dr:** *instead of pretraining a model to learn distributed representation of text which has been proven useful in transfer learning setup, in the project we aimed to induce reusable, graph-based symbolic representation of text*]
- was responsible for a mathematical formulation of a variational autoencoder model and its implementation.

EDUCATION

2017 - 2022 PhD in Computation, Cognition and Language at **University of Cambridge**
– *Ph.D. Thesis: [Injecting Inductive Biases into Distributed Representations of Text](#)*, under supervision of [Nigel Collier](#) and [Ehsan Shareghi](#)

2016 - 2017 MPhil in Advanced Computer Science at **University of Cambridge** (Distinction)

2013 - 2016 BEng in Computer Science and Electronics at **University of Bristol** (First Class)

SELECTED PUBLICATIONS

- Victor Prokhorov** and Ivan Titov and Siddharth N, [Autoencoding Conditional Neural Processes for Representation Learning](#) in **ArXiv 2023** [[code](#)] [**tl;dr:** *develops the Partial Pixel Space Variational Autoencoder that casts Conditional Neural Process (CNP) context as latent variables learnt simultaneously with the CNP*] [**keywords:** generative models; variational autoencoders; conditional neural processes; representation learning; interpretability; vision]
- Mattia Opper and **Victor Prokhorov** and Siddharth N, [StrAE: Autoencoding for Pre-Trained Embeddings using Explicit Structure](#) in **EMNLP 2023** (main) [**tl;dr:** *investigates how explicit structure affects embedding quality*] [**keywords:** autoencoders; representation learning; interpretability; structure induction; NLP]
- Victor Prokhorov** and Yingzhen Li and Ehsan Shareghi and Nigel Collier, [Learning Sparse Sentence Encoding without Supervision: An Exploration of Sparsity in Variational Autoencoders](#) in **RepL4NLP 2021** (workshop) [[code](#)] [**tl;dr:** *presents a novel VAE model with sparse latent representations for text representation and generation*] [**keywords:** generative models; variational autoencoders; sparsity; representation learning; interpretability; NLP]
- Lan Zhang and **Victor Prokhorov** and Ehsan Shareghi, [Unsupervised Representation Disentanglement of Text: An Evaluation on Synthetic Datasets](#) in **RepL4NLP 2021** (workshop) [[code](#)] [**tl;dr:** *uses the existing disentanglement VAE models to study the challenges of disentanglement for text*] [**keywords:** generative models; variational autoencoder; disentanglement; representation learning; NLP]

5. **Victor Prokhorov** and Ehsan Shareghi and Yingzhen Li and Mohammad Taher Pilehvar and Nigel Collier, [On the Importance of the Kullback-Leibler Divergence Term in Variational Autoencoders for Text Generation](#) in **WNGT 2019** (workshop) [[code](#)] [**tl;dr:** *uses an information-theoretic framework to study an effect of the rate and distortion on text generation*] [**keywords:** generative models; variational autoencoder; representation learning; model analysis; information theory; NLP]
6. **Victor Prokhorov**, Mohammad Taher Pilehvar, Dimitri Katsaklis, Pietro Lio, Nigel Collier, [Unseen Word Representation by Aligning Heterogeneous Lexical Semantic Space](#) in **AAAI 2019** [**tl;dr:** *uses knowledge graphs to learn representations for rare and out-of-vocabulary words*][**keywords:** representation learning; knowledge graphs; NLP]
7. **Victor Prokhorov**, Mohammad Taher Pilehvar, Nigel Collier, [Generating knowledge graph paths from textual definitions using sequence-to-sequence models](#) in **NAACL 2019** [[code](#)] [**tl;dr:** *sequence-to-sequence model that grounds sentence meaning in a knowledge graph*] [**keywords:** representation learning; interpretability; knowledge graphs; NLP]

SKILLS

Programming	Python, PyTorch (see: pps-vae), TensorFlow (see: hsvae , kl-text-vae , text2path)
Research Communication	communicated my research via publications at: AAAI, NAACL, EMNLP; communicated research for public audiences of peers: invited poster presentation at Microsoft Research Cambridge, UK, 2020 and invited poster presentation at Google NLP Summit, Zurich, Switzerland, 2019

HONORS & AWARDS

- Mitacs Globalink Research (Mitacs, **Awarded**; the award required in person presence in Canada; due to COVID outbreak did not accept)
- Student Travel Grant (Workshop: Neural Generation and Translation)

ACTIVITIES

- Co-organiser for Edinburgh NLP Meetings, 2022-2023
- Co-organiser for [Dagstuhl ELLIS NLP Workshop](#), 2022
- Reviewer for ICLR, 2022 and ACL ARR, 2021