# Victor Prokhorov

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## Research Summary

My research has revolved around the development of **interpretable** and **structured representations** for modelling text and images. The research in this direction can facilitate controlled generation, faithful attribute binding (in the multi-modal setting) and make an analysis of the generative models easier.

## Work Experiences

Apr. 2022 – Apr. 2024 **Postdoctoral Researcher**, University of Edinburgh, ExLab, working with Siddharth N. and Ivan Titov

- Conducted research on interpretable representations for images and deep generative models (see project); was responsible for leading of the project, a mathematical formulation of a Variational Autoencoder model, its implementation in PyTorch and communicating of the findings via a publication.

Sep. 2020 – Dec. 2020 **Research Internship**, Montreal Institute for Learning Algorithms (MILA), working with Siva Reddy

- Conducted research on symbolic representations for text and deep generative models; was responsible for a mathematical formulation of a Variational Autoencoder model, its implementation in PyTorch.

## Education

Oct. 2017 – Jan. 2022 **Ph.D. Computation, Cognition and Language**, University of Cambridge, Cambridge, UK

- **Ph.D. Thesis:** "Injecting Inductive Biases into Distributed Representations of Text," under supervision of Nigel Collier and Ehsan Shareghi

Oct. 2016 – Jun. 2017 **MPhil in Advanced Computer Science**, Grade: Distinction, University of Cambridge, Cambridge, UK

Sep. 2013 – Jul. 206 **BEng in Computer Science and Electronics**, Grade: First Class, University of Bristol, Bristol, UK

## Honors & Awards

- Mitacs Globalink Research (Mitacs, **Awarded**; did not accept)
- Student Travel Grant (Workshop: Neural Generation and Translation)

## Selected Publications

- **Victor Prokhorov** and Ivan Titov and Siddharth N, "Autoencoding Conditional Neural Processes for Representation Learning," *ArXiv*, 2023

- Mattia Opper and **Victor Prokhorov** and Siddharth N, "StrAE: Autoencoding for Pre-Trained Embeddings using Explicit Structure," in EMNLP (main conference), 2023
- **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 Proceedings of the 6th Workshop on Representation Learning for NLP, 2021
- Lan Zhang and **Victor Prokhorov** and Ehsan Shareghi, "Unsupervised Representation Disentanglement of Text: An Evaluation on Synthetic Datasets" in Proceedings of the 6th Workshop on Representation Learning for NLP, 2021
- **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 Proceedings of the 3rd Workshop on Neural Generation and Translation, 2019

## 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
- Invited poster presentation: *On the Importance of the Kullback-Leibler Divergence Term in Variational Autoencoders for Text Generation* at AI+pizza, Microsoft Research Cambridge, Cambridge, UK, 2020
- Invited poster presentation: *From Representation to Generation of Text* at Google NLP Summit, Zurich, Switzerland, 2019

## Technical Skills

- **Programming**
  Python, PyTorch, TensorFlow, Hugging Face