

# Anastasia Razdaibiedina

[arazd.github.io](https://arazd.github.io) ◇ [anastasia.razdaibiedina@mail.utoronto.ca](mailto:anastasia.razdaibiedina@mail.utoronto.ca)

## EDUCATION

### University of Toronto

2018 - 2024 (expected)

Ph.D. Machine Learning & Computational Biology (GPA: 4.0)

Research areas: Representation Learning, Natural Language Processing, Biomedical Machine Learning, Continual Learning

### Kyiv National University of Taras Shevchenko

2013 - 2017

B.S. Applied Mathematics with Honours (GPA: 4.0)

## RESEARCH EXPERIENCE

### Meta (Facebook) AI, Seattle, US

Jun 2022 - Present

*Research Intern, Natural Language Processing and Machine Learning*

- Developed a continual learning method for language models based on prompt tuning, which trains  $< 0.1\%$  of total parameters.
- Validated on T5 and BERT models, achieved +22% improvement over previous state-of-the-art on a standard NLP benchmark.
- Submitted a research paper to ICLR 2023, gave a talk at FAIR.

Technologies: pytorch, huggingface, numpy, pandas, jupyter, matplotlib, bash, slurm, git

### Amazon Research, New York, US (remote)

May - Oct 2021

*Applied Scientist Intern, Natural Language Processing*

- Developed a regularization method for language models fine-tuning, which avoids representation collapse.
- Achieved +2.6 points improvement over standard fine-tuning on 13 NLP tasks with BERT model.
- Submitted a research paper to EACL 2023, gave a talk at Amazon Science.

Technologies: tensorflow, huggingface, numpy, pandas, scikit learn, bash, aws cloud computing

### Recursion Pharmaceuticals, Salt Lake City, US (remote)

Jun - Sep 2020

*Data Science Intern*

- Developed computer vision algorithms for drug discovery using ResNet and DenseNet architectures.
- Improved existing CNN pipeline accuracy by 8% via data augmentation techniques (CutMix and MixUp).

Technologies: pytorch, determined, scikit learn, numpy, pandas, seaborn, plotly, jupyter notebook, bash, git, google cloud

### University of Toronto / Vector Institute, Toronto, Canada

Jan 2018 - Present

*Ph.D. Researcher*

- Developed a self-supervised method to predict protein function from single-cell microscopy data, and validated on a novel dataset of 3,000,000 cell images. Discovered aging-related functions of 7 unknown proteins (in submission to Nature Methods).
- Developed an image restoration method for microscopy data using GANs (Generative Adversarial Networks), effective in few-shot conditions. Published in NeurIPS 2019 medical imaging workshop and rated in top-15 submissions.

Technologies: pytorch, tensorflow, keras, numpy, matplotlib, plotly, scipy, scikit-learn, bash, cuda

## SELECTED PUBLICATIONS

1. A. Razdaibiedina et al. Progressive Prompts: continual learning for language models without forgetting. Submitted to *ICLR*, 2023. [OpenReview link](#)
2. A. Razdaibiedina et al. PIFIA: a self-supervised method for protein functional annotation from single-cell imaging data. In submission to *Nature Methods*.
3. A. Razdaibiedina et al. Improving language models fine-tuning with representation consistency targets. Submitted to *EACL*, 2023. <https://arxiv.org/abs/2205.11603>
4. A. Razdaibiedina et al. Learning multi-scale functional representations of proteins from single-cell microscopy data. In *ICLR*, 2022, MLDD workshop. <https://arxiv.org/abs/2205.11676>
5. A. Razdaibiedina et al. Multi-defect microscopy image restoration under limited data conditions. In *NeurIPS*, 2019, Medical Imaging workshop (rated in top-15). <https://arxiv.org/abs/1910.14207>
6. A. Razdaibiedina et al. Effects of single-nucleotide polymorphisms in cytokine, toll-like receptor, and progesterone receptor genes on risk of miscarriage. In *Obstetrics and Gynaecology International*, 2018. <https://pubmed.ncbi.nlm.nih.gov/30116270/>

## TEACHING EXPERIENCE

- Bias and Fairness in ML, Vector Institute (2022W)
- CSC384: Intro to Artificial Intelligence (2021W)
- Deep Learning 2, Vector Institute (2020F)
- CSC311: Intro to Machine Learning (2019F)

## INVITED TALKS

*Facebook AI Research talk*, Continual learning for language models without forgetting

Sep 2022

*Toronto Bioinformatics User Group*, Self-supervised method for protein functional annotation from single-cell imaging data

Mar 2022

*York University × Vector Institute invited panelist*, AI in Healthcare and Future

Oct 2019

## SELECTED HONORS AND AWARDS

Ontario Graduate Scholarship 2021-22, 15,000\$	NeurIPS travel award 2019, 500\$	Ph.D. merit entrance scholarship 2018, 2,000\$
Vector Institute Fellowship 2019-21, 18,000\$	NVIDIA GPU grant program 2018	SGS travel award 2018 & 2022, 1,000\$ × 2