ANNA KORSAKOVA

📱 +1 4154180014 ⋄ San Francisco, CA

✉ anya@calicolabs.com 🔗 linkedin.com/in/akorsakova 🏠 website ⛓ github.com/anyakors

TECHNICAL SKILLS

Interests	computational biology; AI/ML applications; mechanistic interpretability; technical analysis of financial markets
Programming	python, tensorflow, pyTorch, C++, bash, R
Tools	UNIX, Git, PyMOL, SolidWorks, Adobe Illustrator
Wet lab	CD, UV, fluorescence, NMR, Oxford Nanopore DNA/RNA seq
Compbio	variant effect prediction, representation learning from data, scVI-tools, AMBER MD

RESEARCH AND WORK EXPERIENCE

Postdoctoral researcher (computational genomics)
@ David Kelley lab, Calico Life Sciences   May 2023-present
- Currently extracting insights from the flagship Borzoi DNA sequence-based model using sparse autoencoders
- Extended Borzoi model for scoring of indels, SVs and tandem repeats using align-and-stitch method at inference

Postdoctoral researcher, Cancer Science Institute of Singapore   Oct 2022-May 2023
- Improved algorithms for copy number signatures in breast cancer @ Jason Pitt / Ashok Venkitaraman lab
- Collaborated to consult on the best algorithmic practices for building ensemble approaches to mutational signature assignment

Quantitative finance analyst and developer, Juniper Investment, Singapore   Feb 2022-Sep 2022
- Built high profit-to-loss ratio quantitative trading models with in C++ (MQL5) and python using technical analysis

Ph.D. candidate, Nanyang Technological University, Singapore   Aug 2017-Jul 2022
- Built ML frameworks for DNA structure and RNA splicing prediction, nanopore sequencing, NMR and MD simulations @ Biophysics lab, Prof. Phan Anh Tuân

Junior researcher, LPI RAS, Moscow   Jan 2014-Aug 2017
- Studied diffusive-thermal instabilities in hydrogen-air flames with computational modeling approaches
@ Laboratory of Nonlinear Dynamics and Biophysics, Dr. Vladimir Gubernov

Junior C++/algorithmic developer, NRNU MEPhI, Moscow   Dec 2012-Dec 2013
- Implemented an algorithm for eye iris recognition and tracking in live video stream with C++, openCV and Matlab

EDUCATION

Ph.D. in Biophysics, School of Physical and Mathematical Sciences   Aug 2017-Jul 2022
NTU (Nanyang Technological University, Singapore)
M.Sc. in Applied Mathematics and Physics NRNU MEPhI, Moscow   Sep 2014-Jun 2016
First Class Honors
B.Sc. in Applied Mathematics and Physics NRNU MEPhI, Moscow   Sep 2010-Jun 2014

RELEVANT PUBLICATIONS

Korsakova A et al., **"Shift augmentation for improved indel scoring in DNA sequence-based ML models"** *to be submitted to Nat Methods*

Wu AJ, Perera A, Kularatnarajah L, Korsakova A, Pitt JJ, **"Mutational signature assignment heterogeneity is widespread and can be addressed by ensemble approaches"** in Briefings in Bioinformatics, 2023, DOI:10.1093/bib/bbad331

Korsakova A, Phan AT, **"Prediction of G4 formation in live cells with epigenetic data: a deep learning approach"** in NAR Genomics and Bioinformatics, 2023, DOI:10.1093/nargab/lqad071

*Chan A, *Korsakova A et al., **"RNA alternative splicing prediction with discrete compositional energy network"** at ACM CHIL '21, DOI:10.1145/3450439.3451857 **contributed equally*

DATASETS

*Chan A., *Korsakova A. et al.*, **"Context Augmented Psi Dataset (CAPD) to benchmark RNA alternative splicing prediction models"** 2021, https://doi.org/10.21979/N9/FFN0XH *contributed equally*

PEER REVIEW

Nature Machine Intelligence ISSN: 2522-5839, reviewer, 2024

RESEARCH INTERNSHIPS

|	
Wan Lab of RNA structuromics, Genome Institute of Singapore, Singapore RNA G4 structure probing in long synthetic RNA with NAI-SHAPE and nanopore sequencing	Mar 2021-Jun 2021
Lab of Biology and Applied Pharmacology, École normale supérieure Paris-Saclay, Paris Geometrical improvement of NMR RDC data usage for G4 structure resolution; NMR training	Jun 2018-Aug 2018
Institute of Technical Thermodynamics, Karlsruhe Institute of Technology, Karlsruhe	Oct 2015-Nov 2015

TEACHING

Undergraduate student mentor *NTU, Singapore* Supervised students on an ML-genomic project and a nanopore sequencing project	2018, 2020, 2021
From synthesis to quantification of DNA using UV absorption circular dichroism and fluorescence spectroscopy (PH3399) *NTU, Singapore*	2019, 2020
Silicon Charge Particle Detectors (PH3199) Fabrication Laboratory (PH3199) *NTU, Singapore*	2018, 2019, 2020

RECORDED MEDIA

open.spotify.com/episode/0WtAP3POmuJQNppueKY268 Art of Academia podcast '23

youtu.be/Miz3X953Q-0 on DNA Oxford Nanopore sequencing (in Russian, auto-generated English subtitles available)

HONORS AND AWARDS

SINGA scholarship award (NTU, Singapore)	2017-2021
NRNU MEPhI's Best Student Award 2015 (NRNU MEPhI, Moscow)	2015
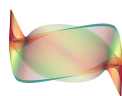
PERSONAL DETAILS

Date of birth:	16 Jan 1993
Nationality:	Russian
Gender:	Female
Languages:	English (fluent), Russian (native), French (elementary)
Interests:	Algorithms, beat production and music synthesis, pole sports