

# CURRICULUM VITAE

Maksym Neyra-Nesterenko

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## EDUCATION

**Ph.D., Mathematics** – Simon Fraser University

May 2024—now

- Supervisor: Ben Adcock

**M.Sc., Applied Mathematics** – Simon Fraser University

Sep 2020–Mar 2023

- Thesis title: *Unrolled NESTA: constructing stable, accurate and efficient neural networks for gradient-sparse imaging problems*
- Contributes towards research in: deep neural networks for inverse problems in imaging and optimization acceleration schemes for fast image reconstruction
- Committee: Ben Adcock, Nilima Nigam, Ozgur Yilmaz, Nadish de Silva

**B.Sc., Mathematics Honours** – Simon Fraser University

Sep 2014–Apr 2020

- Minor in *Computing Science*

## TECHNICAL SKILLS

- Python, MATLAB, SQL, C, Git, Bash
- Microsoft Office 365, LaTeX
- tensorflow, torch, numpy, pandas, spark, scikit-learn, jupyter, matplotlib
- Data modelling, data analysis, data visualization and data cleaning
- Machine learning and statistics
- Optimization theory and algorithms

## WORK EXPERIENCE

**Data scientist** – Statistics Canada

Oct 2019–Aug 2020, Jan–Apr 2019, May–Aug 2018

- Designed and implemented OpenTabulate, a data tabulation Python program, to compile datasets for an open data portal of public Canadian infrastructure hosted on Statistics Canada's website
- Webscraped and assembled a comprehensive dataset of Canadian education facilities on behalf of a government client aiming to conduct an analysis of indigenous schools
- Collaborated with supervisors to write, edit, and submit data quality reports to clients

## PUBLICATIONS

### Journal papers

- B. Adcock, M. Colbrook & M. Neyra-Nesterenko, *Restarts subject to approximate sharpness: a parameter-free and optimal scheme for first-order methods*. Found. Comput. Math. **In press**. (2024)
- M. Neyra-Nesterenko & B. Adcock, *NESTANets: stable, accurate and efficient neural networks for analysis-sparse inverse problems*. Sampl. Theory Signal Process. Data Anal. **21**, 4 (2023)

### Conference abstracts

- B. Adcock & M. Neyra-Nesterenko. Provably accurate, stable and efficient deep neural networks for compressive imaging. In *International Conference on Computational Harmonic Analysis*, volume 48. 13–17 Sep 2021.

## PRESENTATIONS

### Contributed talks

- *Parameter-free and optimal restart schemes for first-order methods via approximate sharpness*  
WCOM Autumn (Sep 21, 2024)
- *Unrolled NESTA: constructing stable, accurate and efficient neural networks for gradient-sparse imaging problems* – Math Grad Social Seminar (Feb 7, 2023)
- *Restart schemes: a powerful parameter-free acceleration scheme for first-order methods*  
SFU Applied Math Seminar (Nov 23, 2022)
- *Stable, accurate and efficient deep neural networks for reconstruction of gradient-sparse images*  
SIAM Pacific Northwest Conference (May 21, 2022)
- *Stable, accurate and efficient deep neural networks for gradient sparse imaging*  
SIAM Conference on Imaging Science (Mar 22, 2022)
- *Stable, accurate and efficient deep neural networks for inverse problems with analysis sparse models*  
SFU Operations Research Seminars (Feb 14, 2022)
- *Provably accurate, stable and efficient deep neural networks for compressive imaging*  
International Conference on Computational Harmonic Analysis (Sep 17, 2021)
- *Provably accurate and stable deep neural networks for imaging*  
CAIMS Annual Meeting (Jun 23, 2021)

## RESEARCH INTERNSHIPS

### Undergraduate Research Assistant – Simon Fraser University

- Supervised by Paul Tupper and funded by NSERC May 2017-Aug 2017
- Supervised by Karen Yeats and funded by SFU May 2016-Aug 2016

## SCHOLARSHIPS

### Ph.D. Research Scholarship

May 2024-Apr 2025

Value: \$5400, received from SFU by nomination

### Special Graduate Entrance Scholarship

May 2024-Aug 2024

Value: \$10000, received from SFU by nomination

### Graduate Travel and Research Award

May 2022-Aug 2022

Value: \$1500, received from SFU and SIAM by application

### NSERC Canada Graduate Scholarships Master's

May 2021-Apr 2022

Value: \$17500, received from NSERC by application

### Peter Borwein Memorial Graduate Scholarship

Jan 2022-Apr 2022

Value: \$1500, received from SFU by nomination

### BC Graduate Scholarship

Sep 2020-Aug 2021

Value: \$15000, received from SFU by nomination

### NSERC Undergraduate Student Research Award

May 2017-Aug 2017

Value: \$4500, received from NSERC by application

### VPR Undergraduate Student Research Award

May 2016-Aug 2016

Value: \$4500, received from SFU by application

## ACADEMIC RECOGNITION

- AISTATS 2023 top reviewer (top-10% of reviewers)

Feb 2023

## REFEREE ACTIVITY

- SIAM Journal on Scientific Computing (SISC)
- International Conference on Artificial Intelligence and Statistics (AISTATS)

Apr 2023

Nov 2022

## WORKSHOPS and DEVELOPMENT

### PIMS-IFDS-NSF Summer School on Optimal Transport – University of WA

Jun 2022

- Workshop and lectures on optimal transport, with numerous researchers presenting their work in the area

### PIMS Math to power Industry workshop – University of Calgary

Aug 2021-Sep 2021

- Completed MITACS professional industry training and development courses for data science
- Worked with Serious Labs to present and report a project on developing real-time simulation for hydraulic systems to enable virtual training for hydraulic equipment usage

## TEACHING and MENTORSHIP

### Teaching assistant – Simon Fraser University

- Guided students in math workshops, tutorials, and office hours to help understand course material
- Performed marking, invigilation, and management duties to assist course instructors
- Past courses and workshops:

- Vector calculus (MATH254), algebra workshop
- Continuous optimization (MATH309), calculus workshop
- Vector and complex analysis (MATH254), linear analysis (MATH419)
- Continuous optimization (MATH309), algebra workshop
- Ordinary differential equations (MATH260)
- Algebra workshop, mathematics of data science (MATH475)
- Vector calculus (MATH254), applied calculus workshop
- Algebra workshop
- Applied calculus workshop

Spring 2025

Fall 2024

Summer 2024

Fall 2022

Summer 2022

Spring 2022

Spring 2021

Fall 2020

Fall 2018, Spring 2018

## PERSONAL PROJECTS

### Address parsing with recurrent neural networks

Jun 2023

- Implemented a data-driven Canadian address parser to perform geocoding and address verification
- Engineered the neural network architecture, data, and training procedure, to compute an accurate parsing model that is robust to noisy input addresses

### San Francisco fire service analysis

May 2023

- Examined fire service effectiveness and usage via data analysis to inform public safety policies
- Reported statistics on service calls, safety complaints and fire incidents to address service questions
- Extracted and cleaned fire service data programmatically with Python to carry out analysis

### Strongly solving Quantik

Mar 2023

- Independently solved the 2-player abstract strategy game Quantik, by writing an algorithm that searches for a winning strategy from any legal board position
- Solver implemented in C to leverage high performance and cache-friendly data structures for fast querying of winning moves

## MEMBERSHIPS

### Canadian Applied and Industrial Mathematics Society (CAIMS)

Jan 2021—now

### Society for Industrial and Applied Mathematics (SIAM)

Jan 2021—now

## LICENSES and CERTIFICATIONS

### First aid and CPR/AED level C – Canadian Red Cross

Jul 2023-Jul 2026

- Credential ID: 104291530