Gerd **Bizi**

Graduate Student · Medical Biophysics

University of Toronto

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Education

University of Toronto, School of Graduate Studies — *Toronto, ON*

MSc, Medical Biophysics — *2025 - Present*

University of Toronto, Faculty of Arts and Sciences — *Toronto, ON*

HBSc, Specialist in Computer Science w/ a Focus in AI, Major in Biochemistry — *2020 - 2025*

Research

Graduate Research Assistant — *Toronto, ON*

PI: Dr. Chris McIntosh, Department of Medical Biophysics @ U of T — *Jan 2026 - Present*

- Creating multimodal foundation models aligning CT, X-Ray, EKG, and bloodwork data

Research Assistant - Predicting Bladder Cancer Recurrence from Whole Slide Images — *Toronto, ON*

PIs: Dr. Martin Yaffe, Dr. Anne Martel, Department of Medical Biophysics @ U of T — *May 2025 - Sep 2025*

- Finetuning SOTA computational pathology tools to perform feature extraction from gigapixel WSIs
- Using deep learning-based survival analysis frameworks to predict recurrence

Sr Thesis - *ab initio* Spherically-Constrained Reconstruction of Proteins Using Cryo-EM — *Toronto, ON*

PIs: Dr. John Rubinstein, Department of Medical Biophysics & Biochemistry @ U of T;
Dr. David Fleet, Department of Computer Science @ U of T — *Sep 2024 - Apr 2025*

- Developed methodology to **restrict pose space** of membrane-embedded proteins to improve *ab initio* 3D volume reconstruction of V-type ATPase
- Using segmentation results from Segment Anything Model (**SAM**) as priors to determine relative protein pose
- Building on lab's previous project, cryoSPIN, to use angle priors to more accurately converge to high-resolution cryo-EM maps

Research Assistant - Multimodal Framework for Breast Cancer Analysis — *Toronto, ON*

PIs: Dr. Martin Yaffe, Dr. Anne Martel, Department of Medical Biophysics @ U of T — *Sep 2024 - Dec 2025*

- Developing **multimodal** methodology to determine breast cancer phenotypes from RNA-sequencing; and tomography, histopathology, fluorescence microscopy images
- Currently using statistical analyses to build model identifying breast cancer types from lumpectomies using gene and protein expression from multiplexing assay

Jr Thesis & Research Assistant - Mitochondrial and Peroxisomal Protein Dynamics and Localization — *Toronto, ON*

PI: Dr. Peter Kim, Department of Biochemistry @ U of T — *Jan 2022 - Apr 2023*

- Investigated the interactions between BORG2 and BORG3 with cytoskeletal and mitochondrial fission machinery, using protein over-expression experiments to study their effects on mitochondrial dynamics
- Developed pre-processing pipeline for unbiased image thresholding and quantification of mitochondrial networks and individual mitochondrial length in selected ROIs
- Performed immunofluorescence assays in fixed cell samples to identify localization patterns of mitochondrial proteins OCIAD1 and Bcl-Rambo under antibody-staining and protein overexpression conditions

Work Experience

Course Developer for HMB201, HMB301, and HM491 (Biotech) — *Toronto, ON*

University of Toronto, Department of Computer Science — *Feb 2025 - Present*

- Developing Jupyter Notebooks introducing intermediate machine learning concepts such as **autoencoders** and **vision transformers** for applications in computational biology, with a focus on gene expression analysis and medical imaging

Research Associate — *Remote*

Pytri Inc. — *Sep 2024 - Apr 2025*

- Working on Pytri's flagship gel electrophoresis analysis model, using **yoloV8** to analyze gel electrophoresis experiments
- Conducting market research to survey client needs for gel electrophoresis solutions

Teaching Assistant *Toronto, ON*

University of Toronto *Sep 2023 - Present*

- *Head TA* for **LMP1210 - Principles of Machine Learning in Biomedical Research** (W2026), responsible for leading tutorials, designing tutorial content, office hours, grading, and course administration
- *Head TA* for **HMB491 - Projects in Biotech Industry** (FW2025-2026), responsible for leading tutorials, designing tutorial content, office hours, grading, and assisting with course administration
- *Head TA* for **MAT187 - Calculus II** (W2025), responsible for leading tutorials, grading, and assisting with course administration
- TA for **MAT187 - Calculus II** (W2026, W2024), leading tutorials and grading assignments
- TA for **MAT188 - Linear Algebra** (F2025, F2024, F2023), leading tutorials and grading assignments
- TA for **CSC300 - Computers and Society** (W2024), leading tutorials and grading assignments

Projects

Building a Pipeline to Analyze iPSC Differentiation through RNA-Seq Data *Toronto, ON*

Developer *May 2023 - Apr 2024*

- Developed a computational pipeline to analyze RNA-Seq data from iPSCs differentiating into cardiomyocytes
- Utilized statistical methods, *DeSeq2* and *edgeR*, to identify differentially expressed genes across time points
- Performed data visualization using correlation **heatmapping**, and **Cytoscape** to elucidate transcript patterns
- Identified gene candidates influencing differentiation efficiency and explored methods to optimize transcriptional regulation

Extracurricular Activities

Medical Biophysics Graduate Student Association *Toronto, ON*

First Year Representative *Nov 2025 - Present*

RH Scholarship Foundation *Toronto, ON*

Director of Operations *January 2024 - Present*

- Managed operations and venue logistics for scholarship events, contributing to **$100,000+** in awarded scholarships
- Expanded outreach by representing RH Scholarship at key community events and student organizations
- Secured **$3,000+** in scholarships and developed partnerships with international embassies and professional associations

Albanian Student Association @ U of T *Toronto, ON*

President *Sep 2023 - Apr 2025*

- Revamping the association's constitution and launching new initiatives, including grad school panels and networking events
- Organized cultural and social events with **150+ attendees** and secured **$1,000+** in sponsorships

Think Pacific, Fiji *Vunimaqo, Fiji*

Volunteer *Jul 2023 - Aug 2023*

- Helped construct a medical care facility to improve healthcare access in rural Fiji
- Supported Diabetes Fiji's screening program and promoted mental health awareness in collaboration with local organizations
- Developed cross-cultural teamwork and project management skills through community-based initiatives

Leukemia and Lymphoma Society - U of T Chapter *Toronto, ON*

Vice-President *Sep 2021 - Apr 2024*

- Responsible for direct communication with LLS Ontario, club finances, and managing executive team
- Prepared official documents for UTSU club status and budget
- Collaborated with Canadian Blood Services to host three blood drives with over 40 donors each
- Organized social activities such as online mixers and dodgeball tournaments with over 50 participants to raise awareness about blood cancer

Skills and Qualifications

Languages	Albanian, French
Programming Languages	Python, R, C, C++, Java, MATLAB, SQL
Machine Learning	PyTorch, TensorFlow, NumPy, Pandas, SciKit-Learn, OpenCV
Databases	PostgreSQL, MongoDB
Cloud and ML Ops	Docker, Git, Linux

Awards & Grants

2025	**Vector Scholarship in AI**, Vector Institute	*$ 17,500*
2025	**Merit Entrance Scholarship**, Department of Medical Biophysics, U of T	*$ 2,000*
2023	**RH Scholarship Recipient**, RH Scholarship Foundation	*$ 1,000*
2023	**James Morrow Scholarship III**, Victoria College, U of T	*$ 1,000*
2022	**Alfred and Isabel Bader Scholarship II**, Victoria College, U of T	*$ 1,000*
2022	**Laidlaw Scholar**, Laidlaw Scholars Foundation	*$ 12,500*
2022	**Summer Student Research Program**, Department of Biochemistry, U of T	*$ 5,000*
2021	**Alfred and Isabel Bader Scholarship I**, Victoria College, U of T	*$ 1,000*
2023, 2022, 2021	**Dean's List Scholar**, U of T	
2020	**U of T Book Award**, U of T	
2020	**LORAN Scholars Foundation Semi-Finalist Certificate**, LORAN Scholars Foundation	
2020	**Schulich Leader Scholarship Nominee**, Northern Secondary School	