

Ghulam Murtaza

POSITION Postdoctoral Researcher

DEPARTMENT Genome Sciences

CONTACT INFORMATION 3720 15th Ave NE *Phone:* (401) 218-1733
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University of Washington *Website:* gmurtaza404.github.io
Seattle, WA 98105 *Lab Website:* noble.gs.washington.edu/

RESEARCH INTERESTS Representation Learning, Machine/Deep Learning, Genomics

EDUCATION **Brown University**, Providence, Rhode Island, USA
Ph.D., Computer Science, May 2025

- Dissertation Topic: Connecting sequential and structural genomics through graph based representations
- Advisor: Dr. Ritambhara Singh

M.S., Computer Science, May 2021

Lahore University of Management Sciences, Lahore, Pakistan
B.S., Computer Science, May 2019

PROFESSIONAL APPOINTMENTS **University of Washington**, Seattle, Washington USA
Postdoctoral Researcher **July, 2025 - Present**

Brown University, Providence, Rhode Island USA
Research Assistant **September, 2019 - June 2025**

National Institute of Standards and Technology, Gaithersburg, Maryland USA
Guest Researcher **June, 2022 - May 2023**

Lahore University of Management Sciences, Lahore, Pakistan
Research Assistant, Computer Science **September, 2018 - July, 2019**
Teaching Assistant, Computer Science **September, 2017 - May, 2018**
Research Intern **May, 2017 - August, 2017**
Research Intern **May, 2016 - August, 2016**

PRE-PRINT Wagner J, Keskus AG, Oshima KK, ... **Murtaza G**, et al. A complete human pancreatic cancer genome. *bioRxiv*, 2026.

Fang T, Wang X, Xiao Z, Hang S, **Murtaza G**, Yang J, Xu H, Jha A, Noble WS, Wang S. Evo2HiC: a multimodal foundation model for integrative analysis of genome sequence and architecture. *Under review at Nature Genetics*.

Hang S, Wang X, **Murtaza G**, Jha A, Wen B, Fang T, Sanders J, Wang S, Noble WS. Puget predicts gene expression across cell types using sequence and 3D chromatin organization data. *Under review at Nature Genetics*.

Yu D, Germann J, **Murtaza G**, Hajdarovic KH, Babcock KR, Dehkordi SK, Jackson AC, Delalle I, Orr ME, Zare H, Singh R, Noble WS, Vlassenko AG, Goyal MS, Webb AE. HypoAD: volumetric and single-cell analysis reveals changes in the human hypothalamus in aging and Alzheimer’s disease. *Under review at Nature*.

CONFERENCE
PROCEEDINGS

Abdullahi T, Gemou I, Nayak NV, **Murtaza G**, Bach SH, Eickhoff C, Singh R. K-Paths: Reasoning over Graph Paths for Drug Repurposing and Drug Interaction Prediction. *ACM SIGKDD (KDD) 2025*.

Murtaza G, Butaney B, Wagner J, Singh R. scGrapHiC: Deep learning-based graph deconvolution for Hi-C using single cell gene expression. *ISMB 2024*. (Runner up for Ian Lawson Van Toch Best Paper Award)

Dogar FR, Qazi IA, Tariq A, **Murtaza G**, Ahmed A, Stocking N. MissIt: Using Missed Calls for Free, Extremely Low Bit-Rate Communication in Developing Regions. *ACM CHI 2020*.

JOURNAL ARTICLES

Murtaza G, Wagner J, Zook JM, Singh R. GrapHiC: An integrative graph-based approach for imputing missing Hi-C reads. *IEEE/ACM TCBB 2024*.

Murtaza G, Jain A, Hughes M, Wagner J, Singh R. A Comprehensive Evaluation of Generalizability of Deep Learning-Based Hi-C Resolution Improvement Methods. *Genes 2024*.

Qazi IA, Qazi Z, Benson TA, Latif E, Manan A, **Murtaza G**, Tariq A. Mobile web browsing under memory pressure. *ACM SIGCOMM CCR 2020*.

WORKSHOP
PROCEEDINGS

Li W, **Murtaza G**, Singh R. scContrast: A contrastive learning based approach for encoding single-cell gene expression data. *AI4NA, ICLR 2025*.

Murtaza G, Wagner J, Zook JM, Singh R. GrapHiC: An integrative graph based approach for imputing missing Hi-C reads. *BIOKDD 2023*.

Murtaza G, Benson TA. WebOptProfiler: Providing performance clarity for Mobile Webpage Optimizations. *ACM HotMobile 2021*.

TALKS

scGrapHiC: Deep learning-based graph deconvolution for Hi-C using single cell gene expression *Intelligent Systems for Molecular Biology (ISMB) 2024*

WebOptProfiler: Providing performance clarity for Mobile Webpage Optimizations *International Conference on emerging Networking EXperiments and Technologies (CoNEXT) 2020*

POSTERS

scGrapHiC: Deep learning-based graph deconvolution for Hi-C using single cell gene expression *Research in Computational Molecular Biology (RECOMB) 2024*

GEGGE: A Graph Encoder for Generalized Genomics Embeddings *Workshop on Algorithms in Bioinformatics (WABI), ACM-BCB 2023*

GrapHiC: An integrative graph based approach for imputing missing Hi-C reads *Intelligent Systems for Molecular Biology (ISMB) 2023*

GrapHiC: An integrative graph based approach for imputing missing Hi-C reads *Genome Architecture in Cell Fate and Disease Gordon Research Seminar 2023*

GraphiC: An integrative graph based approach for imputing missing Hi-C reads *Machine Learning in Computational Biology (MLCB) 2023*

SERVICE TO THE DEPARTMENT AND UNIVERSITY Genome Sciences postdoctoral representative - 2025 - 2026
Computer Science Ph.D. Admissions Committee - 2021 - 2024
Organized computer science graduate student orientation at Brown - 2021
Peer mentor for International Students at Brown - 2020, 2021
GradApp Lab mentor 2019 - 2021
Served as a Medical First Responder for EMS at LUMS 2017 - 2019

SERVICE TO THE PROFESSION Reviewer for Generative AI in Genomics ICLR 2025
Sub-reviewer for ISMB and RECOMB 2025
Reviewer for BMC Genomics 2025
Reviewer for Scientific Reports 2025
Reviewer for Transactions on Computational Biology and Bioinformatics 2025
Reviewer for Computational and Structural Biotechnology Journal 2025
Reviewer for MLCB 2023, 2024
Reviewer for ICLR MLGenX 2024
Sub-reviewer for ICML, RECOMB, KDD, ICLR 2020 - 2025
Sub-reviewer for ACM Internet Measurements Conference - 2019

HONORS, AWARDS AND GRANTS NVIDIA Academic Grant Program (GPU access)
UW data science postdoctoral fellowship 2025 - 2026
Tahoe Hackathon travel grant 2025
Brown Graduate School Fellowship 2019
Dean's Honor List - Lahore University of Management Sciences 2016, 2017, 2019
Top 18 in National Science Talent Contest Pakistan 2014
Full Merit Scholarship in A Level - Lahore Grammar School Johar Town 2015, 2016

TEACHING Teaching Assistant for Data Structures (CS202/EE202) (Spring 2018), Lahore University of Management Sciences (Enrollment: 150 students)
Teaching Assistant for Computational Problem Solving (CS100) (Fall 2017), Lahore University of Management Sciences (Enrollment: 200 students)

REFERENCES **William Noble** (Postdoc Advisor)
Appointment: Professor at University of Washington, Seattle
Email: wnoble@uw.edu
Ritambhara Singh (Ph.D. Advisor)
Appointment: John E. Savage Associate Professor at Brown University
Email: ritambhara@brown.edu
Stephen Bach
Appointment: Eliot Horowitz Assistant Professor at Brown University
Email: stephen_bach@brown.edu
Justin Wagner
Appointment: Staff Scientist at National Institute of Standards and Technology
Email: justin@jmwagner.org

STUDENT ADVISING **Kyra Fetter**

Project: Benchmarking modality matching methods for single-cell Hi-C and RNA-seq measurements
Noble Lab, University of Washington

Winston Li

Project: Evaluating contrastive learning based approaches for aligning scRNA-seq with scHi-C
Singh Lab, Brown University

Byron Butaney

Project: Evaluating efficacy of large single-cell RNA-seq models in capturing higher order biological semantics
Singh Lab, Brown University

Keya Kilachand

Project: Modeling cell cycles in single-cell Hi-C data with Hamiltonian Neural Networks
Singh Lab, Brown University

Xiaoke Song

Project: Extracting features from single-cell Hi-C for accurate multi-modal integration and alignment
Singh Lab, Brown University

Wangdrak Dorji

Project: Modeling structural dynamics of proteins with anisotropic network models (ANM) for accurate protein-protein interaction predictions
Singh Lab, Brown University

Madeline Hughes

Project: Evaluating generalizability of Hi-C resolution improvement frameworks
Singh Lab, Brown University

Thulasi Varatharajan

Project: Non-parametric methods for improving resolution of Hi-C contact matrices
Singh Lab, Brown University

Abdul Manan

Project: Dissecting memory utilization of JavaScript in the webpage loading process
Networks and Systems Lab, LUMS

Abrar Tariq

Project: Characterizing memory consumption of Alexa top 1000 web pages
Networks and Systems Lab, LUMS