

ABDULLAH N MALIK | Curriculum Vitae

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SUMMARY

PhD in Pure Math with research interests in applied category theory, graph neural networks, machine learning, graph theory, quantum computing, foundations of physics and mathematical philosophy. ~Eleven years of experience in academia, and ~four years of experience as a subeditor. Interesting in playing my part in saving the planet. [Azimuth Project](#) Advocate.

EDUCATION

FLORIDA STATE UNIVERSITY

Ph.D. in Pure Mathematics

Thesis: Simplicial Methods in Graph Machine Learning

8/2018 – 5/2024

Tallahassee, FL

CGPA: 3.63

QUAID-E-AZAM UNIVERSITY

M.Phil. in Pure Mathematics

Thesis: Operator Algebras and The Foundations of Quantum Mechanics

2/2014 – 4/2016

Islamabad, Pakistan

CGPA: 3.80

COMSATS INSTITUTE OF INFORMATION TECHNOLOGY

B.S. in Mathematics

Thesis: Engineering Deutsch-Jozsa Algorithm in Cavity QED via Bragg Regime

2/2008 – 2/2012

Islamabad, Pakistan

CGPA: 3.28

EXPERIENCE

ADJUNCT FACULTY

Florida State University

› Calculus II

5/2024 – 8/2024

Tallahassee, FL

GRADUATE TEACHING ASSISTANT

Florida State University

Solo Instructor:

› Calculus III

›› Fall 2023, Spring 2024

› Calculus II

›› Summer 2023

› Calculus I

›› Fall 2022, Summer 2022

Content Creator:

› Course notes for Pre-Calculus

Grader:

› Introduction to Advanced Mathematics

›› Spring 2023

› Discrete Mathematics

›› Fall 2022

› Ordinary Differential Equations

›› Fall 2020

Lab Instructor:

› Business Calculus

›› Spring 2022 & 2021; Summer 2021

Graduate Student Mentor:

› Student: Ayotuntosomi Loye

›› Project: Simplicial Sets are Chu Spaces

IN-CHARGE

Office of Hybrid Learning

COMSATS Institute of Information Technology, Virtual Campus

› Conceptualized and implemented a proposal for a policy framework and educational model on 13 degree programs

› Piloted the transition of 2 courses from face-to-face to hybrid for 16,500 students, that shaved off 3% of total expenses

› Led a team of 15 Content Experts, 5 Instructional Designers, 3 Animation Creators, 2 Video Editors and 4 Web Developers, ensuring successful and smooth generation, processing, editing and deployment of academic content

› Responsible for organizing and coordinating faculty development programs

› Identified gaps in student ICT literacy and provided appropriate recommendations for improvement

8/21/2017 – 12/26/2017

Islamabad, Pakistan

RESEARCH ASSOCIATE

3/9/2013 – 8/22/2017

Department of Mathematics
COMSATS Institute of Information Technology, Virtual Campus

Islamabad, Pakistan

› Moderated the following math courses:

›› Analytical Number Theory, Measure Theory, Operations Research, Introduction to Hilbert Spaces, Functional Analysis, Business Mathematics, Partial Differential Equations, Mathematical Statistics, Business Mathematics and Statistics, Statistical Inference, Algebra, Real Analysis

› M.Sc. Math undergraduate projects supervised:

›› Theorem of Maria Pia Soler, Non-exhaustive Properties of Multiplicative Groups of Matrices, Axiom of Choice: Equivalents and Implications, Current trends in Quantum Logic, Summing the Divergent, Language of the Universe: The Mathematics of Thermodynamics, A Comparison of Set Theories, Physics by SU(2), Automorphisms of General Linear Group, An Overview of Intuitionistic Logic, Extensions of Real Numbers, Constructive Calculus

SUBEDITOR (INTERN)

10/15/2012 – 11/23/2012

Pakistan Council for Science and Technology

Islamabad, Pakistan

› Subeditor for PCST's journal Science, Technology and Development

› Verification of data in Directory of Productive Scientists of Pakistan 2012

› Organised opening ceremony for Science and Innovation Policy, Pakistan, 2012

SUBEDITOR

3/19/2011 – 9/30/2012

UTrade (Pvt.) Ltd.

Islamabad, Pakistan

› Led a team of 16 writers, providing topic guidance and content development for company's signature monthly trade magazine UTrade

› Wrote editorials and summaries for chief editor for 15 editions

› Finalized printing and distribution of magazine to readers all over Pakistan

TEACHING ASSISTANT

12/2009 – 5/2010

Department of Computer Science

Islamabad, Pakistan

COMSATS Institute of Information Technology

› Course: Conducted lab coding sessions for Introduction to Programming using C++ for 30 students, 4 times a week

CHIEF EDITOR

4/2009 – 2/2012

Synergy (Campus Magazine)

Islamabad, Pakistan

› Responsible for all magazine-related gamut, from writing assignments to final print

HONORS & AWARDS

DWIGHT B. GOODNER FELLOWSHIP

Spring 2023

Florida State University

Received additional stipend for Fall 2022 for being outstanding TA. [Certificate](#)

OUTSTANDING INSTRUCTOR AWARD

Fall 2022

Florida State University

Among the top instructors in the Math Department. [Certificate](#)

AMS TRAVEL GRANT

Fall 2022

AMS

Awarded AMS travel grant to meet MRC mentor Valeria de Paiva to continue working on project developed at the MRC 2022.

ACT MRC 2022

Summer 2022

AMS

Attended Mathematics Research Committee for Applied Category Theory. Worked under Valeria de Paiva's group on Dialectica Categories. Fully funded summer school.

ADELAIDE WILSON FELLOWSHIP

Fall 2018

Florida State University

Received a one-time monetary disbursement as an outstanding newly admitted graduate student.

FULBRIGHT FELLOWSHIP

2017 Cohort

Florida State University

Fully funded merit fellowship for PhD, lasting 5 years with stipend, and book and travel allowance. [Certificate](#)

MERIT SCHOLARSHIP
Quaid-e-Azam University
Tuition waiver for M.Phil.

Spring 2014

PRIME MINISTER'S LAPTOP
Islamabad, Pakistan

Fall 2014

Awarded a laptop from Pakistan's Prime Minister for M.Phil. as an honors graduate student. [Certificate](#)

BEST TEACHER AWARD
CIIT, Virtual Campus

Fall 2014, Spring 2014, Spring 2016

Top-rated teacher in all of Math Department. Received honorarium for performance. [Certificate](#)

PAKISTAN ATOMIC ENERGY COMMISSION TALENT SCHOLARSHIP
Islamabad, Pakistan

2008 Cohort

Merit scholarship. Funded all fees for bachelor's, and included stipend and book allowance.

SELECTED CERTIFICATIONS

DATASCIENCE BOOTCAMP

5/1/2024 and 5/1/2023

Erdős Institute

www.erdosinstitute.org/

►Project: Tallahassee crimemap generation using pix2pix.

[Certificate \(2024\)](#)

►Project: Predict initial configuration of Conway's Game of Life

[Certificate \(2023\)](#)

MASTER TRAINER

HEC

Faculty development training

5/1/2023

Islamabad, Pakistan

[Certificate](#)

TALKS

Abstracts, slides and/or notes for the talks are available on my [webpage](#).

COLORING GRAPHS AND BEYOND

Haverford College

Colloquium Talk

4/15/2024

Pennsylvania, PA

FINDING CLIQUES WITHOUT FINDING CLIQUES

FSU Math Honors Day

Flash Talk

4/12/2024

Tallahassee, FL

WEISFEILER AND LEHMAN USE SIMPLICIAL SETS: PSUEDOTOP VERTEX NEURAL NETWORKS

49th ANYSRGMC

Graduate Student Conference

3/22/2024

Syracuse, NY

FINDING HIGHER STRUCTURES IN GRAPHS

Florida State University

Poster Presentation at Math Honors Day

4/14/2023

Tallahassee, FL

AN INTRODUCTION TO BELL'S THEOREM

LOV103, Florida State University

Graduate Student Seminar Talk

11/04/2022

Tallahassee, FL

INFINITE SIMPLICES: AN EXCURSION INTO SIMPLICIAL SETS

Florida State University

Public talk at Research Sharing Luncheon at Honors, Scholars and Fellows Society

8/19/2022

Tallahassee, FL

A COMBINATORIAL APPROACH TO SIMPLICIAL SETS

LOV103 Florida State University

Topology Seminar Talk

8/11/2022

Tallahassee, FL

AXIOMATIZATION OF DIFFERENTIAL COHOMOLOGY

Florida State University

Algebra Seminar Talk

8/21/2021

Zoom

THE VARIATIONAL BICOMPLEX AND TAKENS' THEOREM

Florida State University
Candidacy Exam Talk

4/22/2020

Zoom

HILBERT'S SIXTH PROBLEM AND TOPOS THEORY

LOV201, Florida State University
Graduate Student Seminar Talk

3/12/2019

Tallahassee, FL

COEXISTENCE OF SEVERAL NON-HERMITIAN OBSERVABLES IN PT-SYMMETRIC QM

Delaware State University
Presentation for a class project

4/23/2018

Dover, DE

ORTHOMODULARITY AND INCOMPATIBILITY OF RELATIVITY AND QUANTUM MECHANICS

International Islamic University
3rd National Conference on Mathematical Physics

3/27/2017

Islamabad, Pakistan

MATHEMATICS AND THE FORMALISM OF QUANTUM MECHANICS

Quaid-e-Azam University
Pure Math Seminar Talk

12/03/2015

Islamabad, Pakistan

MATHEMATICS AND THE FORMALISM OF QUANTUM MECHANICS

COMSATS Institute of Information Technology, Virtual Campus
Math Seminar Talk

8/12/2015

Islamabad, Pakistan

ALEXANDER GROTHENDIECK: THE MAN

COMSATS Institute of Information Technology, Virtual Campus
General Seminar Talk

3/12/2015

Islamabad, Pakistan

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COMSATS Institute of Information Technology, Virtual Campus
Math Seminar Talk

8/24/2014

Islamabad, Pakistan

FIXED POINT THEOREMS IN TOPOLOGY: APPLICATIONS

COMSATS Institute of Information Technology, Virtual Campus
Math Seminar Talk

8/17/2014

Islamabad, Pakistan

THE COUNTER-INTUITIVE APPLICATIONS OF HARMONIC SERIES

COMSATS Institute of Information Technology, Virtual Campus
Math Seminar Talk

1/1/2014

Islamabad, Pakistan

WHY INTUITIONISTIC LOGIC IS DE-CONSTRUCTIVE

COMSATS Institute of Information Technology, Virtual Campus
Math Seminar Talk

11/22/2013

Islamabad, Pakistan

ENGINEERING DEUTSCH-JOZSA ALGORITHM WITH FLYING ATOMS

International Conference and Workshop on Nanoscience and Technology 2012
Conference Talk

8/4/2012

Islamabad, Pakistan

LIMITS AND RANDOMNESS OF REASON

COMSATS Institute of Information Technology
Undergraduate Seminar Talk

8/17/2011

Islamabad, Pakistan

PUBLICATIONS

- Foster, T. S., & Malik, A. N. Wiesfeler and Leman Go Global Locally (in preparation)
- Capucci, M.; Gavranović, B.; Malik, A.N.; Rios, F., & Weinberger, J. On a fibrational construction for optics, lenses, and Dialectica categories, arXiv:2403.16388, 2024
- Behzad, M.; Adnan, N.; Malik, A.N.; Merchant, S.A. Technology-Embedded Hybrid Learning. Preprints 2018, 2018030229. <https://doi.org/10.20944/preprints201803.0229.v2>

- Xing, Y. H., Farooq, M. U., & Malik, A. N. Effects of Gender on the Performance of Microenterprises in Pakistan. The International Journal of Humanities & Social Studies, 5(11). 2017
- Malik, A.N., Kamran, T. Orthomodularity and the incompatibility of relativity and quantum mechanics. Quantum Stud.: Math. Found. 4, 171–179 (2017). <https://doi.org/10.1007/s40509-016-0092-8>
- Malik, A.N. Non-isometric, involutive antiautomorphisms. arXiv:1603.08498, 2016
- Malik, A.N. Operator Algebras and Foundations of Quantum Mechanics. Diss. Quaid-e-Azam University, Islamabad, 2016
- Malik, A.N. Engineering Deutsch-Jozsa Algorithm in Cavity QED via Bragg Regime. Diss. COMSATS Institute of Information Technology, Islamabad, 2012.

SKILLS

PROGRAMMING LANGUAGES LIBRARIES ED-TECH SOFTWARE LANGUAGES

Experienced: Python, LaTeX

Familiar: C++ | SQL

pytorch | sklearn | dgl | sqlite3 | Pandas | networkx | pix2pix | numpy | multiprocessing

LMS: Canvas | Blackboard

Grading Tools: Gradescope | Crowdmark

CorelDRAW | Microsoft Excel | Word and Powerpoint

Native: Urdu | Potohari | Punjabi

Fluent: English

SERVICE AND OUTREACH

READING GROUP

Florida State University

Initiated and organized a weekly a reading group on Applied Category Theory by arranging speakers and talk titles

Spring 2023 – Spring 2024

Tallahassee, FL

ADVISOR

Student Advisory Board

Volunteered on a student advisory board for the Honors, Scholars and Fellows Society at Florida State University.

Fall 2022

Tallahassee, FL

JUDGE

Capital Regional Science and Engineering Fair

Volunteered as a judge for a statewide schools' Science Fair.

February 1, 2019

Tallahassee, FL

VOLUNTEER

Research Sharing Luncheon

Volunteered for logistics support for Research Sharing Luncheon, organized by Honors, Scholars and Fellows Society at FSU.

September 13, 2019

Tallahassee, FL

VOLUNTEER

Pakistan Day

Volunteered as a waiter, serving Pakistani cuisine on Coffee Hour, part of a weekly event that celebrates one country's cuisine at Center for Global Education, FSU.

November 30, 2018

Tallahassee, FL

VOLUNTEER

Math Fun Day

Volunteered for a public outreach and education event by the Math Department.

February 2, 2019 & February 1, 2020

Tallahassee, FL

GARDENING

The Spring Gardens

Potted plants in a community vegetable garden as part of Fulbright Enrichment Seminar series.

April 14, 2018

Philadelphia, PA