ABDULLAH N MALIK | Curriculum Vitae

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📞 (+1) 571 299 8671 • 🌐 Webpage • in LinkedIn

SUMMARY

PhD Candidate working on applied category theory and machine learning. Fulbright Alumnus. Interested in foundations of math and physics

EDUCATION

FLORIDA STATE UNIVERSITY   8/2018 – 4/2024
Ph.D. in Pure Mathematics   Tallahassee, FL
Thesis: Machine Learning with Simplicial Sets

QUAID-E-AZAM UNIVERSITY   2/2014 – 4/2016
M.Phil. in Pure Mathematics   Islamabad, Pakistan
Thesis: Operator Algebras and The Foundations of Quantum Mechanics

COMSATS INSTITUTE OF INFORMATION TECHNOLOGY   2/2008 – 2/2012
B.S. in Mathematics   Islamabad, Pakistan
Thesis: Engineering Deutsch-Jozsa Algorithm in Cavity QED via Bragg Regime

EXPERIENCE

TEACHING ASSISTANT   8/2020 – 4/2024
Florida State University   Tallahassee, FL
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, Summer 2021, Spring 2021

Graduate Student Mentor:
- Student: Ayotuntosomi Loye   ›› Project: Simplicial Sets are Chu Spaces

IN-CHARGE   8/2017 – 12/2017
Office of Hybrid Learning   Islamabad, Pakistan
COMSATS Institute of Information Technology, Virtual Campus
- Lead a team of Content Experts, an Instructional Design Professional, Computer Graphics experts, IT Specialists and Supplementary Instruction Leaders.
- Responsible for making arrangements for faculty development.
- Responsible for identifying gaps in student ICT literacy and making appropriate recommendations.
- Oversaw refinement of courseware.
- Analyzed existing practices, and gauged them against successful ones.

RESEARCH ASSOCIATE
3/2013 – 8/2017
Department of Mathematics
Islamabad, Pakistan
COMSATS Institute of Information Technology, Virual Campus
> 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

> Trained as Master Trainer in Pakistan Higher Education Commission's 29th Master Trainers Faculty Professional Development Program.

INTERN
8/2012 – 11/2012
Pakistan Council for Science and Technology
Islamabad, Pakistan
> Chiefly appointed as 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
3/2011 – 9/2012
UTrade (Pvt.) Ltd.
Islamabad, Pakistan
> Subeditor for trade magazine UTrade.
> Responsible for all magazine-related gamut, from writing assignments to final print.

TEACHING ASSISTANT
12/2009 – 5/2010
Department of Computer Science
Islamabad, Pakistan
COMSATS Institute of Information Technology
> Course: Introduction to Programming (Language: C++)

CHIEF EDITOR
4/2009 – 2/2012
Synergy
Islamabad, Pakistan
Campus Magazine
> 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.

OUTSTANDING INSTRUCTOR AWARD
Fall 2022
Florida State University
Among the top instructors in the Math Department

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

Mathematics Research Committee for Applied Category Theory. Worked under Valeria de Paiva's group on Dialectica Categories. Fully funded summer school included travel, lodging and food for one week.

ADELAIDE WILSON FELLOWSHIP
Florida State University
Received a one-time monetary disbursement.

Fall 2018

FULBRIGHT FELLOWSHIP
Florida State University
Fully funded PhD for 5 years with stipend, and book and travel allowance.

2017 Cohort

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

Spring 2014

PRIME MINISTER'S LAPTOP
Islamabad, Pakistan
Awarded a laptop from Pakistan's Prime Minister for M.Phil. studies.

Fall 2014

BEST TEACHER AWARD
CIIT, Virtual Campus
Top-rated teacher in all of Math Department. Received honorarium for performance.

Fall 2014, Spring 2014, Spring 2016

PAKISTAN ATOMIC ENERGY COMMISSION TALENT SCHOLARSHIP
Islamabad, Pakistan
Funded all fees for bachelor's, and included stipend and book allowance.

2008 Cohort

TALKS

Abstracts, slides and/or notes for the talks are available on my webpage.

WEISFEILER AND LEHMAN USE SIMPLICIAL SETS: PSUEDOTOP VERTEX NEURAL NETWORKS
LOV103, Florida State University
Machine Learning Seminar Talk

8/27/2023
Tallahassee, FL

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

3/12/2019
Tallahassee, FL

Graduate Student Seminar Talk

COEXISTENCE OF SEVERAL NON-HERMITIAN OBSERVABLES IN PT-SYMMETRIC QM   4/23/2018
Delaware State University   Dover, DE
Presentation for a class project

ORTHOMODULARITY AND INCOMPATIBILITY OF RELATIVITY AND QUANTUM MECHANICS   3/27/2017
International Islamic University   Islamabad, Pakistan
3rd National Conference on Mathematical Physics

MATHEMATICS AND THE FORMALISM OF QUANTUM MECHANICS   12/03/2015
Quaid-e-Azam University   Islamabad, Pakistan
Pure Math Seminar Talk

MATHEMATICS AND THE FORMALISM OF QUANTUM MECHANICS   8/12/2015
COMSATS Institute of Information Technology, Virtual Campus   Islamabad, Pakistan
Math Seminar Talk

ALEXANDER GROTHENDIECK: THE MAN   3/12/2015
COMSATS Institute of Information Technology, Virtual Campus   Islamabad, Pakistan
General Seminar Talk

1, 2,...   8/24/2014
COMSATS Institute of Information Technology, Virtual Campus   Islamabad, Pakistan
Math Seminar Talk

FIXED POINT THEOREMS IN TOPOLOGY: APPLICATIONS   8/17/2014
COMSATS Institute of Information Technology, Virtual Campus   Islamabad, Pakistan
Math Seminar Talk

THE COUNTER-INTUITIVE APPLICATIONS OF HARMONIC SERIES   1/1/2014
COMSATS Institute of Information Technology, Virtual Campus   Islamabad, Pakistan
Math Seminar Talk

WHY INTUITIONISTIC LOGIC IS DE-CONSTRUCTIVE   11/22/2013
COMSATS Institute of Information Technology, Virtual Campus   Islamabad, Pakistan
Math Seminar Talk

ENGINEERING DEUTSCH-JOZSA ALGORITHM WITH FLYING ATOMS   8/4/2012
International Conference and Workshop on Nanoscience and Technology 2012   Islamabad, Pakistan
Conference Talk

LIMITS AND RANDOMNESS OF REASON   8/17/2011
COMSATS Institute of Information Technology   Islamabad, Pakistan
Undergraduate Seminar Talk

PUBLICATIONS

❯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	**Experienced:** Python, LaTeX **Familiar:** C++	SQL
LIBRARIES	pytorch	sklearn	dgl	sqlite3	Pandas	Networkx
LANGUAGES	**Native:** Urdu, Potohari, Punjabi	**Fluent:** English	**Beginner:** German, Arabic

Service and leadership

READING GROUP
Spring 2023 – Present

Florida State University
Tallahassee, FL

Initiated a reading group on Applied Category Theory.

ADVISOR
Fall 2022

Student Advisory Board
Tallahassee, FL

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

VOLUNTEER
Fall 2019

Research Sharing Luncheon
Tallahassee, FL

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

VOLUNTEER
Fall 2019

Pakistan Day
Tallahassee, FL

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

VOLUNTEER
Spring 2018 & Spring 2019

Math Fun Day
Tallahassee, FL

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

GARDENING
Spring 2018

The Spring Gardens
Philedelphia, PA

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