

Abraham Ladha

Georgia Institute of Technology
Mathematics/Computer Science
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Education **Georgia Institute of Technology — Fall 2016 - Present**

B.S. in Mathematics expected Spring 2019

Fields: Cryptography, Algorithms, Algebra, Combinatorics, and Logic

Armstrong State University — Fall 2014 - Spring 2016

transferred to Georgia Tech after two years

H. V. Jenkins High School — Fall 2010 - Spring 2014

AP Scholar with Distinction from the Engineering Academy

Research **Big Data and Quantum Mechanics — Fall 2018**

Trained under Dr. Medford to calculate absorption energies of physical models with Quantum Espresso, on the PACE supercomputing cluster.
vip.gatech.edu/teams/big-data-and-quantum-mechanics

Provable Security and Ethereum — Fall 2016

Worked to implement Ethereum's CASPER protocol as to fit Miller's Provable Security foundation. Final project for CS6260.
The Ethereum Scratch Off Puzzle — arxiv.org/abs/1612.04518

Secure Multiparty Computation — Summer 2016

Worked with Dr. Rasheed to implement a secure hamming distance protocol as a comparator for a Private Set Intersection (PSI) Algorithm
Summary of Research — ladha.me/files/writeup.pdf

Topological Graph Theory — Spring 2016

Worked with Dr. Lambert to find upper and lower bounds
For the crossing number of the Paley graph on 13 vertices

The N-Queens Problem — Summer 2014 - Spring 2015

Worked with Dr. Brown to find classes of permutations and algebraic properties of a variation of the traditional n -queens problem.
Exploring mod 2 n -queens games — arxiv.org/abs/1510.02875

Awards **ChemEcar 1st Place Nationals**
Pittsburg PA, Fall 2018

ChemEcar 1st Place Southern Regionals
Louisiana State University, Spring 2018

Lancy C. Jen Shearhouse Scholarship
Armstrong State University, 2016

GA Power Research Scholar
Armstrong State University, 2016

Eagle Undergraduate Mathematics Conference 3rd Place
Georgia Southern University, 2016

ACM International Collegiate Programming Competition
College of Charleston, 4th regionals, 2015

Video Game Design State of Georgia
9th place 2012, 6th place 2013, 3rd place 2014

Work **Teaching Assistant — Spring 2019 - Present**
Worked under Dr. Kolesnikov on 8803/4803 Blockchain & Crypto
Responsibilities include creating and grading problem sets, exams, and projects
as well as office hours and student advisement on term papers.

Student Worker — Summer 2018 - Winter 2018
I occupied the front desk in the Marcus nanotechnology building.
I did various odd tasks, ranging from data entry to moving furniture.

CEISMIC STEAM Camp Counselor — Summer 2013 - Summer 2016
I taught mostly K-5 girl scouts basics of computers and programming
using tools such as Construct, Code.org, Blender and Unity3D.

Student Worker — Summer 2015 - Spring 2016
I helped manage various CS Lab equipment, including desktops,
3D printers, plotters, and haptic input devices.

Programming Competition coordinator — Spring 2016
I organized meetings to help Armstrong's programming team practice for
events, such as the ACM ICPC and regional programming competitions

ACM Student Chapter President — Fall 2015 - Spring 2016
I oversaw the second largest organization on campus and helped plan
and manage several large events through out the year.

Technology Student Association President — Fall 2013 - Spring 2014
I grew our organization from 12 people to 80. Our school was promoted
to nationals during my term for the first time since 1988.

Notable Coursework

Georgia Tech

CS 6260 Applied Cryptography
CS 4510 Automata and Complexity Theory
CS 3510 Design and Analysis of Algorithms
MATH 4032 Combinatorial Analysis
MATH 4432 Algebraic Topology
MATH 4108 Abstract Algebra II
MATH 4803 Knot Theory
MATH 4431 Introduction to Topology
MATH 4150 Number Theory
MATH 4107 Abstract Algebra I
MATH 4317 Real Analysis I
MATH 4320 Complex Analysis
MATH 4441 Differential Geometry
MATH 4280 Information Theory
MATH 3406 Second Course in Linear Algebra
MATH 3235 Probability Theory
MATH 3012 Applied Combinatorics
ISYE 3833 Linear Programming
PHYS 4782 Quantum Information and Quantum Computing

Armstrong

CS 5825 Artificial Intelligence
CS 5700 Computer Security
CS 3510 Theory of Computation
CS 3330 Comparative Languages
MATH 5160 Number Theory
MATH 4900 Topological Graph Theory
MATH 4340 Graph Theory
MATH 4011 Real Analysis I
MATH 4022 Real Analysis II
MATH 3360 Modern Geometry
MATH 3110 Abstract Algebra
PHYS 3200 Math Methods for Physicists

Skills and Hobbies

Fluent in C, Python, Go, and many other languages.
I really enjoy most anything related to Linux, L^AT_EX, Rubix cube puzzles, and Yoyos. I also enjoy competitions such as the Putnam and Halite contests. I keep my writings at ladha.me/blog.