nico**casale**

m.s. student, they/them pronouns

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coding
C++/CUDA
MATLAB
Python
LaTeX
C#
C

language
native
english
skilled
spanish
basic
italian
french
german

interests

GPU programming, machine learning, computer graphics

education

2017-2018	**M.S.** candidate in Electrical Engineering	North Carolina State University (NCSU)
	non-thesis, courses in data science, machine learning, random processes, digital image/signal processing, linear algebra, computer architecture	
2012–2017	**B.S.** summa cum laude (3.84 GPA)	NCSU
	Electrical Engineering, *specialization in Computer Engineering*	
2008–2012	**high school diploma**	Independence/Butler High Schools
	score of 5/5 on six AP exams, Academy of International Studies student	

experience

2016-2017	**independent research**	NCSU Electrical Engineering Department
	GPU acceleration of algorithms using NVIDIA's CUDA/C++, under guidance of Dr. Dror Baron. ~28x speedups achieved with a Tesla K80 for multi-processor approximate message passing (MP-AMP)	
08-12 2014 06-12 2015	**cooperative education internship**	Analog Devices, Inc., Greensboro, NC

worked on communications infrastructure team under John Oates, Systems Engineer. Accompanied project through three hardware revisions.
Moved project forward with:
- improved software
  - program to present board capability to customers
  - automation suite to characterize performance of board
- improved hardware
  - maintenance and modification of surface mount PCB components
  - schematic changes (Cadence Allegro PCB Planner)

projects

since 2018	**open source project contributions in python and C++**	github
	OpenMined is a homomorphically-encrypted federated learning platform that seeks to provide a secure and sustainable way of training neural networks.	
since 2017	**computer graphics in C++ and MATLAB**	instagram (some code on github)
	using mathematics and image processing concepts to generate art; working with OpenFrameworks (C++), MATLAB, and Google's search API in Python	
2018	**linear discriminant analysis and decision trees in MATLAB**	github
	for ECE 759, LDA and Decision Trees were used on the MNIST and Extended YaleB datasets to garner an understanding of machine learning concepts.	

since 2018	**music review website in React (Javascript)**	github
	a project built with friends to host all of our gratuitous opinions on music	
2017	**orthographic projection in MATLAB**	ECE 592 project (digital image processing)
	given a photo of a box and its closest corner in image, program finds faces of box and projects to create 3-D model	
2016	**internet of things (IoT) 'car'**	ECE 306 project (embedded systems)
	built a small remote-controlled car with various I/O devices to a Texas Instruments MSP430 Microcontroller, programmed in C	

presentations

08 2017	**poster at undergraduate research symposium**
	GPU implementation of row-wise approximate message passing (AMP) speedup of ~28x achieved with CUDA/C++
04 2017	**poster at senior design day**
	Keg It Out: an IoT beer monitoring service for brewers to optimize distribution. culmination of the Engineering Entrepreneurship Program for senior design

volunteering

2017	**cooking & serving food at day-shelter**	love wins ministries
	served food to some of Raleigh's homeless and at-risk population	
2016	**family STEM nights**	local elementary & middle schools
	facilitated interactive engineering experiments for K-12 students	
2016	**peer tutor for Eta Kappa Nu (HKN, ECE honor society)**	on campus
	offered free help to undergraduates in ECE courses	
2013-2016	**SOUL Garden volunteer**	on campus
	student-run garden which donates food to those in need	
2015 & 2016	**annual Service Raleigh volunteer**	Raleigh
	yearly event to bring many volunteers to the Raleigh area	

extracurriculars

since 2016	**facilitator/host, Wake Up Raleigh**
	mindfulness group with weekly events, community engagement
2013-2015	**president, Buddhist Philosophies Club**
	organized events, led discussions, community engagement and leadership
2016-2017	**Co-Op ambassador**
	informed students about the Co-Op program at State; opportunity to demonstrate leadership and character
since 2008	**poetry & music writing**
	published in the 49th-51st annual editions of NCSU's artistic and literary book