

# nicocasale

m.s. electrical engineering, they/them pronouns

## contact

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## coding

CUDA/HLSL  
C++/C#  
MATLAB  
python  
L<sup>A</sup>T<sub>E</sub>X  
C

## languages

**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

- 05 2018 – **programmer analyst** Earth Resources Technology (ERT)  
ERT contracts with the National Oceanographic and Atmospheric Administra-  
tion (NOAA) to make its swathes of data available to the public.
- 2016-2017 **independent research** NCSU  
GPU acceleration of an algorithm using NVIDIA's CUDA/C++, under guid-  
ance 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
- 02-05 2018 **linear discriminant analysis and decision trees in MATLAB** github  
for ECE 759, LDA and Decision Trees were trained on MNIST and Ext. Yale  
Face Database B to garner an understanding of machine learning techniques

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

## presentations

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

## volunteering

03-04 2018	<b>participated in three Habitat For Humanity build-days</b> helped build a new home for a community family	raleigh
03 2018	<b>served at a pay-what-you-can restaurant</b> served at a community restaurant with a sliding pay scale, starting at \$0	A Place At The Table
06 2017	<b>cooking &amp; serving food at day-shelter</b> served food to some of Raleigh's homeless and at-risk population	love wins ministries
2016	<b>family STEM nights</b> facilitated interactive engineering experiments for K-12 students	local elementary & middle schools
2016	<b>peer tutor for Eta Kappa Nu (HKN, ECE honor society)</b> offered free help to undergraduates in ECE courses	NCSU
2013-2016	<b>SOUL Garden volunteer</b> student-run garden which donates food to those in need	NCSU

## extracurriculars

2016-2018	<b>facilitator/host, Wake Up Raleigh</b> mindfulness group with weekly events, community engagement	
2013-2015	<b>president, Buddhist Philosophies Club</b> organized events, led discussions, community engagement and leadership	
2016-2017	<b>Co-Op ambassador</b> informed students about the Co-Op program at State; opportunity to demonstrate leadership and character	
since 2008	<b>poetry &amp; music writing</b> published in the 49 <sup>th</sup> –52 <sup>nd</sup> annual editions of NCSU's artistic and literary book	