

# nicocasale

m.s. student, they/them pronouns

## contact

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27606

## programming

C++/CUDA  
MATLAB  
Python  
L<sup>A</sup>T<sub>E</sub>X  
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 A.P. 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
    - code maintenance (source control, refactoring)
  - 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 MATLAB and C++** instagram (some code on github)  
each frame generated individually from mathematical basis  
some work with Google's search API in Python, as well
- 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

|      |  |                                    |
|------|--|------------------------------------|
| 2018 | <b>music review website in React (Javascript)</b><br>a project built with friends to host all of our gratuitous opinions on music.                                   | github                             |
| 2016 | <b>internet of things (IoT) 'car'</b><br>built a small remote-controlled car with various I/O devices to a Texas Instruments MSP430 Microcontroller, programmed in C | ECE 306 project (embedded systems) |

## presentations

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

## volunteering

|             |  |                                   |
|-------------|--|-----------------------------------|
| 2017        | <b>cooking &amp; serving food at day-shelter</b><br>served food to some of Raleigh's homeless and at-risk population | love wins ministries              |
| 2016        | <b>family STEM nights</b><br>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><br>offered free help to undergraduates in ECE courses    | on campus                         |
| 2013-2016   | <b>SOUL Garden volunteer</b><br>student-run garden which donates some food to those in need                          | on campus                         |
| 2015 & 2016 | <b>annual Service Raleigh volunteer</b><br>yearly event to bring many volunteers to the Raleigh area                 | Raleigh                           |

## extracurriculars

|            |  |  |
|------------|--|--|
| 2016-2018  | <b>facilitator/host, Wake Up Raleigh</b><br>mindfulness group with weekly events, community engagement                               |  |
| 2013-2015  | <b>president, Buddhist Philosophies Club</b><br>organized events, led discussions, community engagement and leadership               |  |
| 2016-2017  | <b>Co-Op ambassador</b><br>informed students about the Co-Op program at State<br>opportunity to demonstrate leadership and character |  |
| since 2008 | <b>poetry &amp; music writing</b><br>published in the 49 <sup>th</sup> -51 <sup>st</sup> editions of NCSU's literary magazine        |  |