

# JUAN D. LUQUE CHANG

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<https://jdluque.github.io>

## Education

- **PhD, Computer Science** GPA: 3.9/4.0  
*University of Maryland, College Park (UMD)* Expected May 2025
- **BS, Mathematics & Computer Science minor** GPA 3.9/4.0  
*University of Maryland Baltimore County (UMBC); Sherman Scholar* May 2019

## Programming competencies

**Core:** Python, Typescript, C++, Java, MySQL

**Libraries:** pytorch, torch\_geometric, pandas, AWS Amplify, scikit-learn, gurobi, matplotlib seaborn, NetworkX

## Relevant experience

- **Data Science for Social Good (DSSG) at Carnegie Mellon University** Pittsburgh, PA  
*DSSG Fellow – repository: [https://github.com/dssg/dojo\\_mh\\_public](https://github.com/dssg/dojo_mh_public)* May 2022 - August 2022
  - Implemented a scalable *Machine Learning pipeline*, pooling data from > 100 public services heterogeneous tables, using Python, SQL, sci-kit learn and bash to predict behavioral health crises in Kansas
  - Worked closely with stakeholders (outreach teams, mental health center, hospitals, EMS, etc.) to understand the problem and piece together an appropriate solution
  - Presented a 3 minute talk at DataFest 2022
- **UMD Computer Science Department** College Park, MD  
*Research and Teaching Assistant* August 2021 - Present
  - **Publications:** Group Fairness in Set Packing (IJCAI-23); Barter Exchange with Shared Item Valuations; Motif Counting for Graph Neural Networks; Concentration of Submodular Functions Under Negative Dependence
  - **TA:** Machine Learning, Discrete Structures (x3), Intro to Programming Languages I and II
- **What Are Those!? App** College Park, MD  
*Software Engineer* September 2023 - Present
  - Utilized Flutter, AWS and GraphQL to build a search engine for WAT, a shoe-image recognition app and platform for sneaker and street-fashion communities.

## Projects

- **Obsidian Plugin Development (written in Typescript)** Created 2021  
*<https://obsidian.md> is a free markdown-based note making and editing software*
  - Next Link: implements re-bindable shortcuts for jumping the cursor back and forth between note hyperlinks.
  - Share Connected Components: avoid dead links by automating the sharing of connected components of notes
- **Machine Learning Projects on MNIST, CIFAR10, and other datasets** Completed December 2020
  - Implemented DNNs, CNNs, transfer learning (on VGG16), PCA, MDA, spectral clustering, kSVM, and more

## Other skills and experience

**Other experiences:** Google Computer Science Research Mentorship, Mentee 2021; Learning Assistant, Multivariate Calculus at Montgomery College 2017; Learning Assistant, Physics I, UMBC 2018-2019

**Other competencies:** Android Studio, L<sup>A</sup>T<sub>E</sub>X, MATLAB, Github Projects, Trello, Linux (Ubuntu, Debian), Flutter, GraphQL

**Coursework:** Advanced Machine Learning, Algorithmic Lower Bounds, Algorithm Design and Analysis, Advanced Nonlinear Optimization, Quantum Information Processing, Real Analysis, Complex Analysis, Measure Theory, Computational Methods, Computational Geometry

**Other skills/hobbies:** English (native), Spanish (native), French (elementary); MC Board Hoarders (Vice-president); 1000 lb club; bouldering

**Volunteering:** BlairHacks 2022 Python Workshop Host, Baltimore Polytechnic Institute Volunteer Teaching Assistant, Lakeland Elementary and Middle School Volunteer Math Coach and Teaching Assistant, George B. Thomas Learning Academy Volunteer Tutor

**Awards:** Freeman A. Hrabowski President's Scholarship; Sherman Scholar Scholarship; Kenneth-Wantling Endowed Scholarship; Koski-Finnerty Math/Sciences Scholarship; General Honors Scholarship; Transfer Student Alliance