

Julián Villaquirá

404 704 7508 | jvillaquiras3@gatech.edu | [in jcvillaquiras](https://www.linkedin.com/in/jcvillaquiras) | [jcvillaquiras](https://github.com/jcvillaquiras)

Education

Georgia Institute of Technology, Atlanta, GA

- PhD in Mathematics Aug 2025 - present
- MSc in Computational Science and Engineering May 2026 - present

Universidad de los Andes, Bogotá, Colombia

- MSc in Mathematics Aug 2022 - May 2024
- BSc in Mathematics Aug 2018 - May 2021
- BSc in Mechanical Engineering Jan 2017 - May 2021

Skills

- Programming: *Julia, Python, JavaScript, Bash, MATLAB.*
- Tools: *Git, Linux, FreeFEM++, LaTeX.*
- Relevant Coursework: *Probability I and II, Stochastic Calculus, Algorithms, Numerical Linear Algebra, Modelling & Simulation, Functional Analysis, Operator Theory.*
- Personal Projects: *Fourier Transform of a Polytope, JOT.jl, Parallel Regularized K-Means, SDP Calderón Problem, and others on [GitHub](#).*
- Languages: *English (fluent), Spanish (native).*

Professional Experience

Associate Software Developer, [ISI Markets](#), Bogotá, Colombia

Mar 2025 - Aug 2025

- Implemented web scraping automations for CEIC 10X project using internal JS library, and extensively used regular expressions for parsing scraped data.
- Handled majority of the ticket volume of local team of 3 developers, and provided technical guidance for teammates.
- Developed [cap-utils](#), a suite of Bash utilities later adopted by the team to reduce friction in repetitive development and processing tasks.
- Automated article downloading, parsing and forwarding for REDD Intelligence on AWS.

Senior Researcher, [Quantil](#), Bogotá, Colombia

Jul 2023 - Nov 2024

- Formulated and implemented integer optimization model for optimal bag formation under business constraints in a food rescue platform using SCIP and Python.
- Implemented algorithm for fuzzy deduplication of exportation data of Colombian business network.
- Extended oil field planning tool with functionalities and specific business rules to account for operational differences across fields.
- Developed data manipulation, persistence and visualization functions for oil field planning tool.

Junior Researcher, [Quantil](#), Bogotá, Colombia

Feb 2022 - Jun 2023

- Formulated and implemented linear optimization model with cvxopt for a oil field planning tool, maximizing production while balancing oil, water, and energy flows subject to technical and economical constraints on energy (self-generation and purchases) and water (extraction, treatment, injection and disposal).
- Implemented drilling scheduling algorithm under technical and time constraints for field planning tool in Python.
- Modeled problems across diverse areas of the industry (pricing of used vehicles, physics simulations of lime kilns and pipeline usage optimization).

Academic Research Projects

Calderón's Inverse Problem via Neural Operators and Semi-Definite Optimization

- Master thesis in Mathematics supervised by Professor Mauricio Junca.
- Presented poster at [Optimization Workshop](#) in Bogotá, Colombia on Dec 2024.
- Speaker at Conference of Applied and Industrial Mathematics [MAPI 3](#) in Bucaramanga, Colombia on Jun, 2024.
- Implemented recent semidefinite optimization formulation of Calderón's problem in Julia and FreeFEM.

Localization of the Spectrum of Quadratic Pencils, Undergraduate Thesis in Mathematics

- Computed spectra of operator pencils appearing in engineering and physics numerically.

Spectral Clustering Algorithm for Vehicle Routing Problems, Undergraduate Thesis in Engineering

- Developed artificial bee colony algorithm and spectral clustering for VRP in MATLAB.

Scholarships & Recognitions

- David L. Brown Fellowship May 2026
Awarded by the School of Mathematics at Georgia Tech by exhibiting strong academic and research skills.
- Full Scholarship and GTA Position Aug 2022 - May 2024
Awarded by Dept. of Mathematics at Uniandes for academic performance and graduate entrance exam.
- Yerly Scholarship, Department of Mathematics at Uniandes Jan 2021 - May 2021
- Ser Pilo Paga Scholarship, Colombian Ministry of Education Jan 2017 - Dec 2020
- Andrés Bello Award, Colombian Ministry of Education Nov 2016

Teaching Experience

- Georgia Institute of Technology Aug 2025 - present
Teaching assistant for Linear Algebra and Calculus II. Assisted in grading for Introduction to Proofs and graduate Probability class. Tutor in Math Night for math undergraduate majors.
- Universidad de los Andes Aug 2020 - May 2025
Problem sessions for Calculus I and II, Linear Algebra and ODE as UTA/GTA and adjunct professor in the Mathematics department. Lab session for Statics in Mechanical Engineering department.

Volunteer Work

- Volunteer, [Brillas Foundation \(STEAMos\)](#) Oct 2022 - May 2025
Promote STEM education among underprivileged Colombian young girls in challenging home environments by leading educational puzzles and math-based activities.