

Gabriel Agostini

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EDUCATION

Columbia University , Columbia College <i>Bachelor of Arts in Urban Studies</i>	2021 - 2022
Columbia University , School of Engineering and Applied Sciences <i>Bachelor of Science in Applied Mathematics</i> GPA: 4.08/4.0	2017 - 2021
Budapest Semesters in Mathematics <i>Study Abroad</i>	Spring 2020

PUBLICATIONS

Gabriel Agostini, Yushan Zhang, Debra Laefer. *A Category-Theory Approach to Construction Ontologies in Subsurface Mass Transit*. Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci., XLVI-4/W4-2021, 125–130, 2021. doi.org/10.5194/isprs-archives-XLVI-4-W4-2021-125-2021

PRESENTATIONS

A Category-Theory Approach to Construction Ontologies in Subsurface Mass Transit <i>3D GeoInfo Conference</i>	October 2021
Operationalizing Equity in the San Francisco Student School Assignment , video link <i>Stanford Data Science for Social Good</i>	August 2021
Knot Surgery and Integer Characterizing Slopes , video link <i>Columbia University Mathematics Department</i>	August 2019

RESEARCH EXPERIENCE

Stanford & San Francisco Unified School District Partnership <i>Stanford University</i> Advisor: Prof. Irene Lo <ul style="list-style-type: none">- Design an algorithm to ensure equal access to education for underserved students in San Francisco- Incorporate the work with the current student assignment process, which uses deferred acceptance- Identify geographical proxies (red-lining history, median income) for education access barriers- Work alongside policymakers, communicating the decisions and incorporating feedback timely	June 2021 - Present
Centre for Urban Science and Policy <i>TU Delft</i> Advisor: Prof. Trivik Verma <ul style="list-style-type: none">- Use Open Street Maps street networks data (with OSMNx) to study underlying patterns in urban grids- Extensively clean and refine street network data- Develop a methodology to measure the wiring (correlation) of graphlets in street networks- Produce a dataset with over 15,000 square kilometers of worldwide street networks and their wirings- Worked independently under prof. Verma's supervision to design a research question	May 2020 - Present

Urban Modelling Group

June 2020 - August 2021

*Center for Urban Science and Progress, NYU | Advisor: **Prof. Debra Laefer***

- Explore efficient systems of data organization for asset management in subway systems
- Clean and understand data for over 1,500 items in New York City subway stations
- Build ologs—an innovative Category Theory object—to represent four subway stations across the world

Columbia Mathematics Research Experience for Undergraduates

June 2019 - August 2019

*Columbia University | Advisor: **Prof. Kyle Hayden***

- Used computational software (SnapPea) in Algebraic Topology to study knot invariants
- Contributed to the verification of modern conjectures in Knot Theory such as Baker's conjecture (2018)
- Classified integer slopes for Dehn surgery of non-twist knots with unknotting number 1

TEACHING EXPERIENCE & STEM OUTREACH**Columbia University Mathematics Department, Teaching Assistant**Spring 2019, Fall 2019, Summer 2020,
Spring 2021, Summer 2021, Fall 2021

- Grade problem sets and hold weekly office hours
- Assisted for Calculus II, Multivariable Calculus, Linear Algebra, and Ordinary Differential Equations

Fênix Pré-Vestibulares, Mathematics Instructor

Summer 2018

- Plan and run over 50 hours of lessons and problem sets focused on Brazilian college entrance exams
- Enhanced the outreach of Mathematics education to students from the public school system
- Organized curriculum on basic mathematics, set theory, functions, and trigonometry

LEADERSHIP EXPERIENCE**International Student Advisory Board, Social Media Chair**

May 2018 - May 2021

Columbia University Multicultural Affairs

- Work with university staff to enhance the experience of undergraduate international students
- Advocate for policies to improve community-building, financial literacy, and intersectional expression
- Managed and created content for the International@Columbia Facebook page
- Selected three times as an orientation leader for the International Student Orientation Program to assist over 150 first-year students in their transition to Columbia

FUNDING AWARDS**Queer in AI Grad Application Financial Aid**

Fall 2021

*Out in STEM and Queer in AI***Stanford Data Science for Social Good Fellowship**

Summer 2021

*Stanford Data Science Institute***Work Exemption Program**

Summer 2021, Fall 2021

*Columbia University Center for Career Education***Tandon Undergraduate Summer Research Program**

Summer 2020

*New York University Tandon School of Engineering***Columbia University Summer Funding**

Summer 2020, 2021

Columbia University Center for Career Education

HONORS

Summa Cum Laude

May 2021

Columbia University School of Engineering and Applied Sciences

Distinction awarded to the top 5% students of the graduating class

Kitüntetés

March 2020

Budapest Semesters in Mathematics

Highest academic honors, awarded to top-performing students in the program

Core Scholar

April 2018

Columbia University Core Curriculum Office

Prize awarded to a creative project—a game called *Cards Against Sappho*—that reflects the student's engagement with the Columbia University Core Curriculum

Dean's List

2017-2021

Columbia University

Distinction awarded to students who maintain a high GPA every semester

Charles Prescott Davis Scholarship

2017-2022

Columbia University

Competitive merit-based scholarship granted upon admission

Brazilian Mathematics Olympiad Medalist

2011, 2013, 2015, 2016

Brazilian Institute of Pure and Applied Mathematics (IMPA)

RELEVANT COURSEWORK

<i>Mathematics</i>	Real Analysis (A), Measure Theory (A+), Complex Analysis (A+), Partial Differential Equations (A+), Dynamical Systems (A+), Numerical Methods (A+), Linear Algebra (A+), Algebra I and II (A/A+), Topology (current)
<i>Statistics</i>	Probability Theory (A), Stochastic Processes (A+), Statistical Inference (A+), Multivariate Statistics (A)
<i>Network Science</i>	Graph Theory (A+), Spectral Theory of Graphs and Groups (A+), Structure of Complex Networks (A+), Analysis of Networks and Crowds (A)
<i>Machine Learning</i>	Machine Learning (A), Geometric Data Analysis (A)
<i>Social Sciences</i>	Global Urbanism (A), Urban Elsewheres (A), History of the City in Latin America (A), Colonial Cities of the Americas (current)

SKILLS

<i>Programming</i>	Python (matplotlib, seaborn, pandas, scipy, networkx, geopandas, osmnx, sklearn), R
<i>Technology</i>	Git, Microsoft Excel, Social Media, LaTeX, ArcGIS, qGIS
<i>Languages</i>	Brazilian Portuguese (native), Italian (advanced), Russian (basic)
<i>Others</i>	Bartending