

EDUCATION

- **Columbia University, The Fu Foundation School of Engineering and Applied Science** New York, NY
Bachelor of Science in Computer Science Fall 2021 – Present

Currently pursuing a BS in Computer Science with a focus on intelligent systems at Columbia Engineering.

- **Queens College of the City University of New York** Queens, NY
Bachelor of Arts in Applied Mathematics 2018 - 2021

- **Selected Graduate Coursework:** Number Theory; Modern Abstract Algebra I
- **Selected Undergraduate Coursework:** Quantum Computing; Mathematical Computing; Mathematical Models; Linear Programming and Game Theory; Intro to Topology; Data Structures; Object-Oriented Programming in C++ and Java; Discrete Structures; Abstract Algebra; Linear Algebra; Discrete Mathematics; Probability and Statistics I and II; Principles of Physics I and II; Differential Equations; Vector Calculus; Calculus I - III

RESEARCH EXPERIENCE

- **Experimental Mathematics Lab at CUNY Queens College** Virtual Research
Undergraduate Researcher August 2020 – Present

- Currently conducting research supervised by Professor Christopher Hanusa on creating and analyzing Mathematical Generative Art using Mathematica.

- **Mathematical Sciences Research Institute** Virtual Research
Summer Undergraduate Researcher June 2021 – July 2021

- Investigated Preferential and k -Zone Parking Functions at MSRI-UP 2021 in a group led by graduate TA Juan Carlos Martínez Mori from Cornell University with the mentorship of Prof. Pamela E. Harris from Williams College and Prof. Rebecca E. Garcia from Sam Houston State University.

- **Algebraic Coding Theory Research at University of Puerto Rico** Virtual Research
Undergraduate Researcher August 2020 – June 2021

- (On-Hiatus: Due to 2021 MSRI-UP)
Working with Professor Fernando Piñero from UPR to continue and expand on the ETSU-UPR REU Summer 2020 research on Algebraic Coding Theory and Cryptography.

- **East Tennessee State University and University of Puerto Rico REU** Virtual Research
Summer Undergraduate Researcher June 2020 – August 2020

- Accepted into the ETSU-UPR Research Experiences for Undergraduates (REU) program funded by the National Science Foundation to conduct Mathematical Sciences research for Summer 2020.
- Conducted Combinatorics/Probability research under Professor Anant Godbole from ETSU and Algebraic Coding Theory research under Professor Fernando Piñero from UPR.

- **Experimental Mathematics Lab at CUNY Queens College** Queens, NY
Undergraduate Research Assistant Fall 2018

- Worked with Professor Christopher Hanusa on creating three-dimensional Voronoi diagrams.
- Established a working environment used to generate models using C++ and the Voropp library.
- Exported and analyzed mathematical properties such as faces and vertices of diagrams using Mathematica and Gnuplot.

TEACHING EXPERIENCE

Teaching Assistant, Queens College of the City University of New York

2021

Undergraduate Level Courses:

- MATH 201 - Multivariable Calculus Spring 2021
• Instructor: Christopher R. H. Hanusa Enrollment: 20

PUBLICATIONS

- **Preferential and k -Zone Parking Functions** In preparation, 2021
Rebecca Garcia, Parneet Gill, Pamela E. Harris, J. Carlos Martínez Mori,
Christopher Soto, Pamela Vargas, Dwight Anderson Williams II
- **The Expected Number of Distinct Consecutive Patterns in a Random Permutation** Submitted, 2020
Austin Allen, Dylan Cruz Fonseca, Veronica Dobbs, Egypt Downs, Evelyn Fokuoh,
Anant Godbole, Sebastián Papanikolaou Costa, Christopher Soto, Lino Yoshikawa arXiv:2011.12179
- **Introducing Three Best Known Goppa Codes** Submitted, 2020
Jan L. Carrasquillo-López, Axel O. Gómez-Flores, Christopher Soto, Fernando Piñero arXiv:2010.07278

PRESENTATIONS

Presenting Author(s) indicated by *:

- **Preferential and k -Zone Parking Functions** Seattle, WA
2022 Joint Mathematics Meetings *January 2022*
Mathematical Sciences Research Institute Special Session on the MSRI Undergraduate Program
Parneet Gill*, Christopher Soto*, Pamela Vargas*
- **Preferential and k -Zone Parking Functions** Virtual Meeting
2021 Gulf Coast Undergraduate Research Symposium, Rice University *October 2021*
Undergraduate Student Talks
Parneet Gill, Christopher Soto*, Pamela Vargas
- **Preferential and k -Zone Parking Functions** Virtual Meeting
2021 MATHFest XXXI, The National Association of Mathematicians (NAM) *October 2021*
Undergraduate Student Talks
Parneet Gill, Christopher Soto*, Pamela Vargas
- **Preferential and k -Zone Parking Functions** Virtual Meeting
Young Mathematicians Conference at The Ohio State University *August 21st, 2021*
Undergraduate Student Talks
Parneet Gill*, Christopher Soto*, Pamela Vargas
- **Introducing Three Best Known Binary Goppa Codes** Virtual Meeting
2021 MAA MathFest *August 4th, 2021*
MAA Undergraduate Student Paper Sessions
Jan L. Carrasquillo-López, Axel O. Gómez-Flores, Christopher Soto*, Fernando Piñero
- **Preferential and k -Zone Parking Functions** Virtual Meeting
Mathematical Sciences Research Institute *July 23rd, 2021*
MSRI-UP 2021: Parking Functions: Choose your own adventure
Parneet Gill*, Christopher Soto*, Pamela Vargas*
- **Introducing Three Best Known Binary Goppa Codes** Virtual Meeting
The Interuniversity Seminar on Research in the Mathematical Sciences (SIDIM), UPR-Humacao *February 26th, 2021*
Contributed Student Presentations
Jan L. Carrasquillo-López, Axel O. Gómez-Flores, Christopher Soto*, Fernando Piñero
- **Enumerating "Good" Permutations** Virtual Meeting
2021 Joint Mathematics Meetings *January 7th, 2021*
AMS-MAA-SIAM Special Session on Research in Mathematics
Undergraduates and Students in Post-Baccalaureate Programs, II
Austin Allen*, Veronica Dobbs*, Sebastián Papanikolaou Costa, Christopher Soto*, Lino Yoshikawa*

• **A Short Tour Through the Wonders of the Field of Computational Complexity**

Bridging Mathematics and Computer Science, CUNY Queens College
2019 CUNY Adjunct Incubator Project
Christopher Soto

Flushing, NY
November 19th, 2019

POSTERS

Presenting Author(s) indicated by *:

- **Introducing Three Best Known Binary Goppa Codes** Virtual Meeting
October 2021
2021 SACNAS - National Diversity in STEM (NDiSTEM) Digital Conference
Undergraduate Research Poster Presentation
Jan L. Carrasquillo-López, Axel O. Gómez-Flores, Christopher Soto*, Fernando Piñero
- **Introducing Three Best Known Binary Goppa Codes** Virtual Meeting
January 7th, 2021
2021 Joint Mathematics Meetings
MAA Undergraduate Student Poster Session
Jan L. Carrasquillo-López, Axel O. Gómez-Flores, Christopher Soto*, Fernando Piñero
★ JMM 2021 MAA Virtual Student Poster Session - Honorable Mention Poster ★

WRITING CONTRIBUTIONS TO THE PROFESSION

- **People Over Math: A Co-created Principle for Successful Research Communities** Submitted, 2021
Faculty authors: Rebecca Garcia, Pamela E. Harris, and Dwight Anderson Williams II
Graduate student authors: J. Carlos Martínez Mori and Casandra Monroe
Undergraduate student authors: Tomás Aguilar-Fraga, Yasmin Aguillon, Daniel Alofameni Quiñonez, Dylan Alvarenga, Aalliyah Celestine, Parneet Gill, Imhotep Hogan, Jakeyl Johnson, Kobe Lawson-Chavanu, Lina Liu, Aaron Ortiz, Lauren Quesada, Cynthia Marie Rivera Sánchez, Christopher Soto, Camelle Tieu, Dirk Tolson III, Jacob van der Leeuw, Pamela Vargas

RESEARCH PROJECTS

- **ArtVote (<https://artvote.net>)** *In-Progress*
Currently working with Professor Christopher Hanusa in the Experimental Mathematics Lab at Queens College CUNY, where we are investigating the aesthetics of generative art. We generated thousands of different images incorporating randomness using Mathematica and are using Mathematical analysis and modeling to determine various preferences in style, color, density, and more to create more aesthetically pleasing art.
- **Apple-tite** *Completed: 2016*
Created a mobile app that provides healthy food recipes and financial information for each recipe, as well as connects healthcare professionals and patients through a system I created called the CareID system. Provides various functions such as allowing users to add favorite recipes, allows caregivers / professionals to regulate patients health information and dietary restrictions. Funded by the Young Science Achievers Program, AT&T, and IBM. Mentored by Dr. Dean Saghafi-Ezaz, MD.
★ Westchester Smart Mobile App Contest 2016 - First Place ACCA Finance & Money App Award ★
★ Young Science Achievers Program (YSAP) 2016 - First Place Inventions ★
- **Mind's Eye** *Completed: 2015*
Created a mobile app for patients with Alzheimer's and Dementia. Mind's Eye is a variation to the game Shake Loose a Memory which asks users various questions about their life and recent events, allowing the user to choose Yes or No, based on their recollection to the question asked. Results of the game could then be exported and shown to a medical professional to see whether an individual overtime may be experiencing memory issues. Funded by the Young Science Achievers Program, AT&T, and IBM. Mentored by Dr. Dean Saghafi-Ezaz, MD.
★ Westchester Science & Engineering Fair 2016 Special Award - Intel Excellence in Computer Science Award ★
★ Young Science Achievers Program (YSAP) 2015 - Second Place Inventions ★

AWARDS AND HONORS

- **Math Alliance Scholar**, The National Alliance for Doctoral Studies in the Mathematical Sciences 2020
Awarded to underrepresented undergraduates with potential to receive a doctoral degree in a mathematical science.

TECHNICAL SKILLS

- **Languages:** Python, Java, C/C++, Lua, L^AT_EX
- **Applications and Frameworks:** Mathematica, SageMath, Cirq, Qiskit, NumPy, Matplotlib, pandas, Voro++
- **Miscellaneous:** Git, HTML/CSS, Javascript, Bootstrap