

CONTACT INFORMATION	<div><div><div>Work Address</div><div>Rice University Herman Brown Hall for Mathematical Sciences 6100 Main St, Houston, TX 77005</div></div><div><div>Mobile</div><div>305-323-8060</div></div><div><div>Email</div><div>fcl2@rice.edu</div></div><div><div>Portfolio</div><div><a href="https://fernando-liu-lopez.github.io/fernandoliulopez.github.io/">https://fernando-liu-lopez.github.io/fernandoliulopez.github.io/</a></div></div><div><div>Github</div><div><a href="https://github.com/fernando-liu-lopez">https://github.com/fernando-liu-lopez</a></div></div></div>
EMPLOYMENT	<div><div><div><b>Graduate Fellow</b> - Rice University</div><div>2020-present</div></div><div><div><div>– Conducted research in quantum algebra and category theory, focusing on generalizing classical deformation techniques to modern settings.</div><div>– Assisted in teaching Calculus I-IV, Honors Linear Algebra, Abstract Algebra, and Graduate Algebra. Duties have included covering lectures, giving supplemental lectures, holding in-person and virtual help sessions, and grading assignments.</div></div></div><div><div><div><b>Instructor of Record</b> - Rice University</div><div>2023-2024</div></div><div><div><div>– Designed and instructed several Differential Equations courses, including lesson planning and delivery, creating syllabi, assignments, and exams, and supervising student graders.</div></div></div><div><div><div><b>Quantitative Fellow</b> - Amherst College Moss Quantitative Center</div><div>2018-2019</div></div><div><div><div>– Provided one-on-one and group tutoring for upper division math courses, including Linear Algebra, Abstract Algebra, Number Theory, Real Analysis, p-adic Analysis, and Galois Theory.</div><div>– Record attendance and performance reviews used to secure funding for subsequent years.</div></div></div><div><div><div><b>Math Fellow</b> - Amherst College</div><div>2017-2018</div></div><div><div><div>– Led evening recitations, HW help sessions, and review sessions for Linear Algebra and Abstract Algebra.</div></div></div></div></div></div></div>
EDUCATION	<div><div><div><b>Rice University</b></div><div>2020-present</div></div><div><div>PhD in Mathematics (GPA: 3.98), <i>expected May 2026</i>.</div><div><i>Dissertation:</i> Twisting Systems in Closed Monoidal Categories</div><div>Advisor: Chelsea Walton.</div></div><div><div><div><b>Amherst College</b></div><div>2014-2018</div></div><div><div>BA in Mathematics and Philosophy, magna cum laude (GPA: 3.89).</div><div><i>BA Thesis:</i> Coxeter Groups from a Combinatorial and Geometric Perspective.</div><div>Advisor: Yusra Naqvi.</div></div></div></div>
RESEARCH INTERESTS	<div>Category Theory, Quantum Algebra, Quantum Computation and Deep Learning, Hopf Algebras, Representation Theory, Tensor Categories, TQFTs.</div>
PUBLICATIONS	<div>Fernando Liu Lopez, Chelsea Walton, Twists of graded algebras in monoidal categories, Journal of Algebra, Volume 661, 2025, pp. 301-340, ISSN 0021-8693.</div>

AWARDS & HONORS	<b>Graduate Teaching Award for Independent Instruction</b> 2024 - Awarded to two graduate students university-wide per year. - Winners selected based on teaching philosophy, use of research-based methods and contribution to student learning.
	<b>Excellence in Teaching Award</b> 2023 - Awarded to one graduate student in the Dept. of Mathematics per year.
	<b>Amherst Memorial Fellowship</b> 2020
TEACHING	<b>MATH 211: Ordinary Differential Equations and Linear Algebra</b> Instructor of record, Rice University. Spring 2024
	<b>MATH 211: Ordinary Differential Equations and Linear Algebra</b> Instructor of record, Rice University. Fall 2022
	<b>MATH 211: Ordinary Differential Equations and Linear Algebra</b> Instructor of record, Rice University. Summer 2022
CODING & CERTIFICATIONS	<b>Certifications:</b> Erdős Institute Data Science 2024 and Deep Learning 2025. <b>Programming:</b> Python, SQL, LaTeX, Tableau, Github. <b>Libraries:</b> numpy, pandas, scipy, scikitlearn, matplotlib, xgboost, PyTorch. <b>Quantitative:</b> Statistics, Probability, Machine Learning, AI and Deep Learning.
DATA SCIENCE PROJECTS	<b>TotallyMakesScents: A Novel Perfume Recommender</b> 2025 - Built and deployed a web app using trained and fine-tuned language models to generate perfume recommendations and explanations from user queries.
	<b>Time Series Forecasting for Grocery Store Sales</b> 2024 - Built predictive models for sales forecasting using historic data from Corporacion Favorita grocery stores.
	<b>County Level Electoral Data Analysis:</b> 2024 - Constructed datasets using county level demographic and electoral data from various sources, to analyze how demographic attributes contribute to voting behavior.
CONFERENCE TALKS	<b>AMS Special Session on Recent Developments in Noncommutative Algebra and Tensor Categories</b> Washington DC 2024. - Twists of Graded Algebras in Monoidal Categories.
	<b>JMM Special Session in Homological Techniques in Noncommutative Algebra</b> San Francisco, 2024. - Zhang Twists in Monoidal Categories.
LEARNING GROUPS & SEMINAR TALKS	<b>Current Mathematics Seminar</b> Rice University, 2024. - An Introduction to Data Science for Mathematicians.
	<b>Algebraic Geometry Seminar</b> Rice University, 2024 - Flat Schemes and Hilbert polynomials.
	<b>State Sums with Defect Reading Group</b> virtual, 2023 - State sum of unknotted spheres with defect balls.
	<b>Current Mathematics Seminar</b> Rice University, 2022 - An Introduction to Hopf algebras.

	<b>[Organizer] 2d-TQFTs and Frobenius Algebras</b> - Introduction and preliminaries. - Generators and relations for the category of cobordisms. - Frobenius Algebras and comultiplication. - Monoidal Categories, Frobenius algebras, and 2d-TQFTs.	Rice University, 2022
	<b>Stacks Learning Group</b> - Moduli groupoids and the Yoneda lemma.	Rice University, 2022
	<b>[Organizer] Algebraic Geometry Learning Group</b> - Algebraic Sets and the Nullstellensatz. - Projective space and projective varieties. - Geometric interpretation of the prime Spectrum. - Localization, direct limits, and stalks.	Rice University, 2022.
CONFERENCES & SCHOOLS	Categorical Symmetries in Quantum Field Theory The SwissMAP Research Station (SRS).	September 2023
	Physical Mathematics of Quantum Field Theory, University of Massachusetts, Amherst.	July 2023
	Research School on Bicategories, Categorification and Quantum Theory University of Leeds.	July 2022