

Juan F. Atehortúa

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EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

BS IN MATHEMATICS, AI + DECISION MAKING

May 2025 | Cambridge, MA

GPA: 4.5 / 5.0

COURSEWORK

GRADUATE

Schur/Schubert Polynomials

ML for Inverse Graphics

Computer Vision

Interactive Data Visualization

Algebraic Topology

Natural Language Processing

Theory of Computation

Computational Geometry

UNDERGRADUATE

Algebraic Combinatorics

Seminar in Topology (Braid Groups)

Rings and Fields

Intro. to Topology

Design and Analysis of Algorithms

Mathematical Prin. of Machine Learning

Adv. Topics in Group Theory

Nature Inspired Computation

Intro. to Real Analysis

Intro. to Group Theory

Computer Systems

Algorithms & Data Structures

Linear Algebra

Multivariate Calculus

SKILLS

PROGRAMMING

Java • C • Python • TypeScript • Julia •

C++ • MATLAB • \LaTeX

FRAMEWORKS

Pytorch • Keras • CGAL • WebAssembly

• Three.js • NumPy • Boost • Bazel •

Angular • React • Lit • Abseil

TUTORING

K-12 Math • Computer Science • HS

Chemistry • Spanish • Standardized

Testing

AWARDS

2023 USFCA All-Academic Team

2021 Colby DataFest Honorable Mention

2020 QNM Scholar

EXPERIENCE

GOOGLE | SWE INTERN - Project Starline

May 2023 - Sept. 2023 | Seattle, WA

- Collaborated and coordinated with multiple teams within Project Starline to implement a real-time head tracking and pose prediction visualization web app using the Three.js framework.
- Integrated WebAssembly into the web app to leverage existing C++ code and libraries.

GOOGLE | STEP INTERN - LEARNX YOUTUBE

May 2022 - Aug. 2022 | New York, NY

- Created Quiz Posts in YouTube, a project designed to facilitate interactions between learning creators and their audiences.
- Implemented the polymer component related to the web consumption of these posts in TypeScript and HTML, as well as its associated styling with Sass.
- Designed robust testing, maintained code health, used internal Learning API's, worked cross-functionally with YouTube PMs, Engineers, and UX Leads.

MIT | MATHEMATICS GRADER

Feb 2024 - Curr. | Cambridge, MA

- Grader for 'Algebraic Combinatorics' (18.212).

BOWDOIN COLLEGE | LEARNING ASSISTANT/GRADER

Aug. 2021 - May 2022 | Brunswick, ME

- Graded assignments and provided academic support to students taking Algorithms (CSCI 2200) and Intro. to Mathematical Reasoning (MATH 2020).

RESEARCH

GDP GROUP @ MIT | UROP RESEARCHER

Sept 2022 - May 2023 | Cambridge, MA

Working on improving random Fourier sampling for better neural network training on low-dimensional domains. (Supervisor: Dr. Paul Zhang, PI: Prof. Solomon)

- Implementing testing environment in PyTorch with novel techniques in low-dimensional domain training such as SAPE and SIREN
- Researching improvements in the way positional arguments are encoded into frequency space via an initial Fourier transform layer

SUMMER GEOMETRY INSTITUTE @ MIT | RESEARCH FELLOW

July 2021 - Aug 2021 | Cambridge, MA

Used geometry processing techniques (differential geometry, optimization methods, numerical methods, etc.) applied to a myriad of projects presented by leaders in the field for me and other fellows from around the globe to work on.

- Extended, generalized, and improved an algorithm for the generation of higher-order triangle meshes that perfectly discretizes a curved 2D domain without geometric error. (Mentor: Prof. Campen, Peer: Foqia Shahid)
- Improved upon a plugin designed within the OpenFlipper framework to better the quality of quadrilateral surface meshes in the plane. (Mentors: Prof. Bommers and Prof. Beaufort, Peer: Sidony O'Neal)
- Reconstructed a 3D point cloud and fit an oblate spheroid of the moon based on structure from motion from flickr images of the moon. (Mentor: Prof. Snavely, Peers: Jonathan Mousley and Berna Kabadayi)
- Implemented Schrödinger bridges with anisotropy over arbitrary triangle meshes for optimal transport between two density functions over the mesh. (Mentor: Prof. Solomon, Peers: Jonathan Mousley and Faria Huq)