Andrew Ortegaray

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EDUCATION

Ψ **California Institute of Technology (Caltech)** — Pasadena, CA
Bachelor of Science in Mathematics and Physics; GPA: 3.63 — *Sep. 2016 – June 2020*

EXPERIENCE

Ψ **Wolfram Research** — Online
Symbolic Algorithms Research Intern — *Aug. 2020 – Aug. 2021*
- ψ Researched and implemented recursive and iterative FFT-style algorithms for computing Number Theoretic Transforms with the goal of fast convolution computations. Implemented Fast Multipole algorithms for fast evaluations of scalar potentials.

Ψ **California Institute of Technology** — Pasadena, CA
Teaching Assistant — *Mar. 2018 – Dec. 2019*
- ψ Ph 1ab/Ph 2c: The yearlong introductory physics courses at Caltech. Graded student papers, typeset new solutions, and assisted students with course topics.
- ψ Ma 0: The introduction to proofs course at Caltech. Held weekly office hours and graded student assignment on topics including the Peano axioms and complex numbers.
- ψ Ma 5a: The introductory abstract algebra course at Caltech. Graded student papers, typeset new solutions, and assisted students with course topics.

Ψ **Tutoring** — Various Locations
STEM Tutor — *Dec. 2016 – Present*
- ψ Provided tutoring services for students across the US in courses ranging from Algebra 1, to Multi-Variable Calculus, to Bayesian Statistics, etc.

PROJECTS

Ψ **Wolfram Summer School (WSS)** — Online
Student — *June 2020 – Aug. 2020*
- ψ WSS is a project-based program that provides formal training in the Wolfram Language. Developed a notebook that computed Persistent Homology of the Vietoris-Rips complex of point cloud data. See posts below.

Ψ **Summer Undergraduate Research Fellowship (SURF)** — Pasadena, CA
Research Fellow — *June 2016 – June 2017*
- ψ SURF is a Summer research program by Caltech. Participated in research analyzing linguistic data in a geometric setting. See papers below.

Ψ **Youth Math League** — Arcadia, CA
Lead Coach — *Jan. 2019 – Mar. 2020*
- ψ Youth math program organized with PrepSC to prepare 5th/6th grade students for Olympiad-style competitions. Organized practice and lessons for students weekly.

Ψ **calTechers for a Sustainable Future (TSF)** — Pasadena, CA
Secretary — *Aug. 2018 – Sep. 2019*
- ψ TSF is a student club at Caltech focused on community environmental awareness and sustainability of Caltech. Performed secretary duties and worked on club projects.

PAPERS/PUBLICATIONS

Ψ `arXiv:1712.01719` | "Phylogenetics of Indo-European Language families via an Algebro-Geometric Analysis..."

Ψ `arXiv:1803.09832` | "Heat Kernel Analysis of Syntactic Structures"

Ψ `Wolfram Community` | "[WSS20] Persistent Homology"