

Erick RUIZ

Engineer, physicist, applied mathematician

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Education

Aug. 2016 – Present	Harvard University PhD candidate in Applied Physics
Jan. 2014 – May 2016	Texas Tech University Bachelor of Science in Mechanical Engineering Minors in Mathematics and Physics

Research

Sep. 2017 – Present	Experimental Soft Condensed Matter Group PI: Prof. David Weitz I developed a novel experimental setup to study the mechanics of colloidal suspensions.
June 2016 – Jan. 2017	Westervelt Group PI: Prof. Robert Westervelt I designed a mechanical stage to improve the fabrication process of semiconductor devices for the study of electron transport.
Jan. 2016 – May 2016	Physics Department at Texas Tech University PI: Prof. Thomas Maccarone I wrote code to simulate dynamic binary star systems using an open-source computational astrophysics library.

Teaching

	Teaching Fellow at Harvard University	
	I was responsible for holding office hours and review sessions, writing solutions to homework assignments, and grading.	
Fall 2020	Nonlinear Dynamical Systems ¹	
Spring 2019	Nonlinear Dynamical Systems	(Q Score: 4.2/5.0)
Spring 2018	Ordinary and Partial Differential Equations	(Q Score: 4.8/5.0)

Awards

Spring 2018	Certificate of Distinction in Teaching My teaching efforts have received recognition from the Derek Bok Center for Teaching and Learning.
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¹Q Scores for this term have not been released.

Software²

A custom image processing library

I wrote a custom image processing library in C++ that contains basic and advanced functionalities (e.g. Gaussian and bilateral filters, demosaic and morphing routines, high-dynamic range processing, and panorama stitching) for a course on computational photography at MIT.

Ordinary differential equation solvers

I have written high-performance ordinary differential equations solvers in C++ and Julia to solve physical problems.

(*In progress*)

SVDnoise: Image Denoising using the Singular Value Decomposition

I am developing a Python package that uses the singular value decomposition (SVD) and its optimal truncation to remove noise from images.

GuruDiff: An Automatic Differentiation Package

I collaborated with three other students at Harvard to develop an automatic differentiation package in Python.

Extracurricular

August 2018

Harvard-MIT Consulting Competition Semi-finalist

Our team developed a strategy for *Mandarin Playground*, a Chinese immersion school, to break into the Boston-area market.

Natural Languages

Spanish

Native language

English

Native fluency

I have completed all of my education in the United States.

French

Elementary proficiency

I studied French for three years during middle school.

Technical Skills

Data analysis

I have extensive experience developing software libraries for the analysis of large data sets, scientific computing, and visualization.

Mathematica

I used Mathematica as a tool for teaching courses on differential equations.

\LaTeX

I use \LaTeX to typeset all of my documents, including lecture notes, homework assignments, teaching materials, and presentations.

²Since most of this software has been developed for personal use, it is stored in private Github repositories, but these can be made available upon request.