



Matheus Fernandes

Quantitative Analyst at
Fidelity Investments



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fer.me/scholar

About me

Matheus has lived in three different continents and has a vast international experience that extends beyond his technical skills. Born in Brazil, he also lived in Germany and three different states within the US, where he has gained a global and diverse experience that compliments his cultural appreciation.

Skills

Python

Scikit-learn

SQL

Matlab

Keras

Tensorflow

C and C++

Revised on October 29, 2023
Latest Version at fer.me/resume

Interests

Quantitative specialist with 7+ years of experience creating models at the intersection of applied mathematics and artificial intelligence. Investment professional with 1.5 years of experience in fixed income analytics and 5+ years of experience in real estate investing. 10+ years of programming with Python and 4+ years in database management programs including SQL/Snowflake.

Education

2015-21	Ph.D. in Applied Mathematics Advised by <i>Prof. Katia Bertoldi</i>	Harvard University
2015-20	S.M. in Computational Science and Engineering	Harvard University
2013-15	M.Eng. in Engineering Sciences Concentration in Mechanical Engineering and Material Sciences Advised by <i>Prof. James R. Rice</i>	Harvard University
2009-13	B.Sc. in Mechanical Engineering Minor in Business Management	Case Western Reserve University

Industry Experience

2023-	Fidelity Investments	<i>Quantitative Analyst</i>
2021-23	Fidelity Investments	<i>Asset Management Seniro Data Scientist</i>
	<ul style="list-style-type: none">Developing machine learning algorithms for fixed income security pricing and trade cost applications.	
2020-23	RESE Inc.	<i>Co-founder</i>
	<ul style="list-style-type: none">Creating a platform for real estate investments.	
2016	Corning Incorporated	<i>Summer Research Intern</i>
	<ul style="list-style-type: none">Optimized glass tubing process using Finite Pointset Method for Corning Pharmaceutical Technologies.Developed experimental setup for mechanical characterization of wet ceramic substrate composition.Generated application for post-processing simulation data that seeks defects during glass tube fabrication.	
2013	COMSOL Multiphysics	<i>Summer Business Development Intern</i>
	<ul style="list-style-type: none">Modeled multiphysics interactions of dynamic systems and controls using finite element analysis.Developed tutorials and application for unexperienced users of the software.Interacted with customers to develop a work-flow methodology using COMSOL to match their particular application.	
2011	Bayer Material Science (COVESTRO)	<i>Summer Engineering Intern</i>
	<ul style="list-style-type: none">Solved problems and inefficiencies in plant's piping system using a piping and instrumentation diagram analysis.	
2010	Bayer Material Science (COVESTRO)	<i>Summer Engineering Intern</i>
	<ul style="list-style-type: none">Performed quality control on polycarbonate pellets using Microsoft Excel with Visual Basic Macros to develop a SPC chart system.	

Matheus Fernandes

Certifications

Harvard Business Club Mini MBA

Abaqus Structural Analysis
Certification by SIMULIA

Engineer-In-Training (Engineer
Intern) by Ohio Board of Professional
Engineers

HeartSaver First Aid CPR AED by
American Heart Association

Lean Six Sigma Green Belt

by Lorain Community College

Programmable Logic Controller,
Programming and Operation
Certification

Honors/Awards

Harvard Horizons Scholar (2019)
(Video: <https://fer.me/hh>)

Certificate of Distinction in Teaching
Award X 4 (2019,18,16,15)

National Graduate Engineering
Minority (GEM) Fellowship (2016)

Harvard Graduate School Leadership
Institute (HGSLI) Fellow (2016)

National Science Foundation
Graduate Research Fellowship
Program (NSF-GRFP) (2015)

Harvard Graduate Prize Fellowship
(2015)

University President Civic
Engagement Scholar Honorary Award
(2012)

COMSOL, Inc. Poplars Choice Best
Poster Award (2012)

Languages

English (Native, Bilingual)

Portuguese (Native, Bilingual)

German (Full Professional)

Spanish (Limited Working)

Complete CV

For a comprehensive document,
please refer to Matheus' CV at:
fer.me/cv

Academic Research

2015-21

Harvard University

Modeling of Bio-Inspired Mechanics

- Developed mechanical and hydrodynamic numerical model to investigate Hexactinellid Sponge structure for optimal arrangement of truss systems and vortex dissipation.
- Created numerical model for investigating mechanical properties of the structural coloring formation of Beetles.
- Developed a picture-less sensing soft robotic actuator using generative parametric machine learning classifiers.

2013-15

Harvard University

Mechanics of Subglacial Hydrology

- Developed Finite Element model to analyze Röthlisberger Channel fully incised in ice stream shear margin.
- Created Finite Element model to analyze power law creep rheology of ice under hydrostatic pressure.

2012-13

Case Western Reserve University

Wind-turbine Flow Dynamics

- Analyzed and constructed a wind flow model of campus to investigate effects of buildings surrounding university wind turbine developing expertise in finite element development and analysis.
- Established a testing procedure to validate Computational Fluid Dynamics model against physical data.

Peer Reviewed Publications

2020

Mechanically Robust Lattices Inspired By Deep-Sea Glass Sponges. *Nature Materials*. doi:10.1038/s41563-020-0798-1 [PDF]

2020

Tunable infrared transmission for energy efficient pneumatic building façades. *Energy and Buildings*. doi:10.1016/j.enbuild.2020.110377 [PDF]

2020

An integrated tomographic, additive manufacturing, and parametric modeling-based approach. *Journal of Structural Biology*. doi:10.1016/j.jsb.2020.107481 [PDF]

2020

A geometrically adaptable heart valve replacement. *Science Translational Medicine*. doi:10.1126/scitranslmed.aay4006 [PDF]

2017

Harnessing Geometric Frustration to Form Band Gaps in Acoustic Networks. *Physical Review Letters*. doi:10.1103/PhysRevLett.118.084302. [PDF]

2016

Effects of Ice Deformation on Röthlisberger Channels and Implications for Transitions in Subglacial Hydrology. *Journal of Glaciology*. doi:10.1017/jog.2016.65. [PDF]

2015

Time Scale for Rapid Draining of a Surficial Lake into the Greenland Ice Sheet. *Journal of Applied Mechanics*. doi:10.1115/1.4030325. [PDF]

Patents

2019

Design Principles for production of stronger lattices and beam structures. United States Patent - US 3,597,875. *Harvard University Office of Technology Development*. [PDF]