



# Matheus Fernandes

Quantitative Analyst at Fidelity Investments

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## 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++

## 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** Harvard University  
Advised by *Prof. Katia Bertoldi*
- 2015-20 **S.M. in Computational Science and Engineering** Harvard University
- 2013-15 **M.Eng. in Engineering Sciences** Harvard University  
Concentration in Mechanical Engineering and Material Sciences  
Advised by *Prof. James R. Rice*
- 2009-13 **B.Sc. in Mechanical Engineering** Case Western Reserve University  
Minor in Business Management

## Industry Experience

- 2023- **Fidelity Investments** *Quantitative Analyst*
- 2021-23 **Fidelity Investments** *Asset Management Seniro Data Scientist*
  - Developing machine learning algorithms for fixed income security pricing and trade cost applications.
- 2020-23 **RESE Inc.** *Co-founder*
  - Creating a platform for real estate investments.
- 2016 **Corning Incorporated** *Summer Research Intern*
  - 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** *Summer Business Development Intern*
  - 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)** *Summer Engineering Intern*
  - Solved problems and inefficiencies in plant's piping system using a piping and instrumentation diagram analysis.
- 2010 **Bayer Material Science (COVESTRO)** *Summer Engineering Intern*
  - Performed quality control on polycarbonate pellets using Microsoft Excel with Visual Basic Macros to develop a SPC chart system.

Revised on October 29, 2023  
Latest Version at [fer.me/resume](https://fer.me/resume)

# 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. Populars 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](https://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]