

# Francisco J. Carrillo Ph.D.

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## EDUCATION

### PRINCETON UNIVERSITY

PH.D. COMPUTATIONAL PHYSICS  
& MACHINE LEARNING (ML)  
2021 | Princeton, NJ

### PRINCETON UNIVERSITY

MA, CHEMICAL ENGINEERING  
2018 | Princeton, NJ

### U.T. AUSTIN

BS, CHEMICAL ENGINEERING  
2016 | Austin, TX  
Magna Cum Laude  
GPA: 3.93 / 4.0

## TECHNICAL SKILLS

### PROGRAMMING

Python • C++ • Matlab • Git • Bash

### DATA ANALYSIS

Pandas • NumPy • SQL

### MACHINE LEARNING

Scikit-Learn • TensorFlow

### HIGH PERFORMANCE COMPUTING

Slurm • Google Cloud Platform

## SOFT SKILLS

### LEADERSHIP

### COMMUNICATION

### COLLABORATION

### PROACTIVENESS

### BILINGUAL

English • Spanish

## AWARDS

Gordon Wu Fellow | \$28,000  
Dean of Eng. Grant | \$15,000  
Hack '69 Award | \$10,000  
Azure Cloud Computing | \$5,000

## LINKS

LinkedIn:// [Franjcf](#)

GitHub://[Franjcf](#)

Publications: [Google Scholar](#)

Media Article: [ML + Fluid Dynamics](#)

## EXPERIENCE

### RESEARCH SCIENTIST | PRINCETON UNIVERSITY

2021 - Present | Princeton, NJ

- Developed end-to-end ML models for prediction of stochastic physical processes.
- Leveraged parallel cloud computing to process simulated and experimental data.
- Led international collaborations with Stanford University and ETH Zurich, Switzerland.
- Taught multiple engineering classes and trained incoming graduate students.

### PH.D. CANDIDATE | PRINCETON UNIVERSITY

2016 - 2021 (5 Years) | Princeton, NJ

- Designed parallelizable open-source code to simulate fluid flow in soft porous media.
- Developed 6 publications focused on computational physics and machine learning.
- Presented research findings at over 12 scientific conferences (4x as featured speaker).
- Secured funding from competitive grants, including the Azure Cloud Computing Award.

### RESEARCH ASSISTANT | THE UNIVERSITY OF TEXAS AT AUSTIN

2014 - 2016 (2 Years) | Austin, TX

- Researched novel water desalination technologies through microfluidic experiments.
- Reported findings to the project's business partner, "Okeanos Technologies".
- Obtained and analyzed data in order to set personal and group project objectives.

## LEADERSHIP AND COMMUNITY SERVICE

### ORGANIZER AND TEACHER | ACADEMIC SERVICE AND LEADERSHIP

2016 - Present (5 Years) | Princeton, NJ

- Organized four scientific conference sessions, each with over 100 participants.
- Taught Python programming for Stanford's "Code in Place" class in 2020 and 2021.
- Reviewer for *Physical Review Journals*, *Journal of Computational Physics*, *Journal of Fluid Mechanics*, *Transport in Porous Media*, and *Water Resources Research* (among others).

### PRESIDENT | CATHOLIC ORGANIZATIONS

2014 - Present (7 Years) | Austin, TX and Princeton, NJ

- Organized weekly events attended by over 120 people.
- Directed yearly 70-person, 5-day community service mission trips in Austin TX.
- Coordinated yearly 350-person Easter pilgrimages through Austin, TX.
- Arranged and secured funding for monthly community service activities.

## MACHINE LEARNING PROJECTS | [PORTFOLIO LINK](#)

### IMAGE PROCESSING | SCIKIT-LEARN, PANDAS, NUMPY

- Efficiency evaluation of face-recognition algorithms with PCA.
- Implementation of Kernel SVMs for identification of handwritten digits.

### TIME SERIES FORECASTING | TENSORFLOW, WEB SCRAPING

- Prediction of commodity prices through LSTM Recurrent Neural Networks.

### LANGUAGE PROCESSING | FEATURE ENGINEERING, DATA CLEANING

- Product sentiment analysis of Amazon customer reviews.
- Feature and "trendability" analysis of trending YouTube videos.

### MISCELLANEOUS PROJECTS | C++, OOP, VECTOR CALCULUS

- Optimization of latent user classes based on 60,000 dating profiles through LDA.
- Unconstrained optimization of ridge regression using gradient descent.
- Modeling and prediction of stochastic clogging processes in randomly-generated porous media with Extremely Randomized Trees and Neural Networks.