

Francisco J. Carrillo Ph.D.

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EDUCATION

Princeton University

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

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

Sklearn • TensorFlow • XGBoost

High Performance Computing

Slurm • Google Cloud Platform

SOFT SKILLS

Leadership

Communication

Initiative

Collaboration

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 Portfolio:// [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 E.T.H. Zurich.
- 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 12 scientific conferences (4x as featured speaker).
- Secured funding from competitive grants, such as 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 objectives.

MACHINE LEARNING PROJECTS

Natural Language Processing | CONTEXT ANALYSIS, SPEECH SYNTHESIS

- English language translation with Transformers (Neural Networks + Attention).
- Performed product sentiment analysis of Amazon customer reviews.
- Conducted feature and "trendability" analysis of trending YouTube videos.

Time Series Forecasting | TENSORFLOW, DEEP LEARNING

- Prediction of commodity prices through LSTM Recurrent Neural Networks.

Image Processing | PYTHON, SCIKIT-LEARN, PANDAS, NUMPY

- Evaluated the efficiency of face-recognition algorithms through PCA.
- Implemented Kernel SVMs for the identification of handwritten digits.

Miscellaneous Projects | C++, OOP, VECTOR CALCULUS, STATISTICS

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

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.