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

PRINCETON UNIVERSITY | Research Scientist
2021 - Present (1 Year) | 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.

PRINCETON UNIVERSITY | Ph.D. Candidate
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.

UNIVERSITY OF TEXAS AT AUSTIN | Research Assistant
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

ACADEMIC SERVICE AND LEADERSHIP | Organizer and Teacher
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).

CATHOLIC ORGANIZATIONS | President
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.