Francisco Patitucci

fpatitucci@utexas.edu | linkedin.com/in/franciscopatitucciperez

Education

University of Texas at Austin, PhD in Electrical Engineering 2023 – 2028
Optimization for Machine Learning. Advisor: **Prof. Aryan Mokhtari**. (Expected)
- Selected coursework: Convex Optimization, Advanced Probability, Statistical Machine Learning.

Universidad de Buenos Aires, MSc in Mathematical Engineering 2021 – Transferred to UT
Signal Processing Track
- Selected coursework: Stochastic Processes, Statistical Learning, Optimization, Matrix Analysis.

Universidad Nacional de La Plata, Engineering Degree in Aerospace 2021

Experience

Graduate Research Assistant — Aryan Mokhtari Group, UT Austin 2023 – Present
- Developed theoretical and empirical tools for stochastic, nonconvex, and adaptive optimization methods.
- Designed and implemented adaptive optimization algorithms in Python/PyTorch for deep learning.
- Ran large-scale optimizer benchmarks on HPC clusters using Slurm, evaluating convergence, stability, and robustness on language models up to 350M parameters.
- Built reproducible experiment pipelines for learning-rate sweeps, momentum configurations, random seeds, and model-scale comparisons.

Research Assistant — Paul Puleston Group, UNLP Jan 2021 – Aug 2022
- Implemented and deployed a turbine-emulator control module in C/MATLAB, improved the user interface, and deployed the system to a microcontroller.

Selected Publications

F. Patitucci, A. Mokhtari. *Adaptive Optimization via Momentum on Variance-Normalized Gradients*. arXiv preprint, 2026.

F. Patitucci, R. Jiang, A. Mokhtari. *Improving Online-to-Nonconvex Conversion for Smooth Optimization via Double Optimism*. **ICLR 2026**.

R. Jiang, A. Mokhtari, **F. Patitucci**. *Improved Complexity for Smooth Nonconvex Optimization: A Two-Level Online Learning Approach with Quasi-Newton Methods*. **STOC 2025**.

Honors and Awards

Gold Reviewer Award — International Conference on Machine Learning (ICML) 2026
Graduate Research Fellowship — UT Austin 2023 – 2027
Travel Award — ACM Symposium on Theory of Computing (STOC) 2025
Fulbright Scholarship (declined) — Fulbright Argentina 2023
Ing. Isidoro Marín Medal — National Academy of Engineering, Argentina 2022

Skills

Programming: Python, PyTorch, NumPy, MATLAB, C/C++ basics
ML / Systems: optimizer implementation, distributed training, language-model training, hyperparameter sweeps
Infrastructure: Slurm/HPC, Linux, Git, Bash, LaTeX
Languages: Spanish (native), English (fluent)