Franz Louis Cesista

brought NanoGPT training down to 3 minutes ($0.40)

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Employment

Expedock **early hire, machine learning research engineer**, logistics automation 2021–2024

- built our entire AI pipeline, from data collection, data warehousing and streaming, to model training, deployment, inference optimization, & continuous monitoring
- eliminated 99% of distributed system faults via defensive engineering
- built a DSL in TypeScript for a fully-programmable Metabase-like UX for data viz

Exora research intern on forecasting energy supply-&-demand in the Philippines summer 2020

Education

BS Mathematics from Ateneo de Manila University 2018-2021; 2024-2025
Philippine Science High School 2012-2018

Selected publications :: see Google Scholar for the full list

"*Training Transformers with Enforced Lipschitz Constants*"
NeurIPS 2025 L Newhouse, R Hess, F Cesista, A Zahorodnii, J Bernstein, P Isola

"*Retrieval Augmented Structured Generation: Business Document Information Extraction as Tool Use*"
IEEE MIPR 2024 F Cesista, R Aguiar, J Kim, P Acilo

"*Multimodal Structured Generation: CVPR's 2nd MMFM Challenge Technical Report*"
CVPR 2024, 2nd Multimodal Foundation Models Challenge F Cesista

Selected blog posts (w/ citations from published papers) :: see Ponder for the full list

"*Muon and a Selective Survey on Steepest Descent in Riemannian and Non-Riemannian Manifolds*"
"*Squeezing 1-2% Efficiency Gains Out of Muon by Optimizing the Newton-Schulz Coefficients*"
"*Deep Learning Optimizers as Steepest Descent in Normed Spaces*"

Selected side projects

"*Modded-NanoGPT*"	NanoGPT (124M) in 3 minutes
"*Multimodal Structured Generation*"	Interleaved, multimodal in-&-out structured outputs
"*Flash Attention Minimal*"	A 300-line C++ CUDA implementation of Flash Attention 1 & 2
"*Llama2.cpp*"	A C++ implementation of Meta's Llama2

Honours & awards

World Finalist (2x)	International Collegiate Programming Contest	Russia, 2021 & Bangladesh, 2022
Regional Finalist (3x)	& 🥉 medalist | ICPC	Singapore, 2018 & Malaysia, 2019 & Jakarta, 2020
World Finalist (2x)	International Olympiad in Informatics (IOI)	Iran, 2018 & Japan, 2019
🥈🥉🥉 medalist	NOI Singapore Invitational	Singapore, 2016, 2017, 2018
Merit Scholarship	San Ignacio de Loyola Scholarship Program, Ateneo	2018
Merit Scholarship	Department of Science & Technology, Philippines	2018

Selected open source contributions

Google Deepmind's "Optax"	JAX implementation of the Muon optimizer
DottxtAI's "Outlines"	Interleaved, multimodal in-&-out structured outputs
Huggingface's "Transformers"	Helped simplify & unify the API of multimodal models

Leadership

Cofounder and Former CTO of Google Developer Student Clubs (GDSC) - Loyola Branch

PyTorch • JAX • CUDA • C++ • Python • PostgreSQL • Snowflake • DBT • React • ReactRedux • TypeScript
GraphQL • Keras • Scikit-Learn • AWS SageMaker • Nvidia Triton • vLLM • Docker

optimizer-architecture codesign • multimodal ml • structured generation • information retrieval