Tomás Erdmannsdörffer

terdmannsdorffer@gmail.com • +56 9 5198 3915 • linkedin.com/in/tomas-erdmannsdorffer • github.com/Terdmannsdorffer

PROFILE

ML Engineer with a background in scientific computing and deep learning, experienced in PyTorch, JAX, and physics-informed neural networks. Comfortable across the full stack — from model training and compression to backend systems and cloud infrastructure. Currently conducting research on cardiac fiber modeling at the University of Graz, with hands-on experience building LLM pipelines, fine-tuning transformers, and developing production-grade software.

EDUCATION

Pontificia Universidad Católica de Chile **August 2025 – Present**
Master of Science in Engineering, Mechanical Engineering
Research in Physics-Informed Neural Networks (PINNs) under supervision of Prof. Francisco Sahli
Focus: Cardiac fiber modeling using PINNs applied to partial differential equations

Universidad de los Andes **March 2020 – October 2025**
Bachelor of Engineering in Computer Science
Thesis: Neural Network Compression with Knowledge Distillation, Pruning and Quantization applied to PINNs for non-Newtonian fluid simulation *(manuscript in preparation)*
Minor in Innovation (2021–2022)

Relevant Courses: Low-Level Programming, Web Technologies, Databases, Data Structures and Algorithms, Algorithms and Competitive Programming, AI, LLM, Computer Vision

TECHNICAL SKILLS

ML / AI: PyTorch, JAX, TensorFlow, Keras, HuggingFace (fine-tuning, Transformers, Hub), CUDA, PINNs, RAG, LLM Agents
Languages: Python (Advanced), JavaScript (Intermediate), C/C++ (Intermediate), C# (Intermediate)
Backend & Web: Django, Node.js, React, Ruby on Rails
DevOps & Cloud: Docker, Git, AWS (S3, Lambda), Jenkins, Bitbucket, SQL
Operating Systems: Linux, Windows

PROFESSIONAL EXPERIENCE

Visiting Researcher — Karl-Franzens-Universität Graz **February 2026 – Present**

- Designing and implementing PINN architectures to solve high-dimensional PDEs governing cardiac fiber mechanics, using JAX for differentiable simulation
- Collaborating with Dr. Federica Caforio on constitutive modeling of myocardial tissue (anisotropic hyperelastic laws)
- Evaluating model performance across multiple cardiac views using image reconstruction metrics (MSE, SSIM)

DevOps Intern — Citi **January 2025 – February 2025**

- Maintained and optimized 3 legacy applications at Citi's technology center in Chile
- Enhanced CI/CD pipeline to production, reducing operational complexity and deployment time

- Collaborated on code migration using Bitbucket for version control

AI Research Intern — Falabella Retail **December 2023 – February 2024**

- Researched and evaluated generative AI tools for retail applications, including LLM-based pipelines and prompt engineering strategies
- Developed functional prototype for automating product description generation, transforming a manual workflow into a fully automated process
- Delivered technical proposal with implementation recommendations that continued in development post-internship

RESEARCH AND DEVELOPMENT PROJECTS

Parameter Golf — OpenAI Competition **2025 – Present**

- Competing in OpenAI's public challenge to build sub-16MB language models evaluated by bits-per-byte on FineWeb
- Designing custom tokenizers, quantization schemes, and compressed Transformer architectures targeting constrained hardware (RTX 5060, sm_120)

Compression of PINNs for Non-Newtonian Fluids **2024–2025**

- **Undergraduate Thesis**: Implemented Knowledge Distillation, Pruning, and Quantization on PINNs for carbopol fluid simulation
- Developed original PINN baseline and evaluated accuracy/efficiency trade-offs across compression techniques

Turbo Files — Fault-Tolerant Transfer System **September 2024**

- Production application for a mining company enabling reliable data transmission via fragmentation, resilient to intermittent connectivity
- Integrated Google Drive and AWS S3 for cloud storage with variable file size support

Course Selection APP **September 2023**

- Led 7-person team building a web tool for academic schedule planning; actively used by the entire university for one full academic year
- Stack: Django backend, React frontend; features include credit validation and schedule conflict detection

ACADEMIC EXPERIENCE

Teaching Assistant — Universidad de los Andes **June 2023 – December 2024**

- Courses: Operating Systems, Low-Level Programming, Mobile Applications, Web Technologies, Automata and Computability, Programming
- Assisted ∼30 students per semester across web development, systems programming, and theory of computation

LANGUAGES AND CERTIFICATIONS

Spanish: Native **English:** C2 (IELTS) **German:** A1