Kenyi **Takagui-Perez**

Machine learner and physicist

kenyi.rtp@gmail.com | taogenna.github.io | taogenna | taogenna

Experience

Yape, Banco de Crédito del Perú (BCP)

Lima, Peru

Machine Learning Engineer – Service Payments Recommendation Platform

May 2025 - Oct 2025

- Built and deployed recommendation models in Databricks and integrated them into FastAPI microservices serving Yape's 18M-user platform.
- Worked closely with data scientists and business teams to gather requirements and understand business needs, ensuring successful model deployment that met the project's objectives.
- Designed a geographical heuristic leveraging non-overlapping utility territories, yielding a 130% improvement in correct payment predictions for mid-tier service providers during backtesting.
- Designed and managed YAML-based Databricks Workflows to orchestrate end-to-end data and ML pipelines, ensuring reproducibility and efficient ETL with SQL

Spatialise, UNIIQ-backed Machine Learning startup

Netherlands, Remote

Machine Learning Engineer Intern

Feb 2025 - May 2025

- Implemented a positional encoder graph neural networks to predict soil organic carbon from satellite data with high spatial precision.
- Performed feature engineering, hypothesis testing, developed baseline models and several spatial statistical tools to analyse clients data.

Institute for Radioastronomy (INRAS)

Lima, Peru

Research Engineer Intern – Supervised by **Prof. Marco Milla**

May 2024 - Oct 2024

- Designed and developed an **open-source implementation** of an inversion algorithm that reconstructs the electron density profile given ionospheric radio wave reflection data based on multi-quasi-parabolic layers. **Published results** as a solo-author. Given return offer.
- Proposed and implemented an encoder-decoder semantic segmentation model in PyTorch to extract signal traces from ionograms.

Fromsolvers

Lima, Peru

Software Engineer Intern

Jan 2024 - Apr 2024

- Part of the backend development team for the implementation of a Multiplayer Trivia Game App for sports and esports.
- My work was mainly in Python and we developed a RESTful API with Django for the database and FastAPI framework. Given return offer.

Bariloche Atomic Center

Bariloche, Argentina

Student Researcher – Supervised by **Prof. Armando Aligia**

Aug 2022 - Dec 2023

- Researched the robustness of the topological protection of Majorana quasiparticles in superconducting nanowire systems using simple effective low-energy Hamiltonians and self-consistent Hartree-Fock methods. **Published results**.
- Demonstrated that Coulomb repulsion compromises Majorana end states' topological protection only in short nanowires.

Universidade de Sao Paulo

Sao Paulo, Brasil

Visiting Researcher – Supervised by **Prof. Yoshiharu Kohayakawa**

Feb 2022 - Apr 2022

- Worked on quantum communication protocols where two spatially separated parties could solve a distributed task.

Open Source Projects

Language Driven Semantic Segmentation

From-scratch reimplementation of LSeg (ICML 2022): built a dense-prediction Transformer and integrated CLIP for text-conditioned semantic segmentation in a shared multimodal embedding

Connect4 AI-MCTS

Python implementation of Monte Carlo Tree Search (MCTS) algorithm for solving the board game Connect4.

Neural Style Transfer

Reconstruction of the original paper on neural style transfer by Gatys et al. from scratch in PyTorch.

Technical Blog

Posts: PPCA - The Minimal Generative Model, Representing Atomic Environments for MLIP, How to measure the non-Markovianity of a Quantum System?

Publications

Effect of interatomic repulsion on Majorana zero modes in a coupled quantum-dot–superconducting-nanowire hybrid system

R.K. Takagui Perez, A.A. Aligia - Physical Review Journal B, 2024

A note on an inversion algorithm for vertical ionograms for the prediction of plasma frequency profiles

R.K. Takagui Perez - ArXiv e-prints, 2024

Accomplishments

2025	**ICTP Fellowship**, One of 8 students chosen from 260 to receive full graduate support (28000$) (Declined)
2022	**Balseiro Graduate Fellowship**, Full graduate support from the National Atomic Energy Commission
2020, 2019	**Top25 at the ICPC South America Final**, Compited against 150 teams and 450 students from 6 countries
2021, 2020	**Top100 at the IEEExtreme 24h Hackaton**, Ranked in the top 1.7% out of 5570 teams
2019	**Top10 at ITPO**, International Theoretical Physics Olympiad for Undergraduates

Education

Bariloche Atomic Center and Balseiro Institute

Master of Science with concentration on Theoretical Condensed Matter Physics, GPA 3.3/4.0 *Aug 2022 - Jan 2024*

- Thesis: "Effect of interatomic repulsion on Majorana zero modes ..." · Advisor: PhD. Armando Aligia.
- Graduate Courses: Quantum Theory of Solids · Quantum Field Theory · Open Quantum Systems · Topological Matter · Laser Physics · Quantum Many-Body · Chemistry & Material Science · Photonics in Microwave Systems

Pontifical Catholic University of Peru (PUCP)

Bachelor of Science, Physics, GPA 4.0/4.0 *Aug 2016 - Dec 2021*

- Thesis: "Holographic Entanglement Entropy" · Advisor: PhD. Pablo Bueno, Barcelona University & CERN.
- Teaching Assistant: Classical Mechanics · Intro. to Algorithms · Office hours and assignment grading.
- Completed first 2.5 years in Electronic Engineering before transitioning to Physics.

Coursework

Summer School of Machine Learning - PUCP	*Jan. 2025*
Deep Learning Specialization - DeepLearning.AI	*Sep. 2024*
Competitive Programming Training Camp - Argentina	*Jun. 2020*
Brazilian ICPC Summer School - Brasil	*Jan. 2020*

Skills

Programming Languages	Python, C++, SQL, Julia, Mathematica
Frameworks	PyTorch, TensorFlow, NumPy, Scikit-Learn, PySpark, LightGBM
Tools	Jupyter Notebooks, Github, Databricks, Google Cloud Platform, Git, Bash, LaTeX
Languages	Spanish(native), English(advanced), Portuguese(basic), French(basic)