SANDRO J. HERNÁNDEZ GOICOCHEA

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ABOUT ME

Combining a strong foundation in Physics and a proven teaching and research background, I am pursuing a Master's in Computer Science at the University of Bern. I have successfully transitioned into the tech industry, where I am applying advanced analytical and technical skills to lead projects focused on data-driven decision-making and software development.

TECHNICAL SKILLS

Software Engineering & Development: Python, HTML, CSS, JavaScript, Node.js, React, GitHub, C, Arduino
Data Science & AI: Numpy, Pandas, Scikit-learn, PyTorch, PySpark, OpenCV, Requests, BeautifulSoup, Node2Vec
Data Management & Processing: SQL, PostgreSQL, MySQL, Neo4j, Redis
Tools & Platforms: Wolfram Mathematica, Linux (Ubuntu), MS Office, LaTeX, Automatic Carving and 3D Printing
Languages: English (C1), German (B1), Spanish (Mother tongue), Portuguese (B2)

PROFESSIONAL EXPERIENCE

University of Bern, Bern, Switzerland: Research Assistant Feb 2024 – Present

- Conducted an empirical study to identify and categorize the diverse information needs of GitHub Actions (GA) developers through the analysis of StackOverflow posts.
- Contributed to the writing of documentation and the subsequent preparation of a scientific article.
- Enhanced my expertise in database management, data cleaning, data analysis, web scraping, and CI/CD through practical, hands-on experience in this research project.

Pontifical Catholic University of Peru, Lima, Peru: Part-time Physics Professor 2017 – 2022

- Taught courses on Mechanics, Electromagnetism, and Thermodynamics to large groups of students.
- Developed and graded exams for groups of over 1,000 students, managing a team of teaching assistants.
- Used programming tools like Wolfram Mathematica and MATLAB for classroom demonstrations.

University of Engineering and Technology (UTEC), Lima, Peru: Part-time Physics Professor 2020 – 2022

- Taught and created teaching materials for Physics courses, covering topics in Mechanics and Electromagnetism.

ACADEMIC PROJECTS & PORTFOLIO

TWITCHCOMM: A Community-Based Recommender System for Twitch Users 2024

Co-developed a machine-learning-based recommender system to suggest users with similar interests on Twitch, integrating community detection and link prediction algorithms.

- Analyzed the Twitch Gamers Social Network dataset from SNAP, applying community detection algorithms to segment over 168,000 users and nearly 7 million connections into meaningful communities.
- Designed and implemented a recommendation system using link prediction and popularity-based algorithms.
- The system was integrated into a full-stack application with Django backend and React frontend, providing personalized recommendations through a seamless user interface.
- Presented the project at the SDS2024 11th IEEE Swiss Conference on Data Science in Zurich.

Understanding GitHub Action Developer Information Needs In Progress

Conducted an empirical study on developer behavior and information needs in GitHub Actions, leading to the creation of a comprehensive taxonomy.

- Analyzed developer behavior and needs on GitHub Actions by examining a large dataset of Stack Overflow posts, identifying key patterns in developer inquiries.
- Developed a detailed taxonomy of Relevant Information (RI) categories and Developer Needs (DN) classes, enabling fine-grained classification of developers' queries.
- Validated the taxonomy through structural analysis and developer surveys, ensuring reliability and practical applicability.

Master's Thesis: Revisiting Decoherence Effects in Neutrino Oscillations 2016

Conducted an in-depth investigation into the impact of quantum decoherence on neutrino oscillations, utilizing data from the MINOS and IceCube experiments.

- Developed and applied a phenomenological model to study neutrino oscillations within the open quantum systems framework, focusing on how decoherence influences oscillation probabilities.
- Performed a comprehensive analysis of experimental data, comparing results across neutrino experiments (MINOS and IceCube) to constrain decoherence parameters and identify potential signs of physics beyond the Standard Model.

Portfolio

Explore more of my work and projects in detail on my online portfolio.

- **Portfolio Link:** https://sandro-hernandez.netlify.app/

EDUCATION

University of Bern, Bern, Switzerland: M.S., Computer Science Expected Dec 2024

- Relevant courses include Machine Learning, Big Data, Recommender Systems, Computer Vision, Image Processing, Explainable AI, Software Product Lines, and Compiler Construction.
- Focused on advanced topics in machine learning, software development, and data science.
- Conducted research in the area of recommender systems within the context of Twitch, which led to a publication.

Coursera, Online: IBM Data Science Professional Certificate 6 months - 2022

- Completed a series of courses covering data analysis, web scraping, machine learning, and data visualization.

Pontifical Catholic University of Peru, Lima, Peru: M.S., Physics 2014 - 2016

- Specialized in neutrino physics with a focus on the effects of quantum decoherence in neutrino oscillations.
- Developed and implemented computational models using Python and Wolfram Mathematica.

Pontifical Catholic University of Peru, Lima, Peru: B.S., Physics 2008 - 2014