

# Ivannia Gomez Moreno

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## Education

University of California, San Diego 2024 – Present  
PhD in Computer Engineering

CETYS Universidad campus Tijuana 2020 – 2024  
Bachelor's in Computer Science Engineering - Summa Cum Laude & EGEL CENEVAL Excellence Performance 99.46/100

## Technical Skills

- **Programming:** Python (TensorFlow, PyTorch, TorchHD, Numpy, Keras, Scikit-learn), JavaScript, C#, C++, Java, CUDA, OMP
- **Databases:** MySQL, SQL
- **Programming:** Unreal Engine 5, Android Studio, Jira, Kubernetes, Docker, Ionic, Angular, Cloud Compare

## Work Experience

**Research Assistant** **September 2022 – Present**

UC San Diego - Systems Energy Efficiency Lab

- **Robust prediction of time series** using Hyper Dimensional Computing (HDC) for resource-constrained devices, showing comparable accuracy to robust neural networks while achieving up to 9x faster training times
- Analysis of three research papers weekly focusing on topics like HD, IoT, AI, distributed systems, and DL models
- Research into **efficient point cloud segmentation** using HDC for embedded devices

**Data Analyst (ENLACE summer research program)** **June 2022 – August 2022**

UC San Diego – San Diego Supercomputer Center with WIFIRE Lab

- Design a **deep neural network segmentation model** that classifies LiDAR-based fuel sizes to improve current physics-based wildfire simulations. Results show an overall IoU of 40%, with the best classification being 73%, and displaying realistic visualizations of the findings.
- Maintained detailed project documentation on GitHub, deployed using Kubernetes and the Nautilus Cluster
- **Wildfire progression model** "BurnPro3D Immersive Forest Experience" with Unreal Engine in 3D and Virtual Reality using WIFIRE's QUIC-fire modeling data for better forest-fire analysis presented at the Data Science Alliance Inauguration

## Publications

- **I. Gomez Moreno**, U. Orozco-Rosas, K. Picos, T. Rosing "Multipurpose image colorization: a novel pipeline using convolutional neural networks", SPIE, 2024
- X. Yu, A. Thomas, **I. Gomez Moreno**, L. Gutierrez, T. Rosing "Lifelong Intelligence Beyond the Edge using Hyperdimensional Computing", IPSN, 2024
- **I. Gomez Moreno**, X. Yu, T. Rosing, "KalmanHD: Robust On-Device Time Series Forecasting with HyperDimensional Computing", ASP-DAC, 2024
- **I. Gomez Moreno**, et al. "Visualization and Labeling of Terrestrial LiDAR Data for Three-Dimensional Fuel Classification", IEEE e-Science, 2023
- I. Nealey, D. Encinas Pacheco, **I. Gomez Moreno**, M. Floca, D. Crawl, I. Altintas, "A Science-Enabled Virtual Reality Demonstration to Increase Social Acceptance of Prescribed Burns", IEEE e-Science, 2022

## Awards and Certificates

- Awarded best poster in TECHCON 2024
- Certificate of "Getting Started with Deep Learning" in Python - Nvidia 2024
- Certificate of "Fundamentals of Accelerated Computing with Python and C/C++" - Nvidia 2023
- Awarded best poster in the JUMP 2.0 Virtual Undergrad Symposium 2024

## Synergetic Activities

**Convergence Research (CORE) Institute Fellowship** **March 2023 – May 2023**

Convergence Research Institute – San Diego Supercomputer Center

- Attending workshops and webinars focusing on user-inspired and multidisciplinary research
- Co-wrote an AI-driven pitch idea for proactive wildfire control using the GPT algorithm, which streamlines prescribed fire procedures by expediting the present administrative process

## Languages

- Spanish & English - Bilingual