Nikolas Belle

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EDUCATION

University of California, Santa Barbara
M.S. in Electrical & Computer Engineering, Machine Learning & Computer Architecture Specialization, 4.0 GPA — Exp 2026
B.S. in Computer Engineering, Machine Learning & System Software Architecture Specialization, 3.86 GPA — Jun 2025
Engineering Honors Program, Technology Management Program, New Venture Program, Men's Club Soccer

Relevant Coursework
Computer Science: OOP, Data Structures and Algorithms, Advanced Applications Programming, Operating Systems, Distributed Systems, Machine Learning for Computer Networks, Linear Algebra, Discrete Mathematics, Probability and Statistics

Electrical & Computer Engineering: Computer Architecture, Analog and Digital Circuits & Systems, Digital Logic Design, ML and AI in Design and Test Automation, Deep Learning, Adversarial Robustness of Neural Networks, Embedded Systems Design

EXPERIENCE

Research Assistant - NLP Group, UCSB, Santa Barbara, CA — Dec 2024 – Present
Co-Developing **self-evolving multi-agent systems** that autonomously build, evaluate, and improve domain-specific LLM agents to overcome the limitations of a single-agent architecture's **long-term strategy formulation and execution**.

R&D Software & Machine Learning Engineer Intern - Quantum Energy, Santa Barbara, CA — Sep 2024 – Present
Collaborating with CTO to develop robust machine learning algorithms for **power grid simulations** and extracting **impact analytics**. Enhancing API to empower stakeholders by uncovering actionable insights on potential **sustainable energy solutions**.

Software Engineer Intern - Pacific Life, Newport Beach, CA — Jun 2024 – Sep 2024
Led architecture design and development of a system that reduces a 90 hour quality assurance process to seconds. Focused on **modularity**, **scalability**, and **CI/CD** principles to future-proof the process and ensure seamless integration with new technology.

Machine Learning Consultant - Rothman Lab, UCSB, Santa Barbara, CA — Mar 2024 – Oct 2024
Applying machine learning to molecular biology research focused on extending the human lifespan. Fine-tuning foundational model **BRAKER3** for **gene prediction** in tardigrades to analyze **genetic expression** under various environmental stresses.

PROJECTS

Bias Evaluation Framework for Multilingual LLMs — Feb – Mar 2025
- Co-Developed a model agnostic framework to evaluate bias in multilingual LLMs with structured and generative prompting.
- Experiments on political bias showcased novel findings including **stance flipping** between models for pairs of languages.

GauchoSat - Nano Satellite Senior Capstone Project — Sep 2024 – Present
- Project manager and software lead for UCSB's first **CubeSat**, used to collect real-time solar cell performance data from space.
- 9 month design, development, & testing process specifically focused on **command & control** subsystem.

Encrypted Video Classifier - Fingerprinting Streamed Videos Through Burst Characteristics — Oct – Dec 2023
- Trained a custom **convolutional neural network** and **random forest classifier** on flow-level network data with 94% accuracy.
- Leveraged **scikit-learn**, **Keras**, **TensorFlow** as well as **netUnicorn** and **PINOT** for data collection and **Trustee** for analysis.

Fault Tolerant Distributed LLM Service - Multi-Paxos Distributed System — Nov – Dec 2024
- Implemented a distributed AI platform that maintains a replicated key-value store using **Multi-Paxos** for **consensus**, ensuring **fault tolerance** and seamless LLM query handling with Google Gemini.

Mountain Bike Trail Grade Monitor - Embedded Systems Project — Nov – Dec 2024
- Developed a trail grade monitor using a **NEXYS A7 FPGA** and MPU6050 IMU, integrating a **Kalman filter** and **exponential smoothing** to deliver real-time incline measurement with an intuitive user interface for mountain biking.

HONORS AND AWARDS

Computer Engineering Senior Spotlight, University of California, Santa Barbara — Apr 2025

Harold Frank Scholarship Recipient, UCSB Department of Technology Management — Mar 2025

College of Engineering Dean's Honors List, University of California, Santa Barbara — Winter, Spring, Fall, 2022 – 2025

Eagle Scout, Boy Scouts of America — Feb 2021

Second Place, The Young Entrepreneurs Competition Southern California — May 2020

SKILLS

Programming: *Software:* Python, C++, C, React, JavaScript, HTML, CSS, SQL, Java. *Hardware:* STM32, ESP32, RISC-V, SystemVerilog, QP-nano, Xilinx Suite, Arduino. *AI/ML/DL:* LangChain, LangGraph, PyTorch, Scikit-learn, TensorFlow, Keras

Languages: English (native), German (fluent), Spanish (basic)

INTERESTS

Soccer, Mountain Biking, Music, Guitar, Surfing