NICOLE LAI-LOPEZ

San Diego, CA

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GitHub | http://nicolelailo.com/

SUMMARY

Machine Learning Engineer with hands-on experience building NLP pipelines that transform unstructured document data into structured outputs. At Boeing, I developed a high-accuracy PDF ingestion system for aviation data, reducing 18+ hours of manual work per day. I bring a strong foundation in Python, robust model evaluation, and scalable data processing—paired with a product mindset and strong content design skills to innovate and elevate user experiences.

EDUCATION

University of British Columbia
M.S., Data Science - Machine Learning (Computational Linguistics)

2024 - 2025
Vancouver, BC, Canada

- **GPA:** 4.0/4.0
- **Achievements:** Academic Scholarship, 2024 Class Representative, 1st Place Corpus Linguistics Hackathon
- **Coursework:** Advanced Corpus Linguistics, NLP for low-resource languages, Statistical Inference, Machine Learning, Deep Learning, Stats & Computation, Transformer Interpretability, Machine Translation, Parsing strategies, Computational Semantics, Ethics & Security

University of California, San Diego
B.S., Cognitive & Behavioral Neuroscience

2017 - 2021
San Diego, CA, USA

- **GPA:** 3.6/4.0
- **Achievements:** Provost Honors (2018-2021), Academic Scholarship - 32,500 USD
- **Coursework:** Linear Algebra, Programming in Java, R, Prototyping, Usability & Information Architecture, Judgement & Decision-Making, Modeling with Machine Learning

INDUSTRY

Boeing
Machine Learning Research Engineer

Apr 2025 - Present
Vancouver

- Built first LLM-powered parsing system for unstructured aviation flight logs, achieving >90% structured extraction accuracy across 13 formats using hybrid rule-based and generative modeling.
- Designed hierarchical prompt templates across multi-section aviation schemas with robust zero-shot generalization across noisy, domain-specific logs.
- Standardized aviation log schemas, enhancing cross-team data analytics and reporting.
- Developed novel benchmark for structured NFDD extraction against human-annotated ground truth.

Dexcom
UX Content Designer, Computational Linguist

Oct 2022 - Oct 2024
San Diego

- Engineered a real-time UI copy reuse system using Sentence-BERT embeddings, Faiss-based ANN search, and rule-based normalization to detect semantically similar strings — reducing labor & translation costs.
- Led collection, cleaning, and curation of UI string corpus for semantic matching & X-team analytics.
- Worked with SWEs to integrate tool into Figma/CMS workflows to minimize copy turnaround time.

NOAA - Fisheries
Social Media Manager, Content Strategist (Part-time)

Jun 2023 - Oct 2024
San Diego

- Developed a data-informed content strategy that led to a 500k+ increase in monthly interactions.
- Collaborated with scientists, designers, and fisheries experts to create and increase messaging to 3x weekly (from monthly), leveraging independent sentiment & topic analysis on Reddit communities.
- Directed and edited an award-winning underwater documentary to showcase scientists' work in local seaweed ecology.

Dovenmuehle Mortgage
Lead Content Designer

Oct 2021 - Oct 2022
San Francisco

- Built and deployed an AI-powered virtual agent using LivePerson, resolving ~35% of service requests & reducing costs by $XM.
- Analyzed 200K+ customer service transcripts using LivePerson analytics to inform product roadmap decisions.
- Designed and developed Next.js dashboard that dynamically suggested relevant answers based on mortgage status, cycles, and balance.
- Created a comprehensive content design system from scratch for increased customer-facing consistency.

Research

SLIME-lab, Professor Jian Zhu
NLP Group Graduate Researcher

Apr 2025 - Present

- Engineered a modular PyTorch toolkit for low-level activation extraction, patching, and causal analysis in MMDiT architectures for TTS synthesis.

- Designed, implemented forward hooks to capture per-layer self-attention, feedforward, and intermediate activation states for targeted mech interventions and circuit-level feature tracing.
- Developed automated activation patching pipelines, probing, and steering vector discovery, benchmarking causal effects of hidden state manipulation on downstream audio generation.
- Contributed open-source software and empirical results advancing model transparency, feature attribution, and mech understanding in SOTA speech generation systems.

Human-AI Interaction Lab, Professor Cristina Conati **Oct 2024 - Present**

Computer Science Graduate Researcher
- Engineered GRU-CNN attention-based architecture (VTNet) to classify user long and short-term cognitive traits from raw eye-tracking data & scanpaths.
- Designed full preprocessing pipeline for time-series gaze data using cyclical splitting and data augmentation techniques.
- Adapted legacy research codebase into modular, extensible framework for experimentation.

PROJECTS

Co-founder, other people literary magazine | https://www.otherpeoplesd.com/ **Nov 2019 - Present**
- Cofounded Other People, UC San Diego's first literary magazine; led brand, funding, editorial ops, content workflows, user-facing website/social channels, and team-building to establish a sustainable publication that has published 9+ issues, raised $25K+, and remained active through 3 leadership hand-offs over 7+ years.

R Package Contributor, moo4feed | https://www.skysheng.io/moo4feed/ **Apr 2025 - Jul 2025**

UBC, Animal Welfare Lab
- moo4feed is an R package designed to extract novel individual-level traits from raw feeding and drinking data collected through precision livestock farming systems. The package aims to support animal welfare research and data-driven monitoring by enabling reproducible, scalable analysis workflows.

Python Package Contributor, fwi-predict | https://github.com/fish-welfare-initiative/fwi-predict **Mar 2025**

Fish Welfare Initiative
- Developed fwi-predict, an end-to-end forecasting pipeline for predicting pond acidity levels using weather forecasts and geospatial data. The system integrates Earth Engine-based data export, cloud bucket downloads, time-aware feature engineering, and a custom multiclass calibration curve visualizer. Utilized to monitor aquaculture ponds in Eastern India that would otherwise drain time and money resources.

Global Risk and AI Safety Preparedness Contributor | https://aisafetypreparedness.com/ **Jan 2025 - Feb 2025**

Mohammed Bin Rashid School of Government & Future of Life Institute
- A comprehensive mapping of tools, policies and technologies for policymakers, researchers, and industry leaders seeking to understand ongoing AI risks and proposed solutions.

PUBLICATIONS

- Nicole Lai-Lopez, Lusha Wang, Su Yuan, Lisa Zhang. ylmmcl at Multilingual Text Detoxification 2025: Lexicon-Guided Detoxification and Classifier-Gated Rewriting . CLEF 2025: Conference and Labs of the Evaluation Forum, 2025.

SKILLS

- **Programming & Tools**: Python (6 yrs), PyTorch (2yrs), TensorFlow, Pandas, scikit-learn, matplotlib, TransformerLens, R (6 yrs), Linux, JavaScript, HTML/CSS, SQL, C, Java, Git, GitHub, AWS, High Performance Computing (HPC), Apptainer, Streamlit, Docker, Plotly, Tableau, Hugging Face, OpenAI API, Jupyter, Software Development
- **Machine Learning & Data Science**: Data Exploration, Data Visualization, MLOps, CNNs, GNNs, LightGBM, XGBoost, Transformers, NVIDIA NeMo, Prompt Engineering
- **User Experience & Content Creation**: Figma, Sketch, Adobe XD, DaVinci Resolve, Adobe Premiere Pro, Accessibility, Information Architecture, Design Thinking, Wireframing & Protoyping, Content Strategy, Usability testing, Voice & Tone
- **Sports**: Triathlon (ironman + olympic distance), scuba diving (scuba instructor), multi-day backpacking, rock climbing, snowboarding, yoga (yoga instructor), salsa and tango dancing, martial arts
- **Creative**: Language learning, reading, writing, seaweed collecting, underwater videography, documentary filmmaking, video editing, vegan/vegetarian cooking, solo-traveling
- **Languages**: Spanish, English, German, Italian, French

AWARDS

- Merit Scholarship - 4,100 CAD, University of British Columbia 2025
- Merit Scholarship - 32,500 USD UC San Diego 2024-2025
- National Merit Scholarship Recipient - Annual Stipend + Full-tuition, St. Mary's School, Panama 2014 - 2017
- Physics Olympiad National Gold Medalist, first place, Panama 2015
- Math Olympiad National Finalist, Panama 2013