RICHARD YOUNG, Ph.D.
Portland, OR 97217 | (415) 881-1115 | richard@deepneuro.ai | LinkedIn: https://www.linkedin.com/in/richard-j-young/
AI Research Scientist | Patent Inventor | Bridging Theory & Empirical Value in High-Stakes Domains

Ph.D. in Computational Neuroscience 15+ years of experience at the intersection of neuroscience, large language models (LLMs), and AI research. Specializing in understanding LLM cognition, multi-agent coordination, and reinforcement learning for healthcare optimization. Developed scalable, production-grade pipelines generating over one million daily predictions. My research bridges AI/ML innovation with neuroscience complexity through systematic, reproducible methods and open science principles. I develop large-scale foundation models that transform brain data from electrophysiology to neuroimaging to interpretable insights about neural mechanisms in health and disease. Committed to building community standards and open-source tools, I prioritize collaborative science that accelerates discovery across disciplines. By combining rigorous experimental design with transparent model architectures, I ensure AI systems that are both scientifically robust and practically deployable for advancing our understanding of brain function at scale.

TECHNICAL QUALIFICATIONS

Large Language & Foundation-Model Development | Deep Learning & RL Research | Scalable GPU Training & Optimization | ML Infrastructure & End-to-End Deployment | Safe/Responsible AI & Evaluation | Distributed Data Pipelines & Big-Data Engineering | PyTorch | Databricks | Publications & Research Communication | Automation-Driven MLOps | Health AI | Model Robustness & Reliability | Temporal Coherence and Neuroscience-Inspired AI | Reproducible Research | Medical Domain Expertise and Clinical AI | Leadership

PROFESSIONAL EXPERIENCE

Senior Machine Learning Engineer - Applied Scientist | UnitedHealth Group, Remote 02/2024 - Present

- Integrate NLP and LLMs with Databricks, Spark, Microsoft Azure, and OpenAI API to optimize data collection, achieving millions in cost savings and reducing processing times.
- Partner with Snowflake, Microsoft, and Databricks to develop RAG-based solutions, improving

research speed, reducing call times, and enhancing market competitiveness.

- Deployed robust LLM-powered solutions on Azure to automate call transcript analysis, establishing rigorous testing protocols to ensure model fairness and mitigate PII/PHI exposure risks while improving accuracy and accessibility
- Architected and implemented Transformer-based semantic extraction pipelines that improved zero-shot accuracy by 20%; this initiative included developing new validation methodologies to ensure model reliability and reduce business stand-up time from 6 months to 2 weeks.

ML Researcher Brain-Derived Data | University of Nevada, Las Vegas 12/2021 - Present

- Boost predictive model accuracy by 40% by designing and optimizing 8+ algorithms (LSTM, ARIMA, feature engineering) for neurodegenerative disease analysis.
- Improve research efficiency by 30% and accelerate data processing by 50% using AI-driven methodologies, including ChatGPT® for summarization and BERTopic for topic modeling, thereby streamlining the review of over 3,700 clinical trial datasets.
- Realized a 12.4x return on investment by architecting a novel AI-powered Deep Embedded Clustering model, analyzing billions of transactional data points to identify and predict complex temporal behavioral patterns, enabling proactive, precision-targeted interventions and significantly mitigating associated financial and psychological risks.

Senior Data Scientist | Optum, Las Vegas, NV 08/2018 - 02/2024

- Managed terabytes of sensitive data for federal agency submissions (FTC, DOJ), developing and documenting data governance and testing plans to ensure strict regulatory compliance across 10+ departments.
- Developed ML models to predict patient appointment schedules and analyze key health indicators (medication levels, A1C, fall risk, hospital admissions), optimizing both in-office and at-home care.
- Leveraged Alteryx, MS SQL, and structured/unstructured databases to enhance patient outcomes and drive cost savings.

Data Scientist | Nevada Institute of Personalized Medicine, Las Vegas, NV 11/2013 - 11/2018

- Designed and deployed an HPC supercomputer for genomic data, improving computational performance by 6000% and drastically reducing processing times. Enabled 100+ interdisciplinary projects with scalable resources, cloud integration, and repeatable workflows.
- Developed advanced genomic infrastructure utilizing high-throughput sequencing and machine learning technologies, enabling AI-driven analytics and modeling for personalized medicine research across extensive patient datasets.

EDUCATION

Ph.D.: Computational Neuroscience | University of Nevada Las Vegas | 2025

- Thesis: Machine Learning Methods and Transcranial Direct Current Stimulation for the Understanding and Treatment of Parkinson's Disease

Research Focus | Artificial Intelligence, Neuromodulation, and Disease States

- Leveraging cutting-edge Large Language Models (LLMs) to accelerate clinical trial data extraction in research.
- Investigate TMS, tACS, tDCS applications in aging, Parkinson's, stroke, and other neurological conditions.
- Applying Deep Embedded Clustering (Autoencoders | Clustering Layer | KL Divergence Loss) to analyze behavioral patterns, including the predictive detection of problem gambling and other complex psychological states from transactional data.

Past Research Achievements

- Developed DARNN/GAN/LSTM predictive algorithm for COVID-19 detection using wastewater data.
- Applied deep learning and OpenCV (Deep Convolutional Neural Networks | Multi-modal Data) for early Alzheimer's disease detection, mapping genetic variants to RGB color space.

Awards: 2021 UNLV Impact Award, Community-Based Participatory Research Award: Exceptional community engagement.

Master of Science: Data Analytics - Focus: Healthcare and Machine Learning | University of Nevada Las Vegas | 2023

Clinical Trials Analysis

- Utilized Large Language Models (LLMs) for advanced data extraction from publicly available clinical trial datasets.
- Applied sophisticated machine learning algorithms to process and analyze extracted data.
- Developed novel techniques for interpreting unstructured medical text using NLP and LLMs.

Real-time Drug Efficacy Monitoring

- Developed ML-based system integrated with smartphones for real-time monitoring of drug effectiveness.
- Captured immediate data on patients' motor functions and medication adherence.

Bachelor of Arts: Psychology, Magna Cum Laude | University of Nevada Las Vegas | 2018

- Honors Thesis: Diversity of Minimotifs in Human Traits and Disease
- Minors: Latin Honors | Neuroscience | Information Technology

INTELLECTUAL PROPERTY & PATENTS

Systems and Methods for Determining Readmission Rates - AI-based readmission prediction system (US Patent App. 2024/0395417 A1)

- Developed an AI-driven system for calculating disease-specific readmission rates based on hospital admission data, improving healthcare application accuracy. This system uses a machine learning-based method to cluster data, predict readmission probabilities, and visualize insights through a graphical user interface.

Institutional Review Board (IRB) Member & Scientist, UnitedHealth Group

- Serve as a scientific expert on the Institutional Review Board (IRB), collaborating with physician and legal members to evaluate research methodologies for ethical integrity and regulatory compliance, directly influencing policies that protect over 100 million Americans.

TECHNICAL MENTORING AND RESEARCH LEADERSHIP

- Led development on the integration of cutting-edge Large Language Models (LLMs), utilizing platforms such as OpenAI API, OpenRouter, Meta Llama, and Retrieval-Augmented Generation (RAG) frameworks to enable precise domain-specific knowledge extraction and inference capabilities.
- Directed junior researchers in implementing and optimizing high-performance computational workflows, leveraging Azure cloud services, Databricks platforms (Photon), and Slurm-managed High-Performance Computing (HPC) clusters to support robust, scalable model training and rigorous validation.
- Innovation coaching sessions, bridging insights from Natural Language Processing (NLP) and neuroscience, and successfully translating foundational theoretical research into impactful, practical technological solutions.

IMPACT & RECOGNITION

Business Intelligence, Machine Learning - PTI (part-time instructor) - UNLV Lee Business School, 2023 - Present.

Data Analysis, Creative Director & Digital Strategist - Private Startup Companies, 2012 - 2020.

Technical Writing - Data Engineering with Alteryx (Packt Publishing), The Neuroscience of Artificial Intelligence (in progress), Nucleic Acids Research, Algorithms, Brain Sciences, American Journal of Managed Care, Alzheimer's & Dementia.

Delivered 35+ invited talks and keynotes - (audience sizes: 250 - 50,000) on Large Language Models, AI safety, Clinical AI, AI and Education, and Driving Change with AI.