BRYIUM ONYANCHA

bryiumonyancha@gmail.com

Linktr.ee/bryium https://github.com/Bryium

ABOUT ME

I am a research-focused computer science graduate with experience in machine learning, including transformer models, reinforcement learning, and scalable, GPU-accelerated ML pipelines. Alongside my research work, I am a software engineer skilled in building modern web applications, robust backend APIs, and mobile applications using contemporary frameworks and tools.

EDUCATION

Master's Degree,WILLIAM JESSUP UNIVERSITY ,San Jose | 2027

Research Focus: Large Language Models, Diffusion Models, Multimodal Systems and Computer Vision

- Research on efficient training, adaptive inference, and reinforcement-learning–based reasoning in modern foundation models.
- Focus on post-training techniques including RLHF, RLAIF, and iterative refinement for alignment, controllability, and deep reasoning.
- Exploration of model compression, architecture search, and training-time optimizations to reduce compute while preserving frontier-level performance.
- Apply methods to computer vision tasks such as object recognition, image generation, and scene understanding, as well as predictive modeling problems in structured or sequential data.
- Long-term goal: scalable, compute-efficient architectures for next-generation LLMs and multimodal agents.

Bachelor of Science,DEDAN KIMATHI UNIVERSITY OF TECHNOLGY,Nyeri | 2024

- Graduated with Second Class Honors in BSc Information Technology.
- Knowledgeable in software engineering concepts and networking.
- Experienced in using and managing both Linux and Windows operating systems, including system administration tasks.
- Proficient in programming languages like Java, Python, JavaScript, Kotlin, TypeScript, GO, and C++, with a solid understanding of data structures and algorithms.
- Exprienced in Object-Oriented Programming (OOP) with design patterns like MVC and Singleton.
- Skilled in working with databases such as MySQL, PostgreSQL, and with experience in mobile and web development and also machine learning.
- Knowledge of web security best practices, including OAuth, JWT and encryption methods.
- Proficient in Docker for containerization and managing virtual machines.
- Experience with cloud infrastructure management, including deployment, scaling, and orchestration.

WORK EXPERIENCE

LLM Trainer |Turing|Remote|Jul 2025 - Dec 2025

- Contributed to post-training and fine-tuning of large language models, focusing on improving reasoning quality, alignment, and response consistency.
- Worked with reinforcement learning environments (RL Gym–style setups) to evaluate and refine model behavior during training and inference.
- Supported API development and tooling used for model evaluation, data curation, and iterative refinement workflows.
- Collaborated remotely with cross-functional teams to analyze model outputs, debug failure cases, and improve training pipelines

Software Engineer|Dukatech Solutions|Nairobi |Oct 2024 - May 2025

- Contributing to developing innovative applications at DukaTech Solutions.
- Involved in the development of Shop Okoa and Mamapesa, a savings and loan platform.
- Integrated machine learning models into Mamapesa to predict loan eligibility.
- Developed an AI chatbot to simplify loan applications and educate users on financial concepts.
- Leveraging backend expertise and machine learning skills to design algorithms and models.

PROJECTS

Rigorous Evaluation of Transformer-Based T ext Classification

- Fine-tuned pretrained transformer models (BERT & DistilBERT) on labeled text classification datasets to establish strong contextual baselines.
- Evaluated model performance beyond aggregate accuracy using class-wise precision and recall, confusion matrices, and structured error analysis.
- Conducted ablation studies (freezing encoder layers, reducing training data, modifying regularization) to assess robustness, bias patterns, and failure modes.

Time-Series Forecasting for Energy Consumption Analysis

- Collaborated with a team of three to design and implement a time-series forecasting system for predicting energy consumption trends.
- Applied statistical and deep learning models to capture seasonality, trends, and long-term temporal dependencies in energy usage data.
- Evaluated model performance using rolling-window validation to prevent data leakage and ensure realistic forecasting assessment.
- Utilized: Python, Pandas, Statsmodels, PyTorch, LSTM, Time-Series Analysis, Forecasting Metrics.

Image Classification

- Built a CNN-based image classifier to identify handwritten digits or small object datasets (MNIST).
- Implemented data augmentation techniques (rotation, flipping, normalization) to improve generalization and reduce overfitting.
- Evaluated model performance using accuracy, confusion matrices, and visualized misclassified images for error analysis.

Object Detection with Pretrained Models

- Developed an object detection system using a pretrained model (YOLOv5 & Faster R-CNN) to detect and localize multiple objects in images.
- Fine-tuned the model on a custom or open-source dataset and visualized bounding box predictions.
- Measured performance using mean Average Precision (mAP) and class-wise detection metrics.

Bryium AI |RAG-powered chatbot

- Developed an intelligent RAG-powered chatbot using Flask and LangChain.js for real-time, context-aware conversations.
- Integrated GeminiAPI for dynamic AI responses, RAG for external knowledge retrieval, LangChain.js for conversational logic, and Vanilla CSS for a responsive frontend.

HURA-Chatbot

- Developed Hura Chatbot, a conversational web application that delivers AI-driven replies and real-time weather forecasts based on user location, featuring a responsive interface for seamless user experience.

SKILLS

- Deep Learning (Neural Networks, Optimization)
- Transformer Models(LLMs, Attention Mechanisms)
- Reinforcement Learing(Policy Gradients, RLHF-style Training
- Diffusion Models (foundations, training & inference)
- Multmodal Learning(text-vision systems)
- Model Evaluation & Alignment
- Fine-tuning & Post-training(RLHF, RLAIF
- Model Compressions(Prunning, Quantization, distillation)
- Architecture Search & Optimization
- GPU-accelerated Training
- RAG (Retrieval-Augmented Generation)
- Computer Vision (OpenCV, MediaPipe)
- Java
- Kotlin
- Python(Django, Flask)
- JavaScript (Node.js, React, React-Native, LangChain.js, Next.js,Expo, TypeScript)
- Git & GitHub
- SQL (PostgreSQL, SQLite)
- ORM (Prisma, Django ORM)
- RESTful API Design
- User Authentication (JWT, NextAuth)
- HTTPS, CORS configurations