

Patricia Atim

Software/AI Engineer



Personal details



Patricia Atim



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Skills

Software Engineering Skills

API Development and Integration, Data Structures, Algorithms, Cloud Computing (Google Cloud Platform, AWS), Containerization (Docker, Kubernetes), DevOps, CI/CD Pipelines, Version control, and the git-flow, Database Management (MySQL, PostgreSQL, MongoDB), Parallel and Distributed Programming (Dask, Ray, Ansycio), Mobile Application development, Web Application Development, Test Driven Development, Object Oriented Programing, Python, Java, C++, JavaScript, React JS, React Native, Node JS, Django, Flask, FastAPI, Pydantic.

Education

MEng. Artificial Intelligence for Smart Sensors/Actuators

Deggendorf Institute of Technology, Germany

10/2024 - Present

Focus areas: Machine Learning, Deep Learning, GenAI, NLP, Computer Vision, Model Evaluation, Dimensionality Reduction, Exploratory Data Analysis, Data Pipelines and Preprocessing, Data Visualisation, Big Data, Parallel and Distributed Programming, Multithreading and Multiprocessing, GPU Programming and Acceleration.

BSc. Computer Engineering

Makerere University, Uganda

09/2013 - 06/2017

Focus areas: Software Engineering, Programming, Databases, Data Structures and Algorithms, Signal Processing.

Professional Experience

Teaching Assistant – Artificial Intelligence & Machine Learning

Deggendorf Institute of Technology, Germany

02/2025 – Present

- Support first-semester students in understanding core AI/ML concepts such as supervised learning, neural networks, and model evaluation.
- Deliver clear solutions to weekly exercises, explain problem-solving strategies, through practical problem-solving sessions
- Collaborate with the course professor to prepare solution sheets, deliver hands-on tutorials, and foster an engaging learning environment.

Software Engineer

Kanzu Code (Outsourced to MTN), Uganda 05/2022 - 06/2024

- Developed high-performance applications for MTN, Africa's largest telecom, serving 10M+ users.
- Designed RESTful APIs using FastAPI, contributed to the architectural design of scalable systems, implemented cloud deployments with Docker, and led cloud observability efforts.
- Participated in agile sprints, collaborated with distributed teams, and coordinated with external vendors.

Projects and academic work

AI/ML Coursework Projects

- **Predictive Modeling and Evaluation:** Trained regression and classification models (Logistic Regression, SVM, KNN, Naive Bayes) on real-world datasets. Evaluated performance using metrics like MSE, R^2 , precision, recall, and F1-score.
- **Data Preprocessing & Feature Engineering:** Designed data pipelines for cleaning, encoding, augmentation, and balancing. Applied PCA and t-SNE for dimensionality reduction.
- **Transformers & GenAI Applications:** Built and fine-tuned Transformer models for both vision and NLP tasks, including image segmentation and summarization. Explored attention mechanisms and sequence modeling for generative tasks.
- **LLMs & Retrieval-Augmented Generation (RAG):** Developed conversational AI tools using LangChain, Hugging Face Transformers, and vector databases (ChromaDB, FAISS). Integrated RAG pipelines for domain-

Soft Skills

Analytical Problem Solving,
Collaboration and Communication,
Project Management, Adaptability,
Continuous learning, Agile
Methodologies, Product Ideation,
Proactive, self-reliant

Languages

English - Native, German - Beginner

Interests

- AI-Driven Tools and Applications
- Exploring advancements in
Computer Vision and Machine
Learning
- GenAI

April 10, 2025



specific knowledge retrieval and dynamic response generation.

- **Agentic Workflows & Prompt Engineering:** Prototyped agent-like systems using LLMs to automate task execution. Experimented with prompt design, conversational memory, and multi-step reasoning for GenAI applications such as chatbots, document Q&A, and task planning.

Personal Projects

- **AI-Powered Medical Assistant:** *Fine-tuned LLM + Custom Datasets*. Built an assistant capable of answering medical questions, explaining symptoms, and summarizing clinical documents based on trusted sources. Combined medical Q&A, terminology explanations, and document summarization.
- **Persona Chatbot – Custom LLM Fine-Tuning:** *LLaMA, Custom Datasets, Hugging Face*. Fine-tuned LLMs on curated dialogues and public content to create distinct persona chatbots.
- **AI-Powered Code Debugger & Documentation Generator:** *React, FastAPI, AST, OpenAI API, Docker, Kubernetes, AWS/GCP*. Built a GenAI tool that analyzes code, suggests fixes, and auto-generates documentation using LLMs. Deployed as containerized cloud APIs.
- **Personal Task Automation Agent:** *LangChain, Ollama, FAISS, OpenAI*. Built an autonomous agent to process high-level tasks like weekly planning using calendar APIs and personal notes (via RAG). Integrated vector memory for persistent context and a simple Streamlit UI for interaction.
- **AI Data Profiler and Visualizer:** *LangChain, Pandas, Matplotlib*. Created a tool that accepts a CSV file, uses LLMs to detect trends, correlations, and anomalies, then explains them in plain English. Visualized findings using dynamic charts, streamlining data understanding for non-technical users.
- **AI-Powered Document Search:** *LangChain, Hugging Face, ChromaDB, Gradio*. Developed a document Q&A system where users upload files (PDF/DOCX/TXT) and query content via LLM-powered search. Integrated chunking, vector storage, and conversational UI for intuitive document exploration.

AI Skills

Machine Learning Frameworks/Tools: PyTorch, TensorFlow, LangChain, Keras, Scikit-Learn, Scipy, Pandas, NumPy, pyspark, Matplotlib, Seaborn, Plotly, Microsoft Power BI, Pytest, PyTorch Lightning. **Neural Networks:** Neural network Architecture, Activation functions(Sigmoid, ReLu, Softmax, Tanh, Leaky ReLu), forward propagation, Loss and Backpropagation, Gradient descent(Stochastic Gradient Descent, Batch Gradient Descent), Optimisers(Adam, RMSProp, momentum). **Convolutional Neural Networks(CNN):** CNN Architecture, Stride and Padding operations, Pooling, Regularization and Dropout, Skip Connections, Calculating the number of parameters. **Object Detection:** Classification, localization, Image Segmentation(Semantic and Instance segmentation), Evaluation metrics(Intersection over Union (IoU), Jaccard Index, Dice Coefficient), Loss functions(Classification Loss, Localization Loss, Dice Loss), Object Detection Networks: Yolo, Vision Transformers. **GenAI:** Autoencoders, Variational Autoencoders(VAEs), Generational Adversarial Networks(GANs), **Supervised Learning (Regression):** Linear Regression, Polynomial Regression, Regularization(Ridge and Lasso Regression), Metrics(MSE, MAE, R-squared), Loss(OLS method). **Supervised Learning (Classification):** Logistic Regression, Naive Bayes, KNN, SVM, Loss(Binary Cross Entropy, Categorical cross-entropy), Model Evaluation - Confusion Matrix(Accuracy, Precision, recall, F1-score), ROC and AUC. **Decision Trees and Ensembles:** Entropy and Information Gain (Gini), Pruning, Ensemble Methods, Bagging, Random Forests, Boosting (Schapire and

AdaBoost). **Unsupervised Learning (Clustering):** k-Means, Hierarchical, DBSCAN, Elbow Method, metrics(SSD, Silhouette). **Model Evaluation:** Train validation test split, Cross-Validation, Hyperparameter Tuning(Grid Search, Random Search). **Dimensionality Reduction:** PCA, t-SNE. **Data Pipelines and Preprocessing:** Handling Missing Data, Data Normalization and Standardization, One-Hot Encoding, Label Encoding, Embedding, Data Augmentation, Data Splitting, Data Generators and *tf.data* API, Optimizing Data Pipelines, Handling Imbalanced Datasets. **Data Visualisation:** Boxplots, Histograms, Scatterplots, Heat maps