

AI & Machine Learning

Basic to Intermediate Track (6 Months)

Build solid ML foundations, master data preparation, train and evaluate models, and deploy real projects. Designed for beginners and career switchers.

6 Months

24 Weeks

Hands-on

Portfolio

Stackron Academy

Africa's premier IT training institute.

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Programme Overview

About Stackron Academy

Stackron Academy is Africa's premier IT training institute, trusted for practical, career-focused training across data, software, cloud and emerging technologies. Our programmes combine strong foundations with hands-on delivery and mentorship.

Course Introduction (AI & Machine Learning (Basic to Intermediate))

This 6-month track takes you from zero-to-confident in core machine learning. You will learn how to work with data, run exploratory analysis, build supervised and unsupervised models, and apply deep learning fundamentals to practical use cases. Every month ends with a tangible deliverable that strengthens your portfolio.

Who Is This Programme For?

Beginners

You are new to AI/ML and want a clear, structured roadmap from basics to real projects.

Analysts

You already work with data and want to step into predictive modelling and ML-driven insights.

Career Switchers

You are moving into tech and need hands-on training, portfolio projects, and mentorship.

Our Teaching Philosophy

Theory Meets Practice

Strong foundations combined with intensive hands-on projects.

Mentorship-Driven

Instructors serve as mentors, providing real-time feedback and guidance.

Outcome-Oriented

Every module is designed to deliver portfolio-ready, job-relevant skills.

Innovation & Empowerment

We build creators, problem-solvers, and future tech entrepreneurs.

Curriculum is delivered in structured modules with hands-on labs, assignments, peer review, weekly challenges and capstone projects throughout.

Course Curriculum

AI & Machine Learning (Basic to Intermediate) (6 Months / 24 Weeks) - Months 1-3

Monthly structure with weekly projects and reviews.

Month	Week	Focus / Deliverable
Month 1	Week 1	Orientation, AI/ML landscape, tools setup (Python, Jupyter), Git/GitHub workflow
Month 1	Week 2	Python for data work: data types, functions, Numpy, Pandas fundamentals
Month 1	Week 3	SQL essentials for analysts: SELECT, joins, aggregates, window functions
Month 1	Week 4	Data preprocessing, cleaning and feature engineering (missing data, encoding, scaling)
Month 2	Week 5	Exploratory Data Analysis (EDA): patterns, outliers, visualization, storytelling with data
Month 2	Week 6	Supervised learning I: linear regression and regularization + mini project
Month 2	Week 7	Supervised learning II: classification (logistic regression, trees) + metrics
Month 2	Week 8	Model evaluation and tuning: cross-validation, ROC/AUC, hyperparameter search
Month 3	Week 9	Unsupervised learning: clustering (k-means, hierarchical) and applications
Month 3	Week 10	Dimensionality reduction: PCA/UMAP + feature selection strategies
Month 3	Week 11	Intro to neural networks: perceptrons, MLPs, training loops, overfitting control
Month 3	Week 12	Deep learning foundations with PyTorch/TensorFlow + end-of-month project

Course Curriculum

AI & Machine Learning (Basic to Intermediate) (6 Months / 24 Weeks) - Months 4-6

Monthly structure with weekly projects and reviews.

Month	Week	Focus / Deliverable
Month 4	Week 13	Computer vision basics: images, convolution, CNN architectures
Month 4	Week 14	Applied CV: image classification + transfer learning (lightweight)
Month 4	Week 15	NLP basics: text preprocessing, TF-IDF, classical models
Month 4	Week 16	Modern NLP + Intro to LLMs: embeddings, transformers, prompting basics + mini project
Month 5	Week 17	Time series fundamentals: decomposition, stationarity, baselines
Month 5	Week 18	Forecasting methods: ARIMA/Prophet and ML-based forecasting
Month 5	Week 19	Recommender systems: collaborative filtering and content-based approaches
Month 5	Week 20	Deployment & MLOps basics: Streamlit/FastAPI, packaging, Docker intro, MLflow basics
Month 6	Week 21	Capstone design: problem framing, dataset selection, baseline model, roadmap
Month 6	Week 22	Capstone build: modelling, evaluation, documentation
Month 6	Week 23	Capstone deployment: API/app, model card, demo preparation
Month 6	Week 24	Portfolio week: GitHub polish, presentation, interview prep + demo day

What You'll Build

Key Outcomes

- Understand ML workflows end-to-end: data to deployment
- Build and evaluate regression and classification models
- Perform EDA and communicate insights clearly
- Apply deep learning basics to vision and text problems

Tools & Stack

- Python (Pandas, Numpy, scikit-learn)
- SQL, Git/GitHub, Jupyter
- PyTorch or TensorFlow fundamentals
- Streamlit/FastAPI, basic Docker

Portfolio Projects

- EDA report + dashboard on a real dataset
- Predictive model project (classification or regression)
- Clustering + segmentation mini case study
- Capstone: end-to-end ML app with deployment

Career Support

- CV and LinkedIn optimisation for AI/ML roles
- Mock interviews + technical challenge practice
- GitHub portfolio review and capstone demo day

AI & Machine Learning (Basic to Intermediate) is project-based: every month ends with a practical deliverable to strengthen your portfolio.