



AI 101

What is AI?

Artificial Intelligence (AI) refers to the broader concept of machines being able to carry out tasks that normally require human intelligence. AI encompasses various subfields; machine learning, natural language processing, computer vision, robotics, and expert systems.

Machine learning (ML) already powers many products we use every day. But it isn't always apparent to us that ML is behind them. Some examples:

- GPS navigation softwares, such as Google Maps and Waze
- Recommendations engines behind streaming services, such as Netflix and Spotify
- Search engines, such as Google Search, Baidu and Yahoo
- Social media, such as TikTok, Facebook, and Instagram

Machine learning can be applied to a wide range of fields, from health to retail, and in the development of self-driving vehicles.

As a journalist, it's likely that you have already used machine learning technology in your newsroom. Maybe you used Google Translate or another translation tool. Perhaps you used [Grammarly](#) or [Hemingway](#) to review your writing. Or maybe [Trint](#) saved you a lot of time by automatically transcribing your interviews.

History

AI and machine learning have become hot buzzwords in recent years. But these topics are not new. Scientists have been working on AI and ML for quite some time.

Artificial intelligence was first discussed in the 1950s. The term was coined by American computer scientist [John McCarthy](#) in a workshop at Dartmouth College, New Hampshire, in 1956. Since then, AI has undergone many evolutions and has experienced both golden and darker days. Machine learning entered the scene in the 1980s but it's only in the 2010s that developments in the field started to accelerate exponentially.

In the last decade, two key factors have contributed to significant developments in the AI field:



First, **huge amounts of data** are being created every minute. Machines need data to ‘learn’ and the increasing availability means that bigger datasets can be used to improve the training of existing models and also that those models can be tested and applied to new fields.

The second factor relates to recent advances in **processing speeds** that allow computers to make sense of all this information much more quickly. This has allowed tech companies and other players in the field to justify bigger and bigger investments in research and development.

At the current speed, AI will soon become a little less artificial, and a lot more intelligent.

How do machines learn?

Imagine your website gives readers the opportunity to comment on articles. Every day thousands of comments are posted and, as it happens, sometimes the conversation gets a little nasty.

Training a machine learning model that will automatically categorise comments as ‘toxic’ or not toxic, and flag the relevant ones to human moderators involves; 1) collecting relevant samples of toxic and not toxic comments 2) allowing a machine learning model to automatically learn patterns for labelling/categorisation 3) testing the model against comments it has never seen before, checking for accuracy, making adjustments, and repeating the steps

Challenges

As AI continues to evolve, there are growing concerns about its ethical implications, including bias in algorithms, job displacement due to automation, privacy issues, and the potential for misuse of AI-powered technologies.

In a [recent publication by Qubit Hub](#) - four key components were identified as being important in the African context: Data Sets and Data Systems, Digital Infrastructure, Talent, and Markets.

Opportunities

Artificial intelligence (AI) could expand Africa’s economy by a staggering US\$1.5 trillion – about 50% of its current gross domestic product – if it could only capture 10% of the fast-growing AI market, [set to reach US\\$15.7 trillion by 2030](#).



Current use of AI in Africa

1. Agriculture: [FarmDrive: AI-Enabled Innovation Providing - Alternative Credit Scoring Model for Smallholder Farmers, Kenya](#) - An AI enabled application enables farmers to register on FarmDrive by SMS to 21342. Once registered, the application allows farmers to keep records of their farming business activities such as income and expenses.

2. Mining: [Exxaro's Grootegeeluk coal mine, South Africa](#) - Uses drones for surveying and mapping in order to increase production through better efficiency in coal mining.

3. Manufacturing: [Data Prophet for Manufacturing Industry Quality Assurance Automation, South Africa](#) - Data prophet is a suite of AI system solutions for manufacturing industry automation, generically named OMNI.

4. Health: [Envisionit Deep AI in South Africa](#) - Uses AI for pediatric radiology to assist radiologists with diagnoses.

- In Uganda, a start-up, known as [Global Auto Systems Ltd](#) has implemented an integrated oncology management system to keep track of cancer patients in several private cancer screening units.

- [In rural clinics](#) in Kenya, AI is used to detect cervical cancer. In addition, [IBM Research](#) in Kenya is employing AI to prevent the spread of Malaria.

- In Nigeria, [Ubenwa](#) is using AI to detect the possibility of birth asphyxia.

- In North Africa, [Computer-aided detection](#) (CAD) systems in mobile systems are being used to assist with mammogram examinations in order to prevent breast cancer.

5. Energy: In Morocco, a model based on [multi-layer perceptron](#) (MLP) can predict the evolution of the global monthly solar irradiation.

- In Nigeria, [artificial neural network](#) (ANN) based models are applied for the prediction of solar energy potential.

- In Algeria, [hybrid learning models](#) are forecasting the energy consumption for heating, cooling, and domestic appliances.

- In South-Africa, [Artificial Neural Networks](#) (ANNs) are tested for an appraisal of energy consumption in industrial sectors.



6. Education: The [Virtual University of Senegal](#) with more than 29,340 students is exploiting an e-learning platform with tools to predict the most influential learning objects on the learners' final mark.

- [Lainos World](#), developed in Nigeria, is a multi-media Geography edutainment software deploying AI with speech synthesis and path navigation.

- One of the main contributions that AI is making in South Africa is [data analytics](#) to predict student performance and identify learning difficulties.

7. Finance: AI has been used by [financial institutions and banks](#) in determining credit risk when granting loans and credit to customers, as well as fraud detections. There has been a wide-scale use of AI to predict stock and investment performance.

- A South African bank has employed a robot to communicate with clients providing [personalized interactions](#) and advise them using voice recognition and human emotion recognition. Similarly, South African start-ups Data Prophet¹ and Clevva² use automated advisors to assist clients.

- Kudi³, an AI start-up in Nigeria, uses an AI-driven chatbot to assist users in making payment and send money to their families in Nigeria. Kudi assists customers with paying their bills, buying airtime, transferring money, monitoring banking account details, and reminding customers when bills are due. Kudi can be used via any messaging app.

- A [study](#) revealed that 7% of financial institutions in Kenya have incorporated the use of chatbots into daily operations for customer interactions. The study also demonstrated that most customers found that interactions with chatbots were a positive experience.

- Stockshop.co.za is a South African start-up that has been creating [bot solutions](#) for stock market investments. One such solution is using chatbots to find suitable financial consultants and brokers for customers. Bots have also been used to conduct real-time identity verification and advise customers based on their financial history and emotional cues.

¹ <https://dataprophet.com/>

² <https://clevva.com/>

³ <https://kudi.co/about-us/>



Artificial General intelligence ([AGI](#)) is the representation of generalised human cognitive abilities in software so that, faced with an unfamiliar task, the AGI system could find a solution. The intention of an AGI system is to perform any task that a human being is capable of. Kenya is uniquely positioned to play a key role in the world's achievement of safe and beneficial AGI. With access to rare earth minerals essential to semiconductor chip manufacturing, over 10,000MW capacity of clean renewable energy from geothermal wells, and a young and abundant talent pool to train AI engineers, the future is bright.