

## StatsTalk-Africa: Generative AI Applications in Economics and Statistics - Part 1

Tuesday, 6 August 2024

### Concept Note

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#### Background

Generative artificial intelligence (GenAI) is one of the most transformative branches of artificial intelligence (AI). It refers to a type of AI that can create new content, such as text, images, music, or even code, based on the patterns it has learned from existing data. Unlike traditional AI systems that are primarily designed to recognize patterns and make predictions, generative AI models can generate novel outputs that resemble the input data they were trained on. Some of the more familiar generative AI tools are used for: Text-generating (GPT-4 by OpenAI); Sound-generating (OpenAI Jukebox), WaveNet by DeepMind; Image-generating (DALL-E by OpenAI); Time series-generating (TimeGAN by Amazon Web Services), Video-generating (Sora — OpenAI's text-to-video model); and Code-generating (GitHub Copilot by OpenAI and GitHub, OpenAI Codex).

As we witness rapid advancements, it is becoming clear that generative AI is revolutionizing many sectors. Every day, new applications emerge, showcasing the growing power and versatility of these technologies. From creating realistic synthetic data to enhancing predictive modeling, generative AI is reshaping the landscape of economic research and statistical analysis. For instance, in macroeconomics, generative models are being used to simulate complex economic scenarios, providing valuable insights for policy-making. In finance, AI-driven models generate synthetic financial data to train trading algorithms and improve risk management strategies. Furthermore, in national statistics, generative AI aids in filling gaps in incomplete datasets, ensuring more robust and reliable statistical outputs.

This webinar focuses on text-generating AI, particularly Retrieval-Augmented Generation (RAG) which is a cutting-edge technique that combines the strengths of generative models with robust information retrieval systems (RIRS). The United Nations Economic Commission for Africa (UNECA) has already started working on many economic and statistics applications of generative AI. Among these are:

- Large Language Models (LLM) as tutors for training in the System of National Accounts (SNA) and the System of Economic Environmental Accounting (SEEA). This innovative application was presented at the last conference of the International Association for Official Statistics, showcasing the potential of AI to enhance training and capacity building.
- Retrieval-Augmented Generation for data querying uses RAG to query data availability and data sources from national accounts websites using natural language. This approach simplifies the process of accessing relevant data, making it more efficient and user-friendly.
- Extracting statistical data from complex documents with LLM are employed to extract statistical data from complex documents such as Sustainable Development Goals (SDG) reports. This application demonstrates the power of AI in handling intricate and voluminous information, ensuring accurate and comprehensive data extraction.

This webinar will provide opportunity to show the potential of the generative AI currently for economics and statistics being developed at the African Centre for Statistics (ACS) of the UNECA. It will also engage with the data science community on how we could leverage on these latest innovation to accelerate progress toward achieving the SDGs. By fostering collaboration and knowledge sharing, we aim to drive innovation and harness the full potential of generative AI in transforming economic and statistical practices.

## Objective

During the webinar series, we will show practical use for NSOs and other organizations of several key applications of RAG and generative AI in economics and statistics as follows:

- Large Language Models as virtual tutors for online training courses on the System of National Accounts (SNA) and the System of Economic Environmental Accounting (SEEA).
- Retrieval-Augmented Generation for data querying: using RAG to query data availability and data sources from national accounts websites using natural language.
- Extracting structured information such as statistical data from complex documents for research purposes.

This webinar series will provide participants with practical insights and hands-on experiences, highlighting how generative AI can be integrated into their work and more specifically the national statistical system. We will feature demonstrations, case studies, and interactive sessions with the end goal of equipping attendees with the knowledge and tools needed to harness the power of generative AI in their professional endeavors.

The webinar is part of the monthly webinar series – Stats Talk-Africa – being convened by the ACS to provide a space for a dialogue about data, statistics, and innovative tools with data experts and users. Specifically, Stats Talk-Africa aims to:

1. Serve as a knowledge-sharing and exchange platform.
2. Demystify and promote greater understanding of key statistical concepts and alternative data sources that could be harnessed in the African context.

## Date and Time

The Webinar is scheduled for Tuesday, 6 August 2024, from 11:00 to 12:30h EAT.

## Language

English will be the official form of communication for this webinar series.

## Registration link

<https://events.teams.microsoft.com/event/906b54cb-8e7e-433d-b69d-31af6b67bbe9@0f9e35db-544f-4f60-bdcc-5ea416e6dc70>

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