



# INTEGRATION OF AI IN RESEARCH FOR DEVELOPMENT


Dr. John Aoga, Data scientist & Programmers





## BIOGRAPHY

RUFORUM Conference  
04th Dec. 2021







**Dr. John Aoga**

**Who am I?**  
 Doctor & Engineer in Science and Technology  
 Specialist in Data science & AI  
**Online Content author and Teacher**  
 Co Founder of MIFY SARL company

**Goals and Aspirations**  
 Promote and develop AI 4 Africa In Africa  
 Make a big impact with professional slides.  
 Make a big impact with professional slides.

**Domains & Interests**  
 Algorithms and Optimization  
 Data/Pattern Mining Approches and applications  
 Deep Learning & NLP for local languages  
 Social Data Analysis


**Scientific References**

Aoga John ([johnaoga@gmail.com](mailto:johnaoga@gmail.com))

AI Integration in research for development - RUFORUM BENIN (12-04-2021)

2



# What's AI?

## ARTIFICIAL INTELLIGENCE

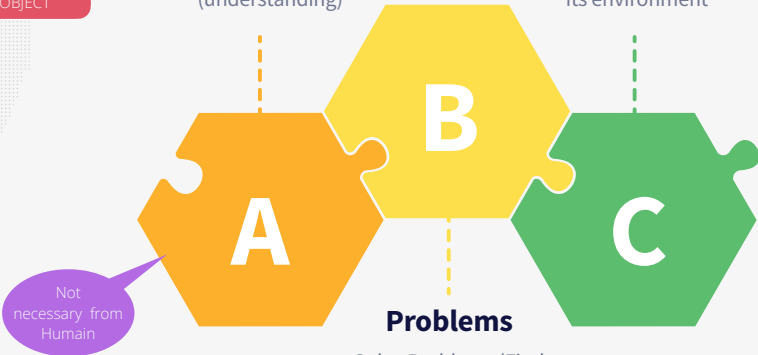
What is AI?

RUFORUM Conference  
04th Dec. 2021

PROGRAMM  
MACHINE  
OBJECT

**Reasoning**  
Simulate reasoning (understanding)

**Adaptation**  
Can understand & live in its environment



**Problems**  
Solve Problems (Find feasible solutions)

McCarty, 2011 + Russell and Norvig (2010)

Aoga John ([johnaoga@gmail.com](mailto:johnaoga@gmail.com))

AI Integration in research for development - RUFORUM BENIN (12-04-2021)

4



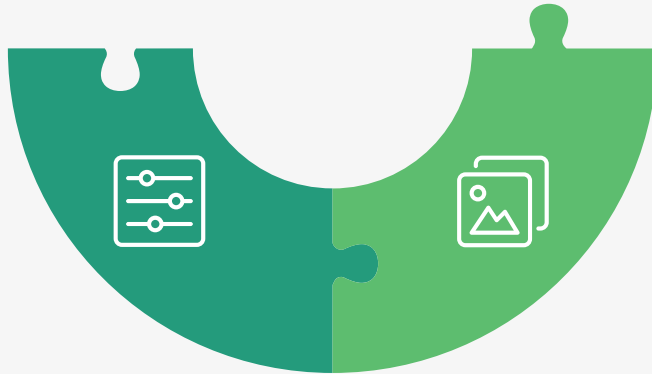
## MAIN AI COMPONENTS

Two components

RUFORUM Conference  
04th Dec. 2021

### DATA

### ALGORITHMS



Andrew Ng, Stanford University

Aoga John ([johnaoga@gmail.com](mailto:johnaoga@gmail.com))

AI Integration in research for development - RUFORUM BENIN (12-04-2021)



## AI APPLICATIONS ARE EVERYWHERE

AI for what applications

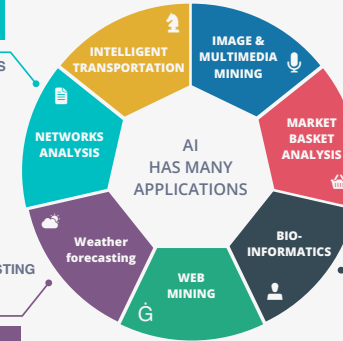
RUFORUM Conference  
04th Dec. 2021



**NETWORKS ANALYSIS**  
PEOPLE BEHAVIOR ANALYSIS  
NETWORK MAINTENANCE



**MARKET BASKET ANALYSIS**  
PRODUCTS RECOMMENDATION  
STOCK PREDICTION



**WEATHER FORECASTING**  
PREDICTING DISASTERS  
PREDICTING TEMPERATURE



**BIOINFORMATICS**  
DNA ANALYSIS  
DISEASE ANALYSIS



<https://towardsdatascience.com/data-science-trends-for-2020-78bda13032c7>

Aoga John ([johnaoga@gmail.com](mailto:johnaoga@gmail.com))

AI Integration in research for development - RUFORUM BENIN (12-04-2021)

6



## AI for Development



## AI AND INTERNATIONAL DEVELOPMENT

RUFORUM Conference  
04th Dec. 2021

01

### SDG principle

Sustainable Development Goals

05

### Suitable Cities

Well design roads,  
transportation flows and  
optimization

02

### No Poverty

Food sustainability, Outcome  
optimization, reduce inequalities

06

### Suitable Services

Digitalization of administration  
(Quick and efficient services)

03

### Quality Education

Online courses (+ create  
educational content)

07

### Production

Optimization of production, Use  
of suitable Tools

04

### Clean resources

Clean water and sanitation,  
Affordable and clean energy  
Responsible consumption

08

### Health

New ways to efficiently tackles  
healthcare problems

Vinuela et al. 2020

Aoga John ([johnaoga@gmail.com](mailto:johnaoga@gmail.com))

AI Integration in research for development - RUFORUM BENIN (12-04-2021)

8



**ANALYTICAL MODELING**

how to select and use relevant AI techniques to extract analytical insight that can then be used to address development issues

**ETHICAL AI**

apply AI to development in an ethically responsible fashion



**DATA INTEGRATION**

Access Data and combine/transform data (phone logs vs poverty)

**INTERDISCIPLINARY APPROACH**

AI for Social Good (AI4SG) movement (tech companies + academia)



## Risks and Challenges



- Feasibility of applying to development issues
  - ▶ Existing of appropriate data
  - ▶ Challenge of scholars and policy makers to tailor AI to needs and priorities
- Performance gaps
  - ▶ AI promises vs AI delivers
  - ▶ (COVID-19 as accelerator) Easy-to-use platforms



## Strategy



### PARADIGMATIC

Existing research on development issues => Uncover the specific contributions

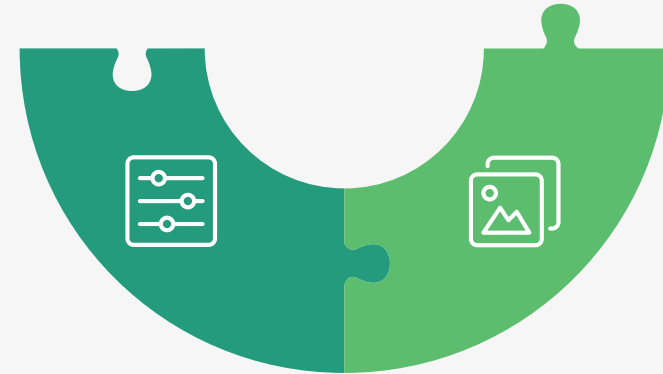
### CRITICAL

Investigate the normative implications entailed by the AI disruption of the field of development



### DATA

### ALGORITHMS



### Invest in Education (For AI & in AI)

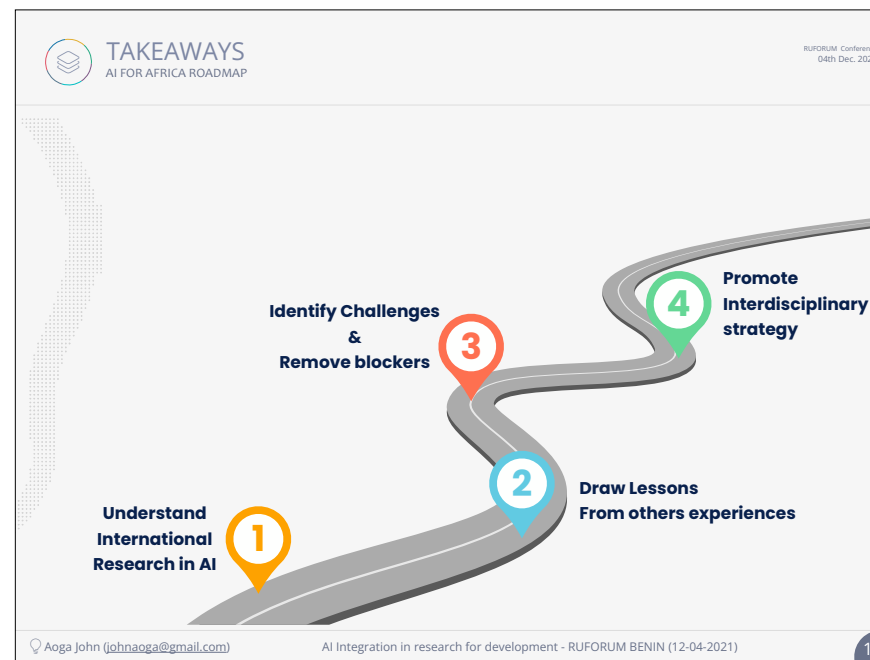
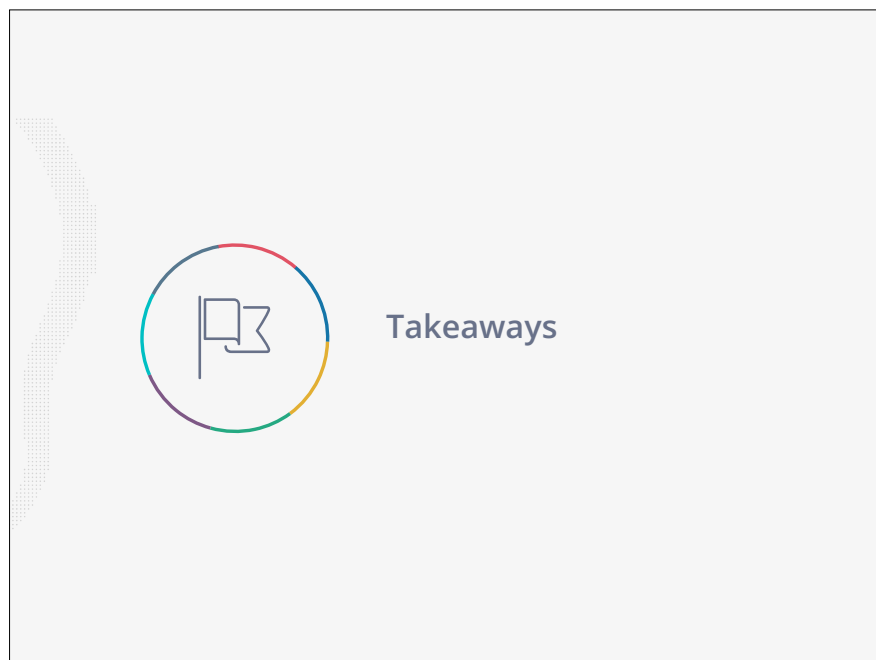
- ▶ Use NLP tools to convert existing educational content and other in our languages
- ▶ Use NLP and other AI approaches to make online education effective (auto-grading, peer evaluation, community handling)

### Promote Cross-Fields Research

- ▶ Weather, Economy & AI
- ▶ Food Sustainability & AI



- ▶ Provide Tools to share work (virtual classroom, )
- ▶ Produce content (remove audio/video noise, correct video, add caption in other language, video summary, translate into another language)
- ▶ Build Exercises and Evaluate Students (Auto grading, promote interactions)
- ▶ Knowledge acquisition diagnostics and student profiling
- ▶ Breaking barriers (easy-to-use platforms, drive motivation in using platform, ...)



- 
- RUFORUM Conference  
04th Dec. 2021
- RÉSUMÉ DE LA PRÉSENTATION
- ▶ L'intelligence artificielle? Avec beaucoup d'applications
  - ▶ Ces facettes
  - ▶ L'IA pour le développement durable
  - ▶ Les leçons de l'existence (intégration de données, IA éthique, approche interdisciplinaire)
  - ▶ Les risques et défis (applicabilité des outils, les gaps de performances)
  - ▶ Stratégies de recherche (pragmatique et critique)
  - ▶ Stratégie globale (investir dans l'éducation pour l'IA et avec l'IA, promouvoir la recherche interdisciplinaire)
- Aoga John ([johnaoga@gmail.com](mailto:johnaoga@gmail.com)) AI Integration in research for development - RUFORUM BENIN (12-04-2021) 19

