FORESTRY RESEARCH IN POST-COVID ERA IN NIGERIA: OPENING NEW RESEARCH FRONTIERS

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INTRODUCTION

- COVID-19 is caused by SARS-CoV2, which is a strain in the Severe Acute Respiratory Syndrome (SARS) coronavirus family

Severe Acute Respiratory Syndrome Coronavirus as an Agent of Emerging and Reemerging Infection

Vincent C. C. Cheng, Susanna K. P. Lau, Patrick C. Y. Woo, and Kwok Yung Yuen*

INTRODUCTION

- COVID-19 has caused about 826,418 deaths globally as at 27th August 2020, 12:28 PM (GMT) (Dong et al., 2020).

- It has also enforced "new normal"
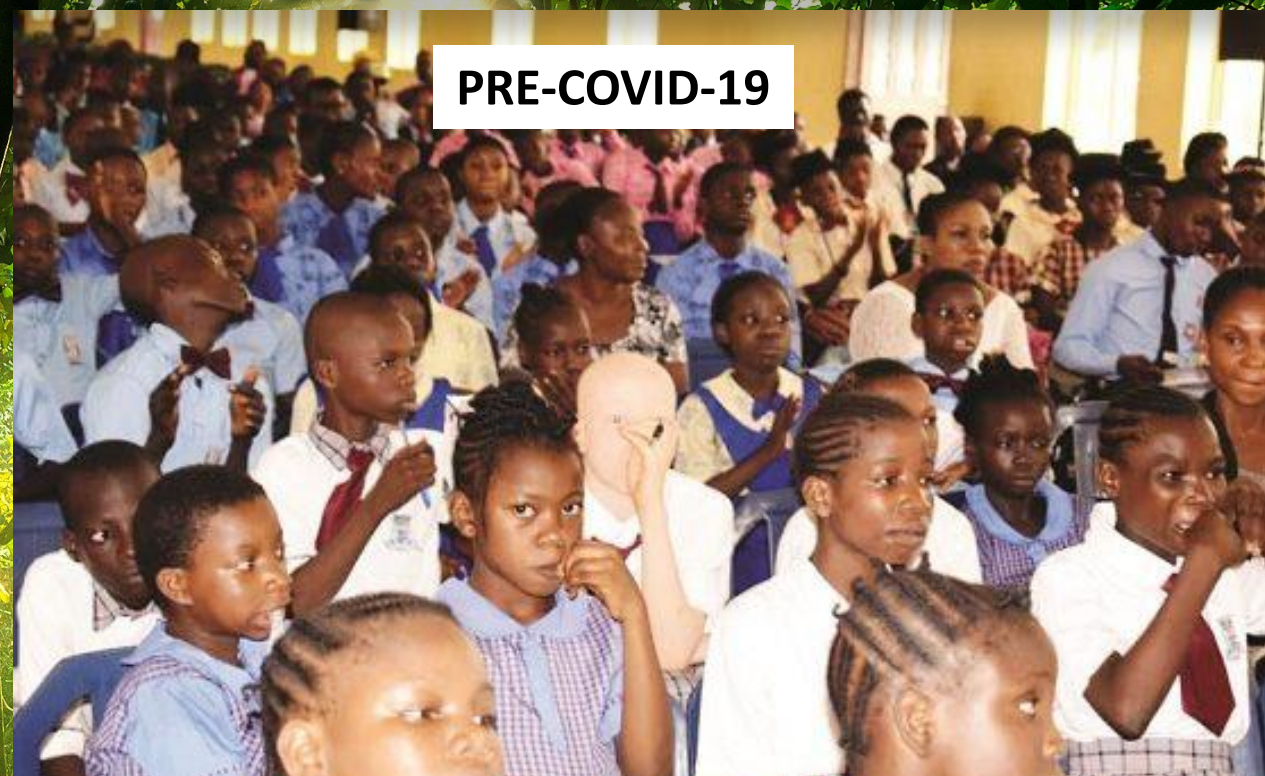
INTRODUCTION

What does " new normal" look like?

POST-COVID-19

PRE-COVID-19

Source: Nigerian Guardian Newspaper, 1st July 2020

Source: The Nation Newspaper, 9th July 2020

FORESTRY RESEARCH IN NIGERIA IN THE PRE-COVID ERA

- Instrumentation problem limits the type, amount of data and quality of data being collected

- Collected data were in most cases not stored in secured databases such that it can later be easily accessed, managed and updated.

- Poor facility & funding

FORESTRY RESEARCH IN NIGERIA IN THE PRE-COVID ERA

- Routine research (i.e. business as usual research) without major breakthroughs
- Quality of publications
- Low synergy among research entities

1. *Has COVID-19 affected research negatively ?*

2. *Has COVID-19 opened new research frontier (s) and new approach to research?*

1. *Has COVID-19 affected research negatively ?*
   - *Several research activities suspended due to mandatory lockdown*
   - *Closure of Universities &research institutions*

2. Has COVID-19 opened new opportunities?

- Telecommuting or Teleworking
- Opportunity to explore virtual conferences & workshops for research meetings
- Opportunity to develop Cloud computing & remote sensing technologies for research
- Opportunity to develop digital technologies that increases velocity and volume of data

IMPACT OF COVID-19 ON RESEARCH

- Though COVID-19 is a public health issue, dealing with it is already a data science issue

- Approach to solving live problems is becoming more and more data driven

- Why?????

- Presently, the more data & ability to mine data, the more the insight and knowledge discovery potential
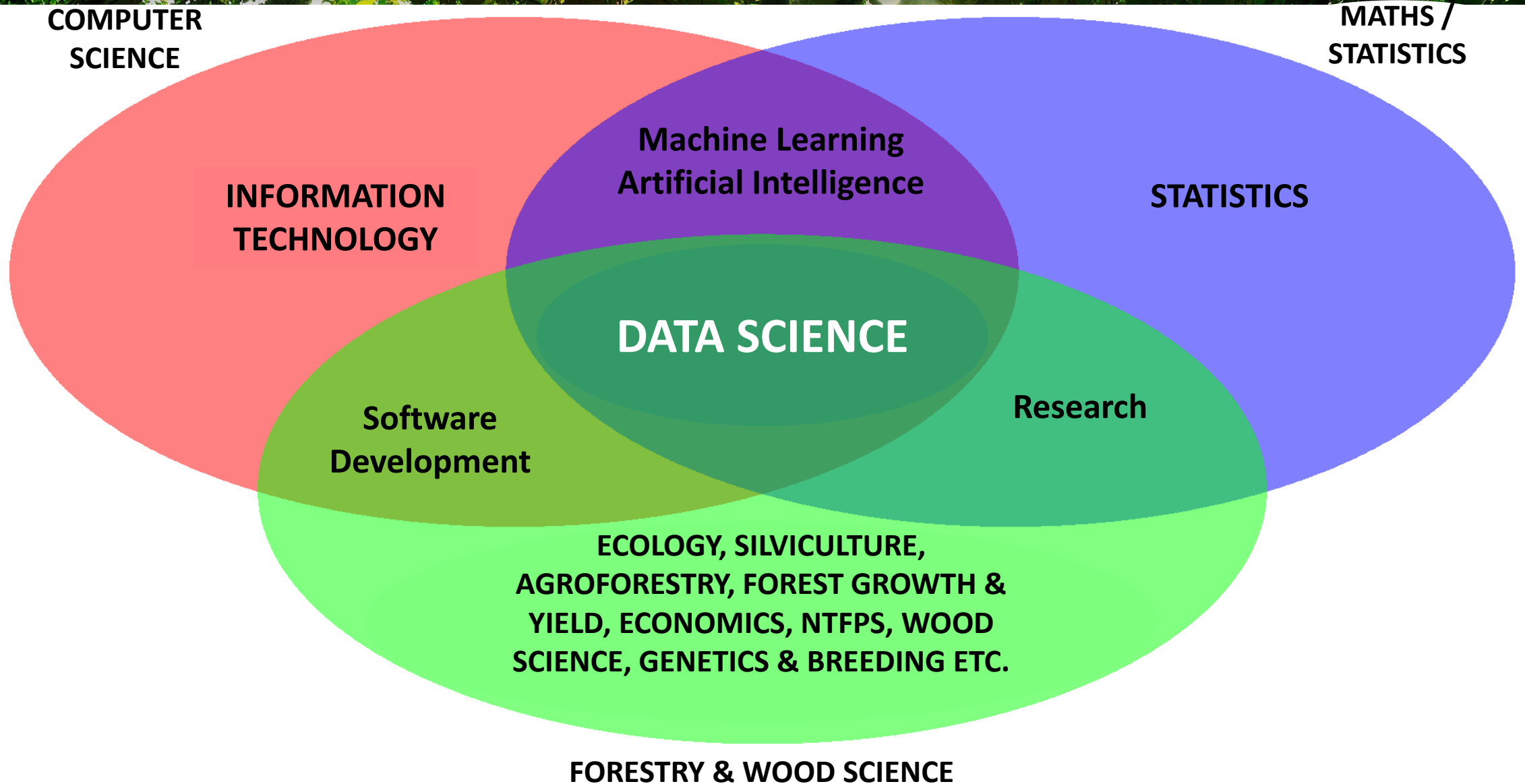
- Data is becoming diverse (structured & unstructured)
- Data is increasing at an alarming rate
- *What does Data Science do?*
  - ✓ Data science uses data mining, machine learning techniques and artificial intelligence to extract knowledge and insights from many structural and unstructured data

How would Data Science look like in Forestry?

COMPUTER SCIENCE

MATHS / STATISTICS

Machine Learning Artificial Intelligence

INFORMATION TECHNOLOGY

STATISTICS

DATA SCIENCE

Software Development

Research

ECOLOGY, SILVICULTURE, AGROFORESTRY, FOREST GROWTH & YIELD, ECONOMICS, NTFPS, WOOD SCIENCE, GENETICS & BREEDING ETC.

FORESTRY & WOOD SCIENCE

- *Why do we need Data Science in Nigerian Forestry?*
  - to overcome limitation of the current analytic tools
    - ✓ limited functionality
    - ✓ high cost of license
    - ✓ incapable of cleaning, analyzing diversed and huge data set

- *Why do we need Data Science in Nigerian Forestry?*
  - to answer complex research questions
  - to deal with diverse kinds of data
  - to readily move into knowledge discovery from huge amount of data
  - to produce new generation of professionals that are data-driven

CAPACITY BUILDING FOR FOREST SCIENTISTS AND STUDENTS

- Data Science Programming languages: R, Python, SQL
- *Some Free Online resources.*
  - ✓ R
    - ➢ Install R - https://cran.stat.auckland.ac.nz/
    - ➢ Install Rstudio - https://rstudio.com/products/rstudio/download/
    - ➢ R for Data Science - https://r4ds.had.co.nz/
  - ✓ Python
    - ➢ Install Python - https://365datascience.com/how-to-install-python/
    - ➢ Python for Data Science - https://jakevdp.github.io/PythonDataScienceHandbook/

CAPACITY BUILDING FOR FOREST SCIENTISTS AND STUDENTS

- *Some Free Online resources.*
  - ✓ SQL
    - ➤ SQL Tutorial - https://www.w3schools.com/sql/
  - ✓ User support
    - ➤ Google - https://www.google.com/
    - ➤ Stackoverflow - https://www.stackoverflow.com
- Updating our undergraduate and postgraduate curricula in Forestry & Wood Science.

CAPACITY BUILDING FOR FOREST SCIENTISTS AND STUDENTS

- **Forest Vegetation modeler: Job Requirement**
  - ✓ Ph.D. in Forestry, Ecology or related environmental discipline;
  - ✓ experience with handling big data;
  - ✓ demonstrated skills in statistics & machine learning
  - ✓ programming skills in languages such as R, Python, C++.

REFERENCES

- Dong, E., Du, H., & Gardner, L. COVID-19 dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU) April 14, 2020.

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- The Nation. (2020, July 9). NAUS decries continued schools closure. Campus Life. Retrieved from https://thenationonlineng.net/naus-decries-continued-schools-closure/

APPRECIATION

- Special thanks to FFPS leadership for inviting me for this talk.

- Appreciation to all our Fathers and Forestry scholars who brought us up in Forestry.

THANK YOU