Curriculum Analysis: The State of Ethics in Computer Science Curriculum
in Kenyan Universities.

Ken J. Mbuki

Sponsored by

Artificial
Intelligence
www.elsevier.com/locate/artint
J O U R N A L

Google
TensorFlow

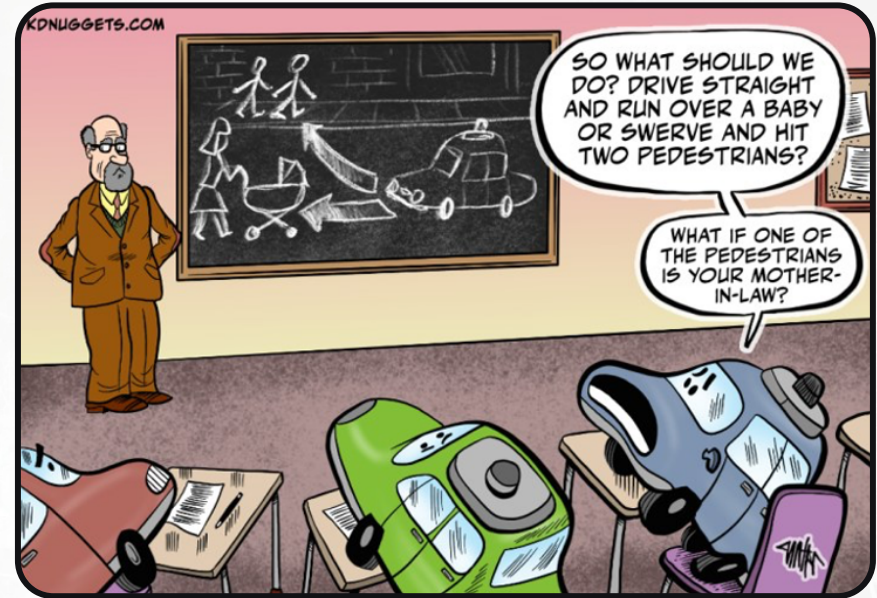KABARAK UNIVERSITY Education in Biblical Perspective

Moral Code As members of Kabarak University family, we purpose at all times and in all places, to set apart in one's heart, Jesus Christ as Lord. (1 Peter 3:15)

Background

Waymo (Google's Self Driving Car)

Trolley Problem

As a self driving car... who should I save?

Problem

Computing education curricula has not been evolving in tandem with the needs and emerging topics of modern computing. Ethical and moral issues in the use of AI and Data analytics are on the rise, which hint a lack of ethical literacy and foundational ethical instruction among computer science practitioners.

KABARAK UNIVERSITY Education in Biblical Perspective
DATA SCIENCE AND ARTIFICIAL INTELLIGENCE CONFERENCE 2023

Sponsored by

Artificial Intelligence
www.elsevier.com/locate/artint
JOURNAL

Google TensorFlow

Study / Project Objectives

To both describe current trends in computing ethics coursework and to provide guidance for further ethics inclusion in computing curriculum

KABARAK UNIVERSITY Education in Biblical Perspective

DATA SCIENCE AND ARTIFICIAL INTELLIGENCE CONFERENCE 2023

Sponsored by

Artificial Intelligence
www.elsevier.com/locate/artint
JOURNAL

Google TensorFlow

Background Literature

- IEEE/ACM Taskforce. (2013). *Curriculum Guidelines for Undergraduate Degree Programs in Computer Science.*

- Michael Skirpan, Nathan Beard, Srinjita Bhaduri, Casey Fiesler, and Tom Yeh. (2018). *Ethics Education in Context: A Case Study of Novel Ethics Activities for the CS Classroom*

- *Ominde, E. S., K' Odhiambo, A. K., & Gunga, S. O. (2021). Analysis of praxis of African communalism: A model of ethical values in primary school curriculum in Kenya.*

Background Literature

Targeted Political Ads

Elections

AI & Data-driven campaigns in the Kenyan politics

Methodology

Curated a list of 1,256 CS units, from 82 CS Programs in within 78 approved universities by Commission for University Education (CUE) in Kenya.
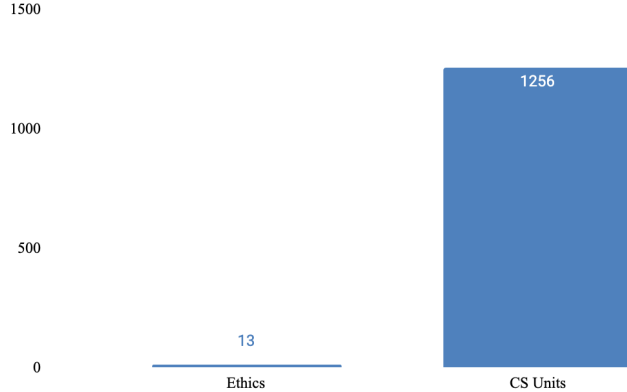
(i) List all the units in each program;

(ii) Identify all ethics/philosophy units offered in each program

• Live Excel Document found here - https://bit.ly/3Fu8h95
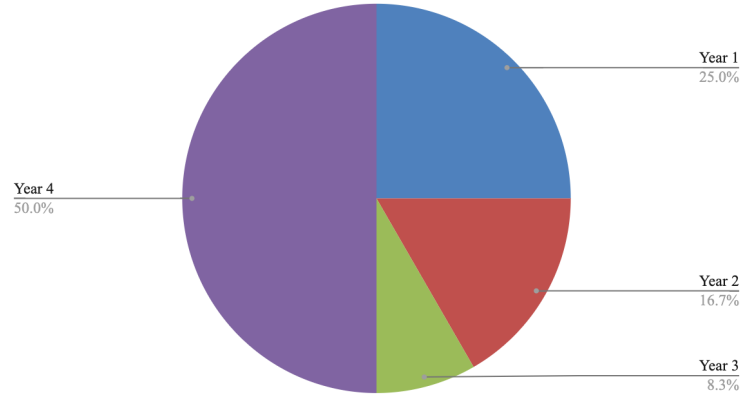
KABARAK UNIVERSITY Education in Biblical Perspective
DATA SCIENCE AND ARTIFICIAL INTELLIGENCE CONFERENCE 2023
Sponsored by
Artificial Intelligence
www.elsevier.com/locate/artint
JOURNAL
Google TensorFlow

Preliminary Results

CS Units VS Ethics Units

Ethics: 13
CS Units: 1256

Distribution of Ethics Unit Year of Study

- Year 1: 25.0%
- Year 2: 16.7%
- Year 3: 8.3%
- Year 4: 50.0%

Average of 3 Credit Hours out of possible 45 Hours for a unit

KABARAK UNIVERSITY Education in Biblical Perspective
DATA SCIENCE AND ARTIFICIAL INTELLIGENCE CONFERENCE 2023

Sponsored by
Artificial Intelligence
www.elsevier.com/locate/artint
JOURNAL

Google TensorFlow

Discussion / Implications

Curricula must continuously evolve to prepare students for lifelong learning and must include professional practice skills like ethics

KABARAK UNIVERSITY Education in Biblical Perspective
DATA SCIENCE AND ARTIFICIAL INTELLIGENCE CONFERENCE 2023

Sponsored by

Artificial Intelligence
www.elsevier.com/locate/artint
JOURNAL

Google TensorFlow

Conclusions

Computing faculty who are unfamiliar with the content and/or pedagogy of applied ethics should take initiatives to upskill

KABARAK UNIVERSITY Education in Biblical Perspective
DATA SCIENCE AND ARTIFICIAL INTELLIGENCE CONFERENCE 2023

Sponsored by

Artificial Intelligence
www.elsevier.com/locate/artint
JOURNAL

Google TensorFlow

Future Work / Directions

Improve on methodology

- ✓ Review National Policies on CS

- ✓ Reach out instructors

- ✓ National Survey

If you work in tech academia and you're not thinking about teaching ethics, you're bad at your job.

Ken Mbuki