



The Single Audit Explorer: More than Meets the AI

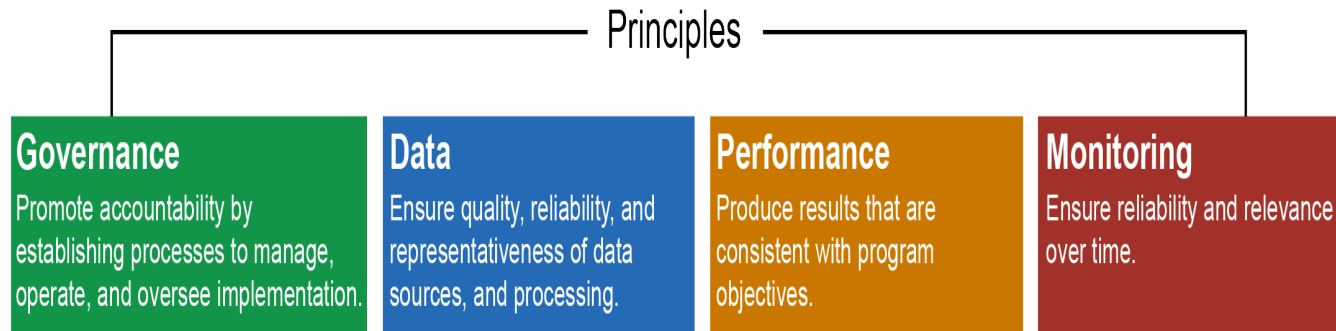
Mike Wetklow

Deputy Chief Financial Officer and Division Director Financial
Management

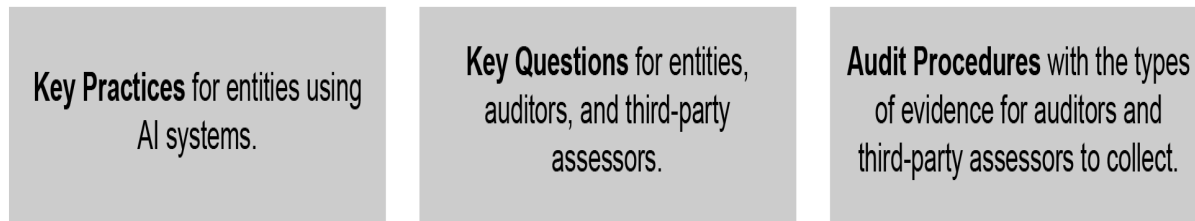
U.S. National Science Foundation

August 16, 2022

GAO Artificial Intelligence Accountability Framework



For each principle, the Framework provides the following:



Alignment with Yellow Book and Green Book standards

Source:

[GAO-21-519SP](#)



Motivation

AICPA Supports Accounting STEM Pursuit Act, Which Creates Important Link Between Accounting and STEM



WASHINGTON, DC, June 11, 2021 – The American Institute of CPAs (AICPA) today voiced its strong support for the *Accounting STEM Pursuit Act of 2021* because it establishes the accounting profession as a STEM career pathway and supports long-standing efforts to create more diversity in the future accounting workforce. The legislation is an important step in recognizing the clear and logical connection between accounting and technology.

<https://us.aicpa.org/press/pressreleases/2021/aicpa-supports-accounting-stem-pursuit-act-which-creates-important-link-between-accounting-and-stem>

Motivation: Continued

<https://www.cnn.com/videos/business/2019/06/14/google-ceo-sundar-pichai-poppy-harlow-zw-orig.cnn/video/playlists/business-big-names-in-tech/>



Motivation Continued

NSF'S MISSION

To promote the progress of science; to advance the national health, prosperity, and welfare; and to secure the national defense.

Director's Vision



-  Advance the frontiers of research into the future
-  Ensure accessibility and inclusivity
-  Secure global leadership

We are in a DEFINING MOMENT

-  Intensity of global competition
-  Urgent need for domestic talent
-  Broad support for science as path for solving global grand challenges

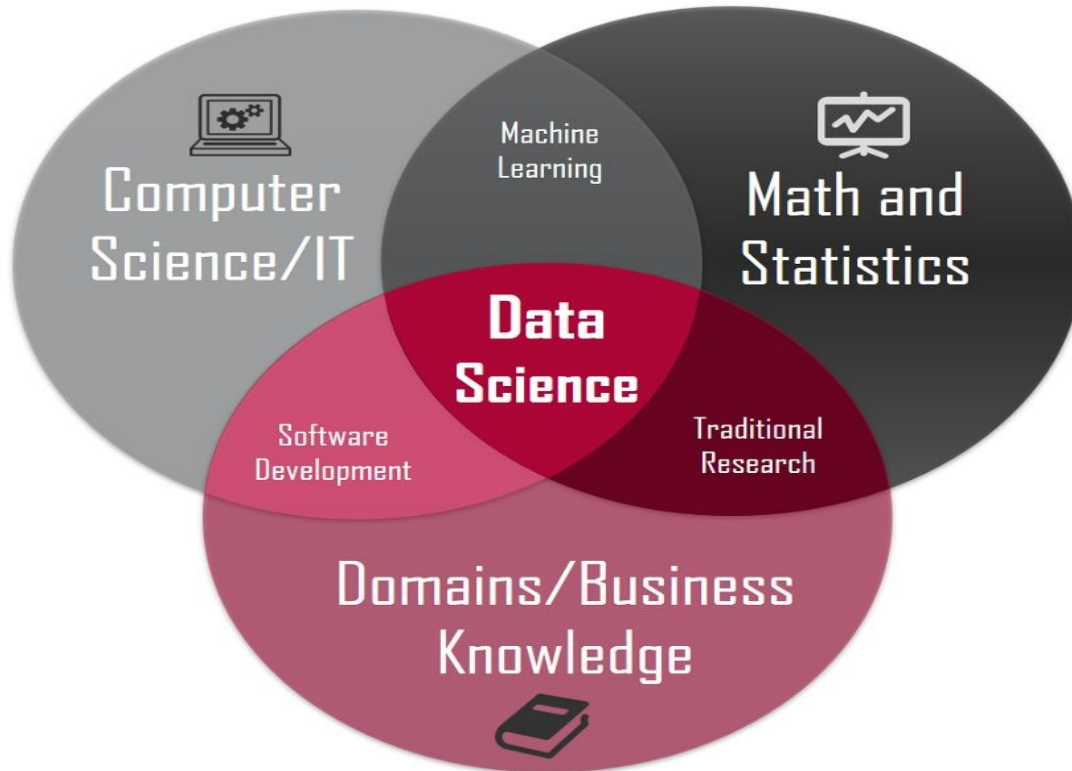
We can accomplish this vision with:

SPEED AND SCALE



- PEOPLE** (Icon: Two stylized figures)
- PARTNERSHIPS** (Icon: Two hands shaking)
- NSF** (Icon: NSF logo on a globe)
- TRANSLATION** (Icon: Gear and hand)

What is Data Science?



Sources:
Linkedin Post
Matthew
Kolakowski

[https://bookdown.o
rg/animestina/R Ma
nchester/](https://bookdown.org/animestina/R_Manchester/)

ML Timeline



ARTIFICIAL INTELLIGENCE

Early artificial intelligence stirs excitement.



MACHINE LEARNING

Machine learning begins to flourish.



DEEP LEARNING

Deep learning breakthroughs drive AI boom.



Source:
Professor
N. Rich Nguyen, PhD
University of Virginia
and
<https://blogs.nvidia.com/blog/2016/07/29/whats-difference-artificial-intelligence-machine-learning-deep-learning-ai/>

#AICPAgaac

CLASSICAL MACHINE LEARNING

Data is pre-categorized
or numerical

SUPERVISED

Predict
a category

CLASSIFICATION

«Divide the socks by color»



Predict
a number

REGRESSION

«Divide the ties by length»



Data is not labeled
in any way

UNSUPERVISED

Divide
by similarity

CLUSTERING

«Split up similar clothing
into stacks»



Identify sequences

Find hidden
dependencies

ASSOCIATION

«Find what clothes I often
wear together»



DIMENSION REDUCTION

(generalization)

«Make the best outfits from the given clothes»

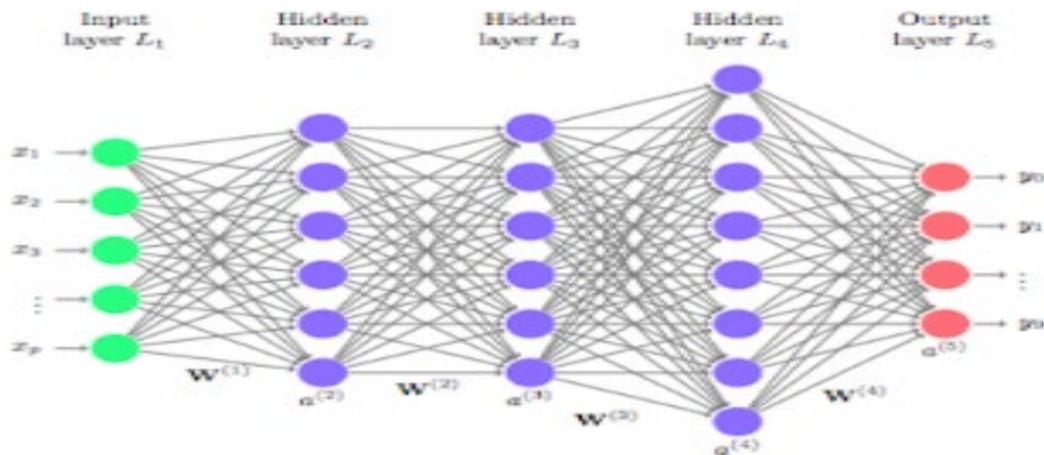


Source:
Professor Rafael
Alvarado, PhD
University of
Virginia

For more
information:

[https://wiki.pat
hmind.com/#de
fine](https://wiki.pat
hmind.com/#de
fine)

Deep Learning



Source:

[UC Business Analytics
R Programming Guide](#)

For more information:

[A Neural Network
Playground
\(\[tensorflow.org\]\(https://www.tensorflow.org\)\)](#)

The Single Audit Explorer Demonstration

[https://github.com/mwetklow/Single-
Audit-Explorer](https://github.com/mwetklow/Single-Audit-Explorer)



Thank you