BRIDGING DATA ANALYTICS AND MACHINE LEARNING SKILL GAPS WITH RAPIDS AND THE NEW ACCELERATED DATA SCIENCE TEACHING KIT FOR UNIVERSITY EDUCATORS

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TEACHING DATA SCIENCE COURSES
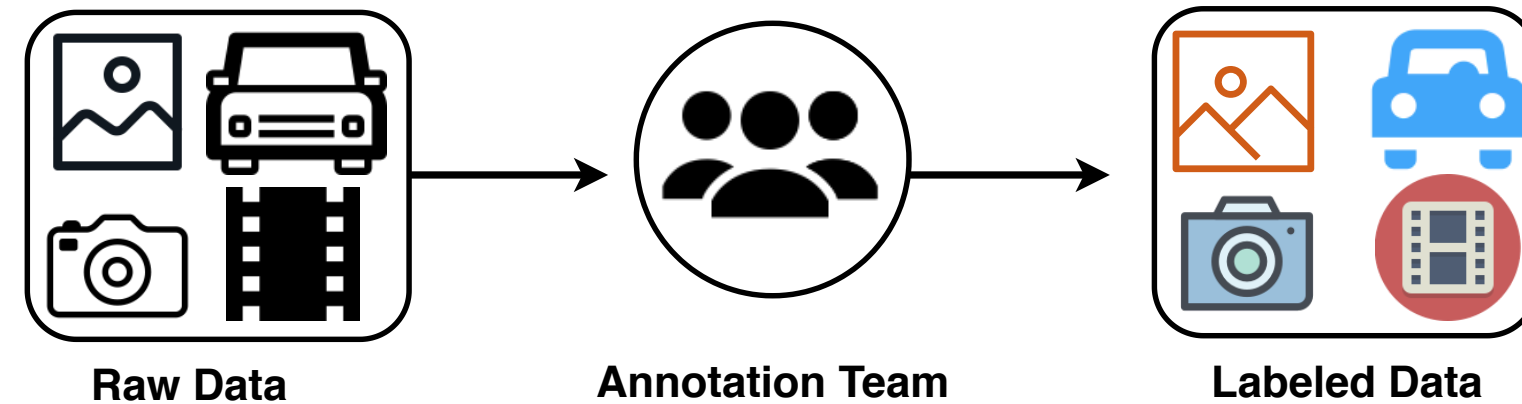
Undergraduate Courses

- **Machine Learning (Senior Level)**
- **Introduction to Python Programming (Sophomore Level, Developing)**
- **Data Structure (Sophomore Level, Developing)**

Graduate Courses

- **Deep Learning**
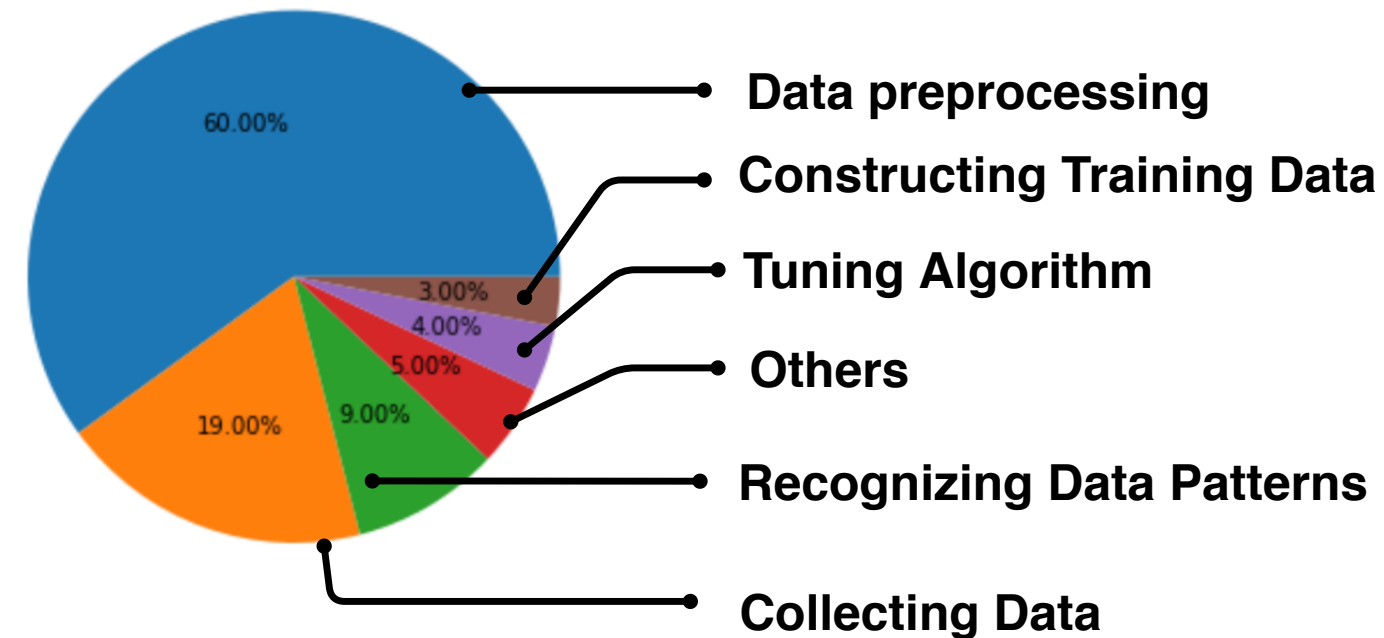- **Statistical Learning for Big Data**

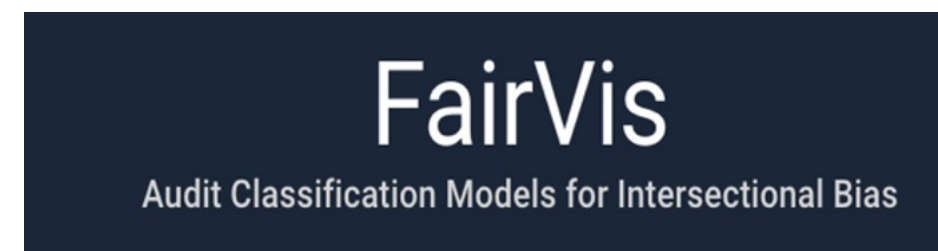# TOPICS DEVELOPED FOR CURRENT VERSION OF DS TK

Data Annotation

Raw Data   **Annotation Team**   **Labeled Data**

Data Preprocessing

- **Data Cleaning**

- **Feature Selection**

- **Feature Reduction**

60.00%

Data preprocessing

3.00%

Constructing Training Data

4.00%

Tuning Algorithm

5.00%

Others

19.00%   9.00%

Recognizing Data Patterns

Collecting Data

Data Bias Visualization

FairVis
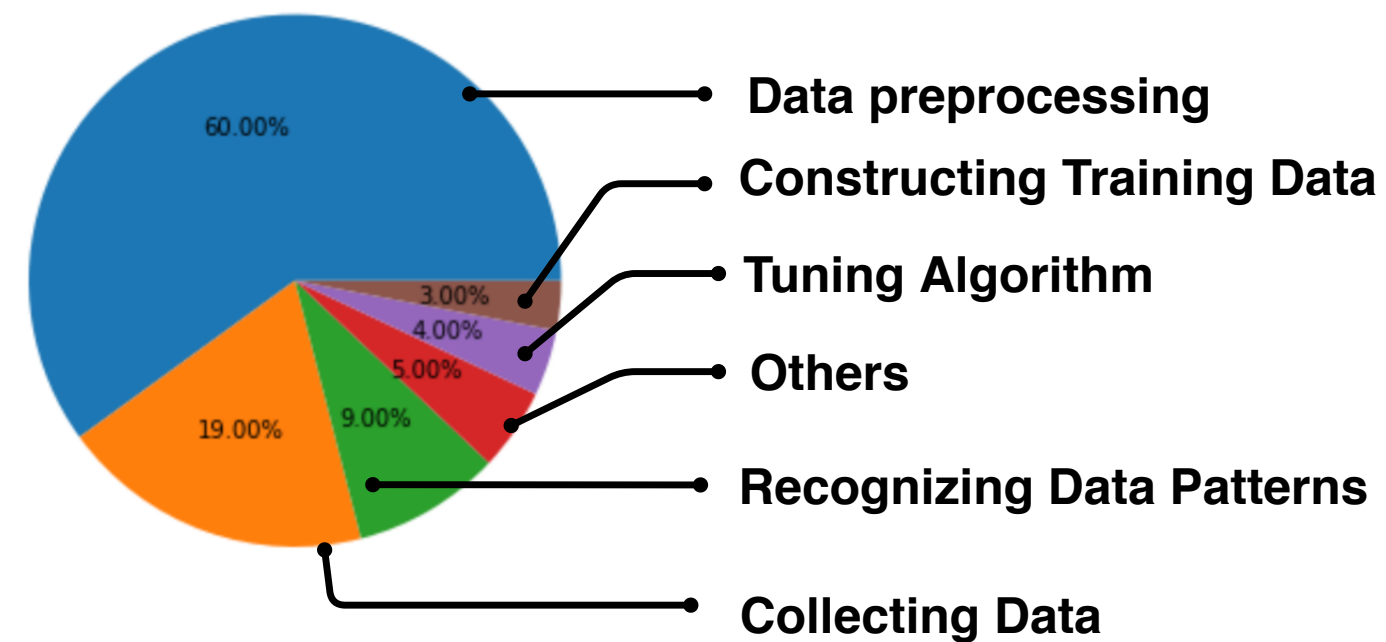Audit Classification Models for Intersectional Bias

DS TK FOR TEACHING AT PVAMU

Machine Learning (ELEG 4103-Z08, Senior Level, Spring, 2021)

Data Preprocessing

- **Data Cleaning**

- **Feature Selection**

- **Feature Reduction**

DS TK FOR FUTURE OF TEACHING AT PVAMU

Courses Using DS TK

- **Machine Learning (**Undergraduate Course**)**
- **Deep Learning** (Graduate Course)
- **Statistical Learning for Big Data** (Graduate Course)

Developing Courses Using DS TK

- **Introduction to Python Programming** (Sophomore Level, Developing)
- **Data Analytics** (Online Courses)

Modules

- **Data Collection and Annotation**
- **Data Preprocessing**
- **RAPIDS and Spark**
- **Visualization**
- **Classification**
- **Clustering and Dimensionality Reduction**
- **Text Analysis**
- **… …**

ADDRESSING BIAS WITH DS TK FOR HBCU EDUCATION

Bias against Black, Indigenous, and People of Color (BIPOC) acts as a roadblock to opportunity, a barrier to resources, and, ultimately, places limitations on how BIPOC are able to succeed.

- **A significant lack of funding and an abundance of policing play a major role in the unfairness for BIPOC education**
- **This leads to resource inequality in HBCUs and minority-serving educational institutions**

NVIDIA Data Science Teaching Kits will help address these biases.

- **Helps create awareness of science behind data equity and fairness**
- **Provides fair opportunity to acquire learning resources**
- **It is important for HBCUs to enhance education in the domain of data science/artificial intelligence, which will help train more and more in-demand diverse workforce**

CHALLENGES FACED BY HBCUS

Overall enrollment is declining in HBCUs

- HBCU enrollment fell 11% in last decade
- HBCU enrollment also declined between 2018 and 2019
- Historically black institutions have dealt with issues keeping enrollments predominantly black

Enrollments Fall at HBCUs

Source: National Center for Education Statistics
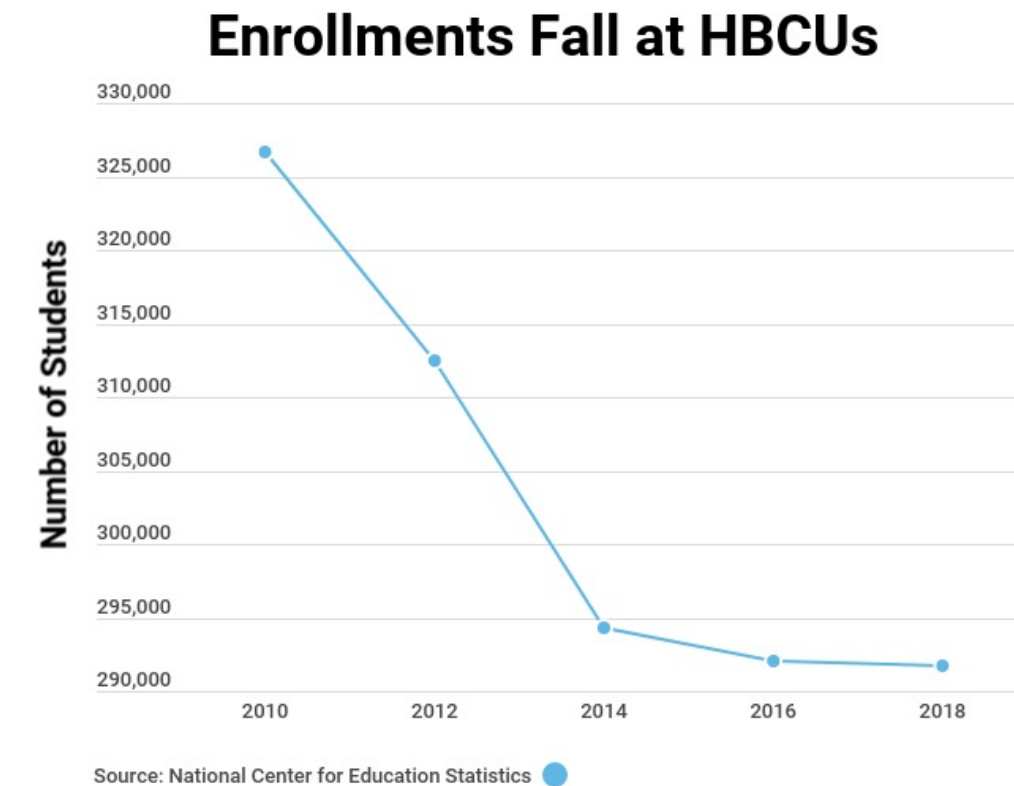
Source: https://www.jamesgmartin.center/2020/06/did-you-know-hbcu-enrollments-fall-10-in-last-decade/

HBCUs lack funding support

- Current funding is not enough to support HBCUs
- Removal of programs such as federal work study would have large negative impact on HBCU students
- Federal government is not the only sector responsible for the inequitable funding of HBCUs, but also "subtler forms of disparate and unfair treatment" by philanthropists, accreditor, corporations and lender

Dr. Michael Lomax

Source: http://www.louisianaweekly.com/despite-future-act-hbcus-still-woefully-underfunded-according-to-uncf-president/

WHAT'S NEXT

GET THE BASICS

Watch "Deep Learning and Beyond"

Listen to the NVIDIA AI Podcast

Review examples of AI in action

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