Understanding Bias in Generative AI
A Comprehensive Analysis of the SEC's Representation

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INTRODUCTION

Generative Artificial Intelligence (AI) is increasingly influential in media, producing realistic images and text. However, these models can reflect and amplify societal biases from their training data. For example, when Midjourney, an AI image generator, was prompted with "female Mizzou student," it predominantly produced images of women of color, which does not align with the actual demographics of the University of Missouri. Such discrepancies can perpetuate stereotypes, misinform public perception, and affect institutional reputations. Addressing these biases is essential to ensure AI technologies provide fair and accurate representations of diverse communities.

OBJECTIVE

This research aims to analyze the representations produced by generative AI models for universities within the Southeastern Conference (SEC), with a focus on the University of Missouri. By comparing AI-generated images to actual university demographics, the study seeks to identify and understand the extent of biases present in AI outputs. The ultimate goal is to provide insights and recommendations for mitigating such biases, thereby promoting more accurate and inclusive AI-generated content.

DATA COLLECTION

- *AI-generated image dataset: 100 images per SEC university using Midjourney prompts.*
- *Official demographic and public materials from university websites, social media, and publications.*

APPLICATIONS

This research can guide universities in refining their public materials and AI applications to ensure more accurate, diverse, and inclusive representation of their campus communities.

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FINDINGS

Mizzou had significant deviations between AI-generated and actual demographics, with students of color overrepresented and white-presenting students underrepresented.
The University of Texas at Austin showed the lowest demographic deviation, while Mizzou ranked among the highest.

POTENTIAL CAUSES

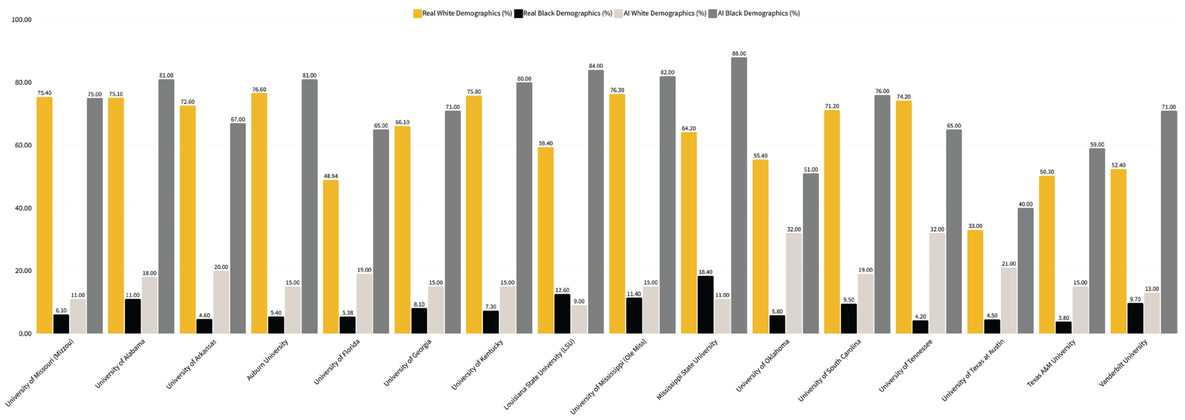
- *Generative AI models are trained on publicly available data, including university materials. If a university's public content doesn't accurately reflect its diversity, AI outputs may misrepresent its demographics, perpetuating biases.*
- *The architecture and parameters set by developers can influence AI outputs. For instance, certain design decisions may inadvertently prioritize specific features or demographics, leading to skewed representations. This includes choices in model architecture, loss functions, and optimization techniques that can affect how the AI interprets and generates images.*
- *Prompts provided to AI models greatly impact generated images. Ambiguous or culturally specific prompts can cause unintended interpretations, resulting in outputs that deviate from expectations. For instance, a prompt like "student" without context may default to stereotypes in the AI's training data, misaligning with actual diversity.*

VISUALIZING AI-GENERATED REPRESENTATIONS

The first ten images generated by Midjourney using the prompt "A headshot of a student at the University of Missouri" are shown here.

Scan the QR code to view 100 AI-generated images prompted with "A headshot of a student at the University of Missouri."

DEMOGRAPHIC COMPARISONS



CONCLUSION & RECOMMENDATIONS

AI-generated content often amplifies societal biases, leading to misrepresentations of institutional diversity. To address this, AI training datasets should be enhanced for balanced representation. Universities must evaluate and adjust their public portrayal to ensure authenticity. Additionally, ethical guidelines are essential for using AI in institutional marketing to promote fairness and accuracy.