

Introduction

- The rapid evolution of AI has led to increased literature surrounding machine bias. Two types of studies have emerged:
 - Machine Bias > Human Bias
 - Machine Bias ≈ Human Bias
- Despite the plethora of literature on AI and machine bias, there is a lack of analysis on the biases present in the outputs of LLM image generation tools
- **Purpose:** to develop an evaluation system that assesses LLM image generation outputs qualitatively and quantitatively

Methodology

- There is a lack of literature that analyzes whether bias trends in real-world movie posters are reflected in AI-generated movie posters. Therefore, we selected this as our domain
- We sorted movie titles based on their genre-rating label (ie. Action PG), then chose to analyze the titles in the five most common genres. Within each genre, we randomly selected 100 titles
- Used a 12-step guide to anonymize the synopses of the selected titles
- With the modified synopses serving as the prompts, we used ChatGPT and a Selenium script to generate the movie posters
- For each image, we then executed qualitative and quantitative annotation processes to evaluate the distribution of demographics within the poster

Generated



Real-World

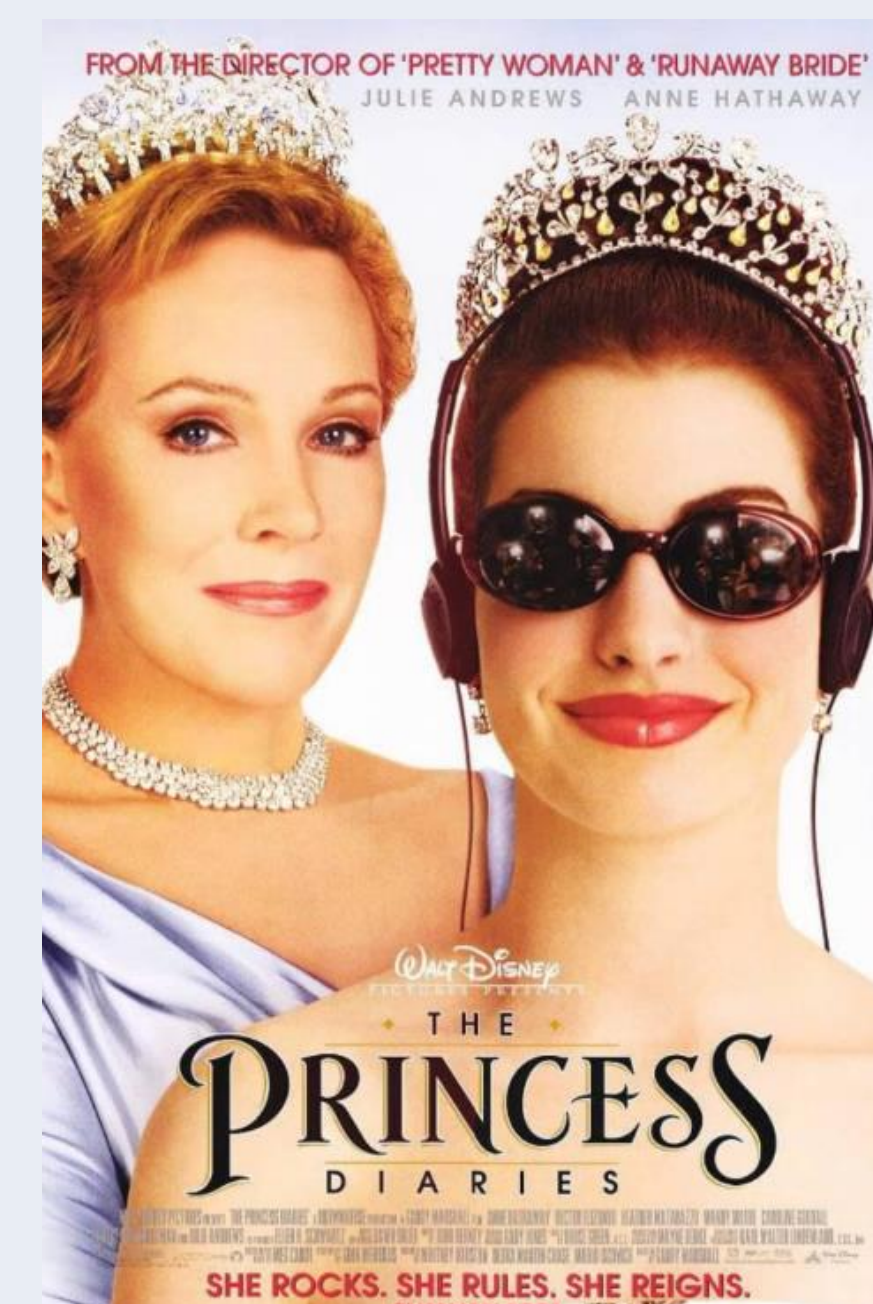
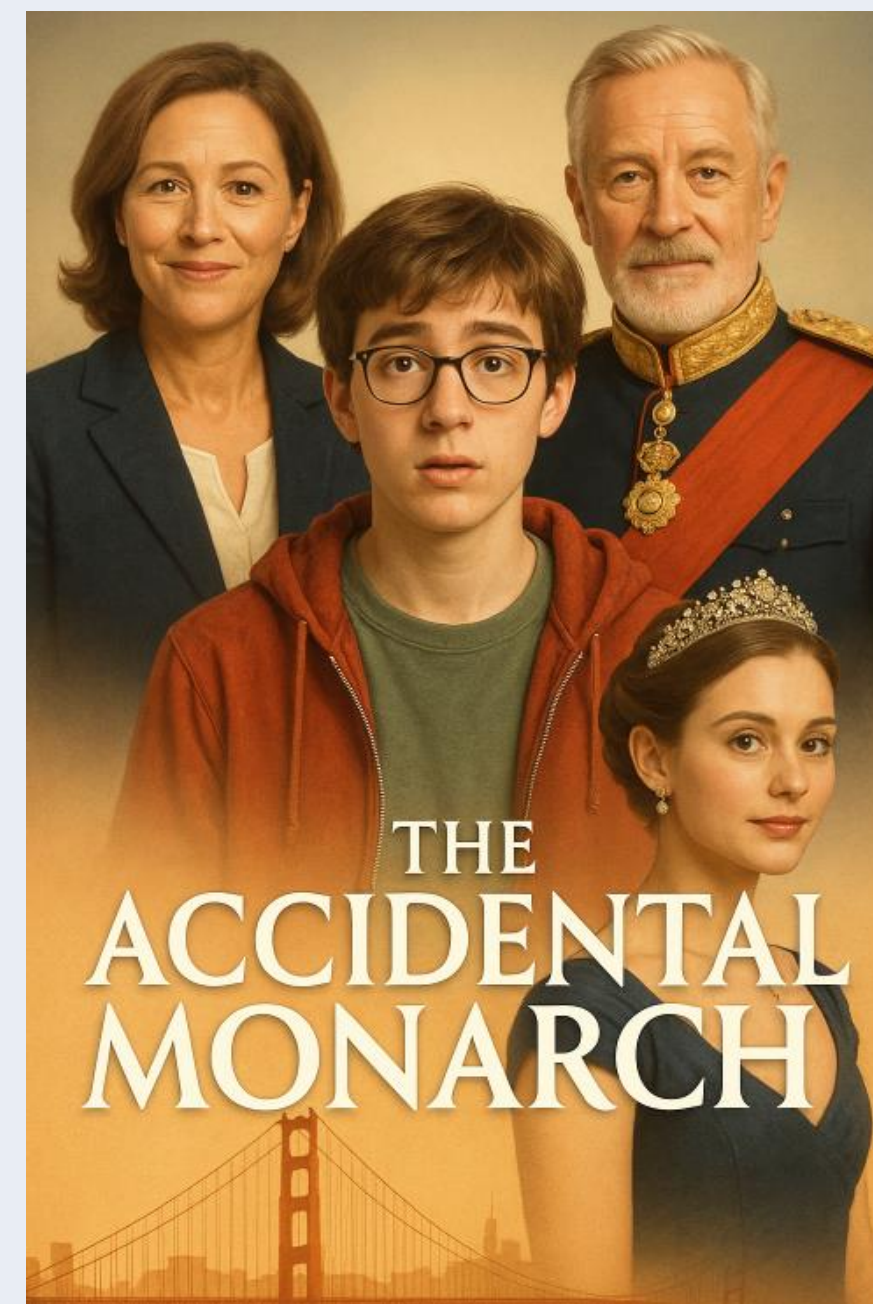


Figure 1 (above): The left-side images are ones generated by ChatGPT, and the right-side images are their real-world counterparts. The top example is a replication case, and the bottom example is a bias case

Results

- **Indication of racial bias:** around 67% of generated posters placed a white individual as the central character
- **Indication of gender bias:** around 69% of the generated posters placed a male individual as the central character
- **Significant presence of copyright concerns:** we found that ChatGPT was producing posters that were very similar to their real-world counterparts

Conclusions

- The overrepresentation of specific demographics within ChatGPT image outputs despite synopsis anonymization provides evidence of machine bias
- The consistent replications of real-world poster gives us a new question regarding bias: are these machines simply mirroring biases present in society instead of intentionally creating them?
- Our work contributes to two important conversations: 1) encouraging the development of fair and accountable AI systems, and 2) Pushing for the creation of robust AI governance frameworks
- This addresses the intersection between creativity, ethics, and legality regarding generative technologies

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