Thesis Project Portfolio

Detecting Misinformation in Fitness Content

(Technical Report)

Behind the Gains: How Fitness Influencers Harm Body Image and Mental Health Among

Gym-Goers

(STS Research Paper)

An Undergraduate Thesis

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Sociotechnical Synthesis

The pervasive spread of misinformation in fitness culture on social media poses a significant threat to the mental and physical health of gym-goers. Fitness influencers often promote unrealistic body standards and fail to disclose their use of performance-enhancing drugs (PEDs), creating a distorted view of what is healthy or attainable. Teenagers and young adults are especially vulnerable in adopting harmful habits, experiencing body dissatisfaction, facing mental health struggles, and in some extreme cases, turning to steroid use. These issues are deeply embedded in our social systems, influenced by the behaviors and motivations of fitness influencers, and are further amplified by social media algorithms that reward engagement over accuracy. My technical project addresses this issue by proposing a machine-learning tool to detect misleading fitness content, while my STS research focuses on analyzing the social and psychological impact of such content on viewers' mental health and body image.

My technical project proposes the development of a machine learning-based detection tool to detect misleading fitness content on social media platforms such as Instagram, TikTok, and YouTube. The goal is to create a scable solution to help gym-goers navigate fitness advice more safely, while also laying the groundwork for the potential integration into social media platforms. Drawing inspiration from traditional email spam detection models, the tool leverages natural language processing (NLP) techniques to analyze captions, comments, and hashtags from fitness-related posts. Supervised learning models such as logistic regression, random forests, and neural networks would be trained to classify posts as "misleading" or "non-misleading" based on indicators such as exaggerated claims, promotion of PEDs, or the endorsement of unsafe practices. Model performance will be evaluated with metrics like accuracy, precision, and recall.

While the current proposal focuses on text-based analysis, future work could expand to allow image and video analysis.

My STS research investigates the role of fitness influencers and social media algorithms in shaping body image norms and gym culture. Using the Health at Every Size (HAES) framework, which promotes body inclusivity, self-acceptance, and health-focused habits, I examined how fitness influencers cultivate unrealistic body ideals and normalize PED use. My research focuses on analyzing fitness influencers like Lexx Little, and Togi, as well as celebrities like Dwayne "The Rock" Johnson and Chris Hemsworth, who frequently promote enhanced physiques as naturally attainable. I contrasted these figures by highlighting more transparent influencers like Dr. Mike Israetel and Jeff Nippard, who openly discuss the effects of PED use and promote evidence-based fitness practices. My findings indicate that controversial and misleading content, with the help of platform algorithms, fosters a toxic fitness culture that exacerbates body image issues, induces eating disorders, and normalizes steroid usage. Influencers often employ techniques such as strategic lighting, posing, and editing to further distort perceptions of natural physiques. Ultimately, social media plays a key role in shaping gym culture, one where engagement and virality often take precedence over transparency and safety.

While my technical project and STS research offer promising steps toward addressing fitness misinformation, significant work remains. My technical project provides a potential outline for future engineers and researchers to build upon. However, the current project proposal remains limited to textual content and would benefit greatly from expansion to allow video and picture analysis. On the STS side, my research provides a deeper understanding of how fitness influencers and existing social media algorithms impact adolescents and young adults. Further

research is needed to collect quantitative data to better understand the long-term mental health impacts of fitness content consumption.

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