Using Bidirectional Transformer Neural Networks for Advancing Gender Bias Recognition in STEM Job Advertisements

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Gender disparity persists in most STEM fields, where men vastly outnumber women. Recent research shows that gendered wording in advertisements for STEM jobs may have a significant influence on the appeal of a job to potential female applicants. To increase awareness and potentially address such gender bias in STEM job ads, it is important to identify the bias as clearly and accurately as possible. Previous research has attempted to predict gender bias in STEM job ads by using a simple word-counting and summation approach. This paper fine-tunes a deep learning language model, Google's Bidirectional Encoder Representations from Transformers, for the specific task of recognizing biased language in STEM job ads by training the altered model on a large dataset of STEM job advertisements. This machine learning model has the advantage of a more holistic semantic understanding of the language in these ads due to its use of transformer neural networks. The analysis yields two main results. First, the ads are biased toward masculine language, in line with the findings of previous research. Second, the machine learning approach predicts gender bias in STEM job ads with high accuracy and is able to outperform the word-counting and summation approach.

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