Annotation Guidelines: Bias in Job Advertisement

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Chapter 1

Introduction

This guide provides instructions for annotators to identify and label different types of bias in job advertisements. Its objective is to produce a high-quality, consistent dataset that encompasses both explicit and implicit biases. Annotators should adhere to the definitions and examples in this guide to maintain uniformity throughout the dataset.

This document defines and establishes the specific criteria for classifying various bias types in job advertisements. It supports the master's thesis entitled "Detection and Classification of Bias in Job Advertisement Using Machine Learning".

Job advertisement biases encompass any linguistic expressions within recruitment texts that can influence the perception of job opportunities based on characteristics such as gender, age, ethnicity, religion, or disability. These biases may manifest explicitly through overt statements (or group mentions) or implicitly via subtle language cues that, often unintentionally, favor or disadvantage certain groups.

This annotation guide is designed to create a **token-level annotated corpus that captures both explicit and implicit biases in job advertisements**. The resulting dataset will enhance Named Entity Recognition (NER) models, enabling them to detect nuanced bias signals that go beyond conventional keyword spotting. By annotating biases at both the word and span levels, this project aims to provide deeper insights into how specific lexical choices shape candidate perceptions and affect recruitment outcomes.

Annotation Process Overview

Prior to manual annotation, real job advertisements were processed using specialized lexicons to generate a word-level pre-annotation of bias. This pre-annotation covers 11 of the 13 identified bias categories but remains incomplete because it does not account for sentence structure or contextual meaning.

A key contribution expected from human annotators is the ability to discern bias based on context and appropriate spans. To facilitate this, annotators will receive complete job ads and be asked to examine specific sentences within each ad, allowing them to evaluate language in its full context.

Context - Complete Job Advertisement

Title: Salford I.T Apprenticeship available under NAS 16-18 year olds only
Location: GB, , Salford

Company Profile: Established on the principles that full time education is not for everyone Spectrum Learning is made up of a team of passionate consultants with the drive for putting people who wish to grow themselves through education whilst working into long term and relevant job roles.We also are official re-sellers for The Institute of Recruiters/ Study Course professional courses in HR Practice, In-House Recruitment and Agency Recruitment It is our mission to help anyone wishing to pursue an apprenticeship onto the right qualification and into the right job.We work closely with both the candidate and the employer to ensure when the learner is enrolled they are at the start of a long and successful career. We have great relationships with a number of national training providers to ensure we can cover any apprenticeship available.

Description: This is fantastic opportunity for someone wanting to start their career in I.T. During the first 12 months you will work towards a Level 2 I.T Software,Web and Telecoms NVQ and then be kept on in a permanent position. You will be working for a Solicitors and the role will involve: –dealing with any computer hardware issues-dealing with any computer software issues-Assisting with any photocopier/telecom related issues and liaising with correct provider to resolve -Ensuring back ups are running correctly and are able to be restored on a regular basis. Ideal candidates will be computer literate and have excellent communication skills. If you are honest and hard working please apply now!

Requirements: Government funding is only available for 16-18 year olds only.

Phrase to annotated

Government funding is only available for 16-18 year olds only.

Pre-annotation

Government funding is only available for 16-18 year olds **Age Related** only.

Annotated phrase**

Government funding is only available for 16-18 year olds only **Age Related**.

Labels identify

Age Related

The items to be annotated will consist of individual words or contiguous word spans extracted from real job advertisements. These advertisements originate from a diverse dataset encompassing multiple countries and industries.

In this work, bias is conceptualized as any language choice in a job advertisement that significantly affects its perception by individuals or groups, depending on their protected attributes. Such biases can either enhance or diminish the appeal or sense of belonging for the individual or group to a certain job. Other researchers address the idea that language-based biases can occur without overt or intentional discrimination, while some bias might discourage certain groups but not necessarily translate directly into illegal or explicit discriminatory practices (Heilman, 2012; Gaucher et al., 2011). Therefore, bias in this context can be unconscious and does not always imply discrimination, as their effect varies depending on the recipient and the specific circumstances of the bias.
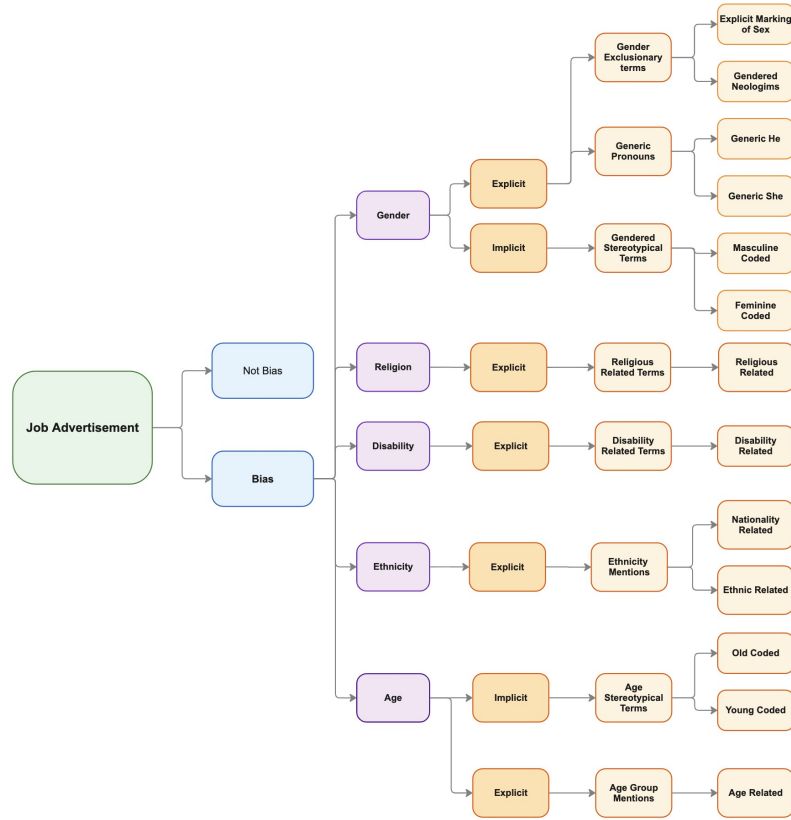
Chapter 2

General Rules

Annotators should take care when tagging biased language that appears in close proximity. In other words, if a sentence contains two words of the same bias category—and each word qualifies on its own—each must be annotated separately.

Chapter 3

Type of Biases

In this section there is the definition of every type of bias of this research.

3.1   Explicit Gender Bias

3.1.1   Gender Exclusionary Terms

Exclusionary terms occur when a gender-neutral entity is described using
gender-exclusive language. For instance, adding a gender-specific sub-word
(e.g., "man") to a gender-neutral occupational term (e.g., "police") results
in "policeman." This construction implies that all police officers are men,
thereby excluding women. Conversely, appending "woman" to "police" to
form "policewoman" suggests that all police officers are women. The use of
exclusionary terms has been shown to carry negative societal implications.
Sex-biased wording can affect perceptions of a career's attractiveness (Briere
and Lanktree, 1983), and languages with gendered occupational terms have
been associated with disproportionate labor force participation (Gay et al.,

2013).

3.1.1.1 Explicit Marking of Sex

The use of explicit sex demarcations in job advertisements constitutes a form of Gender-Exclusive Occupational Terms bias. This category covers instances where an inherently gender-neutral role or occupation is described using a word that unambiguously denotes one gender. Such markings often appear at the word level and clearly signal a specific gender.

Examples: Chairman, Businessman, Manpower, Cameraman, stewardess.

3.1.1.2 Gendered Neologism

Gendered Neologisms are newly coined, gender-specific terms that are emerging into mainstream usage. Although they share similarities with explicit marking of sex in that they exclude one gender, they differ by virtue of their novelty and evolving acceptance in everyday language. This type of bias is annotated at the word level, as it involves the creation of new exclusionary terms.

Examples: Man-bread, Man-sip, Man-bun, Girlboss, SheEO

3.1.2 Generic Pronouns

Pronouns typically correspond to the gender of their referents. However, when the referent is sex-indefinite, the pronoun is used in a generic sense, effectively generalizing gender onto a neutral subject. The most notable form of a generic pronoun sentence occurs when a pronoun's referent is a sex-indefinite occupation. When a pronoun refers to an occupation rather than a sex-definite person (subject), it becomes generic.

3.1.2.1 Generic He

Generic He refers to instances where a sex-indefinite role or description is associated with a male pronoun. This use often reflects implicit gender bias by defaulting to a male reference when the subject's gender is not specified. Due to its dependence on context, this bias is assessed at the sentence level. Examples: "A programmer must carry his laptop with him to work." "How often does a programmer update his skills?" "How do I tell if a pastor is turning his congregation into a cult?" Not Biased Example: "John, a programmer, always carries his laptop to work."

3.1.2.2   Generic She

Generic She denotes instances where a sex-indefinite role or description is associated with a female pronoun. This usage may introduce bias by implying that a particular role should be associated with a female perspective when the role itself is gender-neutral. Like Generic He, this bias is evaluated within the context of the sentence. Example: "A nurse should ensure that she gets adequate rest." Not Biased Example: "Jennie is a rapper; her voice is suited for rapping."

3.2   Implicit Gender Bias

Subtle language choices that suggest a preference for one gender without explicitly naming it. In this instance we will be working mainly with words or sentences that have a strong stereotype associated with a gender in the context of work recruitment.

3.2.1   Gendered Stereotypical Terms

This category covers the inclusion of words or short phrases in job advertisements that carry gender stereotypes. Studies demonstrate that such wording can affect applicants' attitudes and choices depending on their gender (Gaucher et al, 2011). Since job ads use a formal style, these subtle signals are considered implicit bias.

3.2.1.1   Masculine-coded

Use of words associated with male stereotypes (e.g., "aggressive", "dominant") that subtly signal a male-oriented role or culture. Usually present at word level.

Example: "Looking for an aggressive salesperson to dominate the market."

3.2.1.2   Feminine-coded

Use of words associated with female stereotypes (e.g., "supportive", "compassionate") that subtly signal a female-oriented role or environment. Usually present at word level.

Example: "Join our compassionate and supportive team."

3.3 Explicit Religion Bias

3.3.1 Religious Related Terms

Mentions of terms or groups directly and explicitly tied to a religion constitute a bias category in job advertisements, framing the text within a particular religious worldview. Such explicit references can immediately influence potential candidates according to their own beliefs. Although some mentions may be subtle, we treat any reference to a religion or belief system as a single bias class in job postings.

3.3.1.1 Religion Related

Mentions of religion in job advertisements can take many forms—from explicit faith-based requirements to subtle nods toward religious institutions. Regardless of how overt or understated they may be, any word or phrase that references a religion, belief system, or religious organization belongs in this category.

Example: "Only Christian candidates will be considered." Example: "In the church we are looking for an executive assistant"

3.4 Explicit Disability Bias

3.4.1 Disability Related Terms

This category covers any words or phrases in job advertisements that reference disability—whether it's explicit benefits (e.g., "disability insurance") or non-discrimination clauses for candidates with impairments. Although most of these statements are intended as positive accommodations, they still influence how applicants with disabilities perceive and respond to the opportunity. Therefore, any mention of disability in a job posting is treated as a single bias class, since it can alter candidates' behavior and expectations.

3.4.1.1 Disability Related

Terms reflecting disability bias might be as brief as the word "disability" or as elaborate as outlining specific conditions. You can find this bias in any section of a job ad.

Examples: "Must be able-bodied; this role is not open to disabled candidates."

3.5   Explicit Ethnicity Bias

3.5.1   Ethnicity Mentions

This category covers any unambiguous mention of ethnicity in a job posting, whether in the company name, candidate requirements, or descriptive phrases. Such explicit ethnic references—like insisting on a specific nationality or calling out a particular heritage—can significantly influence who applies, so we define them as biased. While many attributes can signal ethnicity, this study focuses on two main types: nationality and other ethnic related terms. Keep in mind that any religious references should be classified under Explicit Religion Bias rather than here.

3.5.1.1   Nationality Related

Within the broader category of ethnic biases, we spotlight nationality bias because it frequently appears in job ads. Nationality bias includes any explicit reference to a specific nation, nationality, city, state, or province. However, references to continents or clusters of countries are excluded. Mentions of language are also not necessarily treated as nationality bias; their classification depends entirely on how they're used.

Example: "Only english people required" Not nationality related: "B2 English required"
Not nationality related, but ethnic related: "European only"

3.5.1.2   thnic Related

Any term or expression that evokes ethnic characteristics—consciously or unconsciously—apart from nationality. Examples include references to racial group, complexion, region of ancestral origin, or cultural lineage.

Example: "Only white applicants will be considered for this position." Example: "Native english required" Example: "Asian only" Not ethnic related, but religion related:

3.6   Explicit Age Bias

3.6.1   Age Mentions

This category includes any direct or indirect reference to an applicant's age group in a job advertisement. Whether it's a clear requirement or a more subtle allusion, these mentions influence how candidates perceive their eligibility.

Although specifying experience is often necessary, we mark every term or phrase that conditions applicant selection by age as explicit bias.

3.6.1.1 Age Related

In job advertisements, references to age can take many forms—ranging from explicit age requirements to subtle age cues woven into the job title or description.

Examples: "Applicants over 50 need not apply." "No recent graduates – we seek a seasoned professional."

3.7 Implicit Age Bias

3.7.1 Age Stereotypical Terms

This bias consists of any phrasing that relies on age stereotypes—such as endorsements of "digital natives" or appeals to "experienced professionals." It can be woven into any part of the ad, from the company profile to linguistic choices in the benefits. Since it operates subtly through semantic nuance, it qualifies as implicit age bias. This is an implicit form of age bias, driven by meaning and context rather than clear-cut rules. We further subdivide this class into Young-Coded and Old-Coded language.

3.7.1.1 Young Coded

This category covers any linguistic choice in a job ad that specifically appeals to a younger audience. These cues aren't meant to exclude older applicants; they simply aim to attract younger talent.

Examples: "Digital native," "Ping-pong table included."

3.7.1.2 Old Coded

This category encompasses phrases or wording that signal a preference for more mature candidates. Like Young-Coded terms, these expressions are designed to draw in a specific age group rather than to push others away. Be careful not to conflate general formality with Old-Coded bias (e.g., "decades of experience" vs. everyday professional tone).

Examples: