natural language processing
browser plug-in

enabling aging workers to take control of their futures

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I often feel worried that the pace it takes me to complete a task makes me look weak or incompetent.

When I am at the grocery store trying to self-checkout, I can feel the eyes on me wishing I’d hurry up. I feel self-conscious all the time...whatever I do.”

Interviewee, 72 year old, OLLI Vital Aging Group
One in four U.S. workers is expected to be 55 or older by 2030.

As of 2020, workers 50 and older made up over one-third of the U.S. workforce.

20.2% of Americans age 65 and older (5.9M men, 4.8M women) were working or actively seeking work in 2019.

Over the past 20 years, average retirement age went from 62 to 66.

78% of older workers have seen/experienced ageism in the workplace.

Since the Workforce Investment Act of 1998, the annual ageism complaints has jumped from 1000 to 18000.

Credit to BuiltIn.com for the data: https://builtin.com/diversity-inclusion/ageism-in-the-workplace
Existing solutions
Job post assessment tools do not protect me from ageist language.

I would like to avoid applying to jobs which may be harmful for someone like me.”

Interviewee, 58 year old statistician, recently rejected for a senior data scientist position
What we do differently

Sage aims to **reduce the information asymmetry** around age-bias in job descriptions; providing applicants with more information while applying for jobs.

Sage not only detects & flags harmful age-unfriendly language but also provides tools that are designed to make the entire job application process easier - all within the same browser plugin:

- Age-bias tracker
- Declutter page
- Speech-to-text for application forms
- Read-page aloud
- Adjust display settings
Watch a demo of the age bias tracker interactions here: https://youtu.be/uzap0WQ9GYI
Sr Data Scientist

Safeway, Pleasanton, CA (Hybrid)

$130,400/yr - $190,160/yr (from job description) • Full-time • Mid-Senior level

10,001+ employees • Retail

Skills: Predictive Modeling, A/B Testing, +8 more

Apply  Save

About the job

We are seeking an energetic and tech-savvy Senior Data Scientist to join our cutting-edge data analytics team. The Senior Data Scientist will be a recent graduate with a youthful spirit and an active approach to problem-solving. As a Senior Data Scientist, you will work on developing and implementing data models, algorithms, and statistical analyses to help our team gain insights into complex data sets.

Responsibilities:
• Design and develop predictive models, machine learning algorithms, and statistical analyses to uncover insights and trends in large and complex data sets.
• Collaborate with cross-functional teams, including software engineers, product managers, and other data scientists to develop data-driven solutions that can be used to make informed business decisions.
• Communicate findings and insights effectively to both technical and non-technical stakeholders, including presenting data and results in a clear and understandable manner.
• Continuously stay up-to-date with the latest advancements and technologies in the field of data science, and apply this knowledge to improve our data analytics processes and methodologies.

Qualifications:
• A recent graduate with a degree in computer science, statistics, mathematics, or a related field.
• At least 5 years of experience in a data science role, with a focus on machine learning, statistical analysis, and data modeling.

Watch a demo of the declutter interaction here: https://www.youtube.com/watch?v=F4unAQR_GPk
Watch a demo of the speak to fill form interaction here: https://youtu.be/OlkRjRsU7EM
Watch a demo of the read page text out loud interaction here: [https://youtu.be/qdd6tp80FWk](https://youtu.be/qdd6tp80FWk)
Watch a demo of the adjust text display interaction here: https://youtu.be/S8km8WctWZ0
This is good! **Simplified** for people like us who are not able to keep up with the **pace of tech advancements**. It is **user friendly**, and I believe I can now apply easily.

Usability tester, Professor of Pharmacology, Age 52
Helping users find age-friendly jobs (w/ NLP)

Job sites are littered with ageist language discriminating older candidates’ personality, lifestyle preferences, skills, and age. A few examples...

You’re a **digital native** with a **keen interest in pop culture**

You are a team player with an **absolute winning mentality**

Looking for an **passionate, energetic, ambitious self starter** who’s **not afraid to question the status quo**
How it’s done

Our model works across different job search platforms to flag ageist language across **personality, lifestyle preferences, skills** and most importantly, the **age** factor.

- Show the age-friendliness status of the job posting
- Calls out ageist language and the intensity of ageism
- Works concurrently with the age-friendly design features of the plugin
What is age discriminatory language?

**Literature Review**

**Personality**
- Energetic, vibrant, high-performer, witty, ambitious, adaptable

**Skills**
- Tech-savvy, quick-learner, fast-learner, sharp

**Age**
- Recent college graduate/Youthful/GPA

**Human Judgement**

**Personality**
- Not looking for someone who is looking to maintain status quo
- An absolute winning mentality

**Skills**
- Ability to work and deliver results under tight deadlines and with limited oversight while managing across multiple functions

**Age**
- Excellent degree from a top university with strong A-levels (ideal 300+ UCAS points)
Data Source, Data Science Approach, and Evaluation

**Data Sources**
- The Employment Scam Aegean Dataset (EMSCAD)
- 10,000 data science job postings in the US from Data.world

**Annotations**
- 788 annotations (Inter annotator agreement 0.896)
- 60% training, 20% validation, 20% testing

**Model**
BERT embeddings + Logistic regression

**Evaluation**
Our baseline model was a Linear regression model yielded a F1 of 0.47. Our best model yielded a F1 score of 0.7.
The role requires a friendly, energetic, tech enthusiast who understands our values and can make sure they are shining in every interaction with our potential clients. In other words, an absolute winning mentality. You’re also a digital native with a keen interest in pop culture.
Looking to the future!

By 2050, the population over 60 will be 20% of total population (2 billion people)!

We need to do better to remove age discrimination in applying to jobs and staying in jobs for older individuals.

Next steps:

● Initiate broader generative research and improve the plugin accessibility features for job search and application
● Introduce real life validation of our NLP model incorporating real time feedback from our users
● Make it easier to find age-friendly jobs in addition to avoiding age-discriminatory jobs
Thank you!

Team
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“Longevity economy” is burgeoning - A booming user group with internet connectivity and unmet needs. Over 50 age group spent $7.6 trillion in goods and services in 2018.

Many applications have sprung up to aid this population, age-tech market worth $10 billion in 2022
Timeline