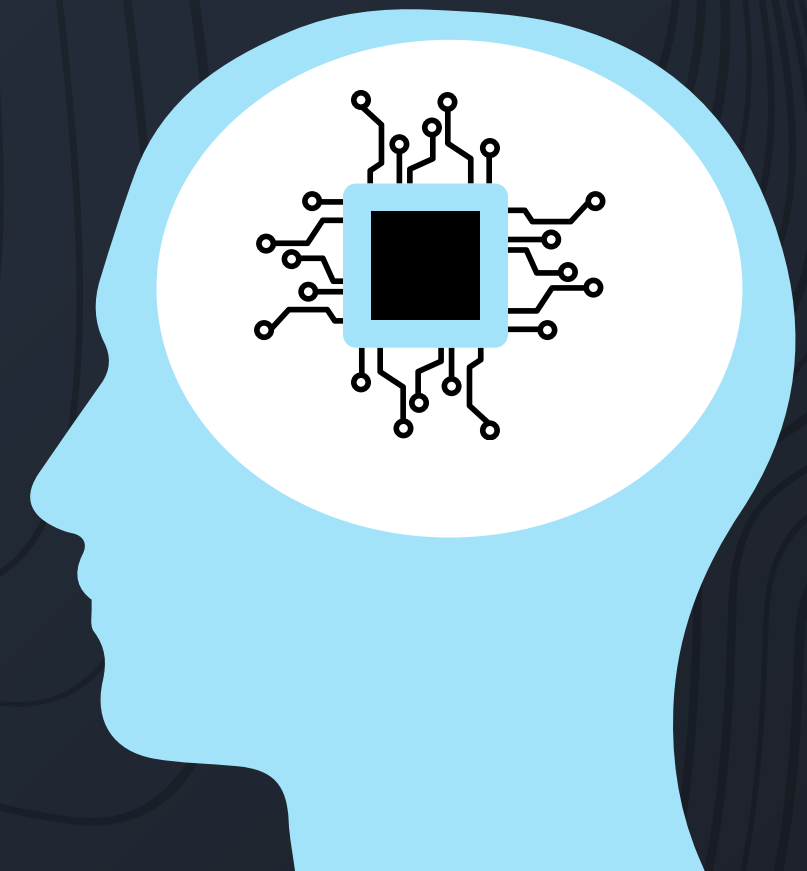# ANALYZING PUBLIC ATTITUDES TOWARDS EMERGING TECHNOLOGIES: INSIGHTS FOR 6IX SENSE'S INVESTMENT DECISION

Final Project

By Nicole Imoru (221125414), Alvina Aamir (221749742), Michael Nguyen (221102363), Ethan Rosehart (221273420), Etie Ukitetu (221303268), Gurkirat Reen (221017793)

Agenda

Executive Summary

Purpose

The purpose of the project was to analyze public perceptions of various emerging technologies in artificial intelligence.

The goal was to provide strategic recommendations for 6ix Sense, a leader in these innovations, to target and engage different demographic segments.

Key Findings

The key findings highlight a specific emerging technological segment: based on the questionnaire data, exoskeletons rated most favorably in comparison to other technology types.

A logistic regression model was craeted to predict if a customer would be a good target for being interested in exoskeletons, using the demographic data from the survey

Recommended 6ix Sense to invest in AI, with a specific focus on advancing exoskeleton technology.

Introduction

01 Problem

02 Context

03 Background

The problem is presented by 6ix Sense, a technology company specializing in neuroscience, genetic engineering, and robotics.

They are currently deciding what emerging technology they should invest in and asked us to analyze survey results to understand the public's attitude toward new technologies.

In the rapidly evolving landscape of technological advancements, understanding public perception is crucial as it will significantly influence the success of new technologies.

This analysis will guide 6ix Sense in making informed decisions about product development, marketing, and outreach efforts.

Emerging technologies have the potential to revolutionize various industries.

However, acceptance varies across different demographic segments. Factors such as age, income, religious beliefs, and political leanings shape public attitudes towards these innovations.

Key Objectives

- 1. Assess Public Attitudes:
  Evaluate how different demographic groups perceive various technology

- 2. Identify Key Segments:
  Determine which demographic segments are most receptive to these technologies.

- 3. Develop Strategic Recommendations:
  Provide actionable insights for 6ix Sense to target specific segments effectively.

Methodology

- The analysis uses data from the Pew Research Center, segmented by demographic factors.

- We applied descriptive statistics and logistic regression modeling to uncover patterns and insights

Feature Engineering

- Before running the model, the data had to be prepared

- Encoded a ranking table due to difference in wording for each question
  - Categorical: 0 is negative response 1 is positive response

- Created a correlation heat map
  - Grouped the different types of questions together
  - Compared to political leaning index to see if they correlated.
  - There was no significant correlation

- Conducted feature engineering since the variables alone couldn't significantly predict a positive reception

Correlation Heatmap - General

Correlation Heatmap
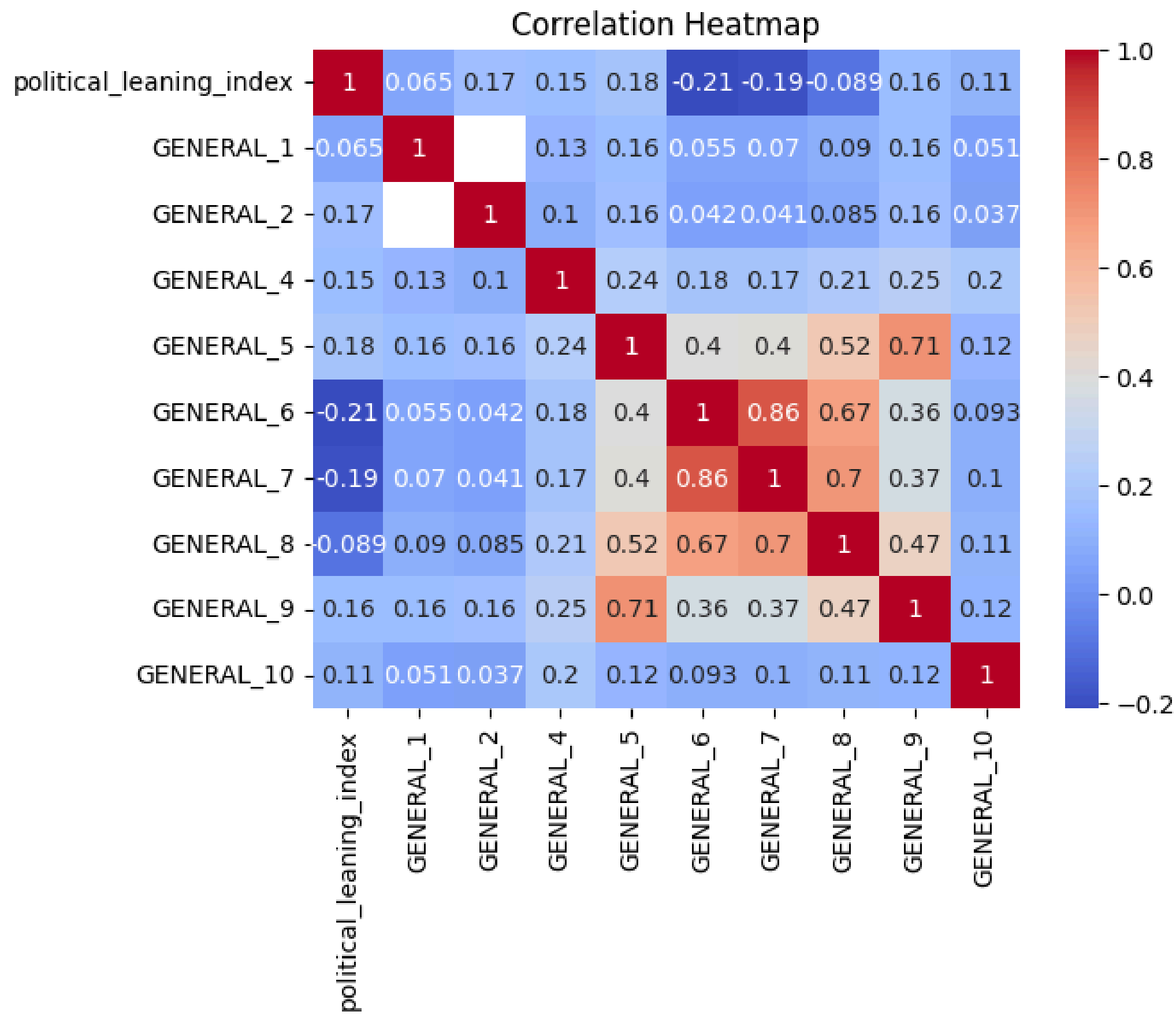
- This heatmap illustrates the correlation between political leaning index and responses to a series of general AI-related questions. Each cell in the heatmap represents the correlation between two variables, with political index located on the y-axis and AI-related questions on the x-axis.

- The goal of this analysis was to find whether the political leaning index would exhibit a significant correlation with the responses to the general AI questions. Contrary to our initial hypothesis, the heatmap shows that all correlation values between political leaning index and AI questions are relatively low as showed by the largely blue shades.

- The lack of strong correlation suggests that political leaning index does not have a major impact on the responses disproving our initial hypothesis and emphazing the need for more advanced modelling.

Model - Logistic Regression

Logistic Regression was selected so that we could examine the coefficients of each input to see what is driving the model.
Because as previous analysis stated, the variables are individually not strongly correlated

✓ Input: Demographic Data

- "F_RELCOM3CAT", "F_METRO", "F_CREGION", "F_CDIVISION", "F_AGECAT", "F_GENDER",
- "F_EDUCCAT", "F_EDUCCAT2", "F_HISP", "F_HISP_ORIGIN", "F_YEARSINUS", "F_RACECMB",
- "F_RACETHNMOD", "F_CITIZEN", "F_BIRTHPLACE", "F_MARITAL", "F_RELIG", "F_BORN",
- "F_RELIGCAT1", "F_ATTEND", "F_RELIMP", "F_PRAY", "F_PARTY_FINAL", "F_PARTYLN_FINAL",
- "F_PARTYSUM_FINAL", "F_PARTYSUMIDEO_FINAL", "F_INC_SDT1", "F_REG", "F_IDEO", "F_INTFREQ",
- "F_VOLSUM", "F_INC_TIER2", "WEIGHT_W99", "political_leaning_index"

✓ Output: Positive Sentiment

Binary Output:
- Positive (1)
  - (Top 70% - Based on Survey Results)
- Negative (0)
  - (Bottom 30% - Survey Results)

✓ Selection Criteria

- F1 Score
- Accuracy
- Precision
- Recall

✓ Hyper-Parameter Tuning

Grid Search Best Parameters:
- 'C': 0.1
- 'penalty' = 'L2',
- 'solver': 'liblinear'
- Performance Increase of ~0.02

Key Metrics

Variables	Coefficient
F_MARITAL_Refused	0.645
F_HISP_YES	0.543
F_HISP_ORIGIN_Other country	0.398
F_RELIG_Orthodox	0.389
F_RELIG_Momon	0.349

- No significant variable alone that stands out which required feature engineering

- These were the following 5 variables with the best coefficients for the model that we could identify

- Some variables had a stronger score than the ones indicated

- These were unknown because not present in dictionary

- For example, RELOM3CAT had a coefficient over over 1 but we could not identify this based on the survey and accompanying dataset
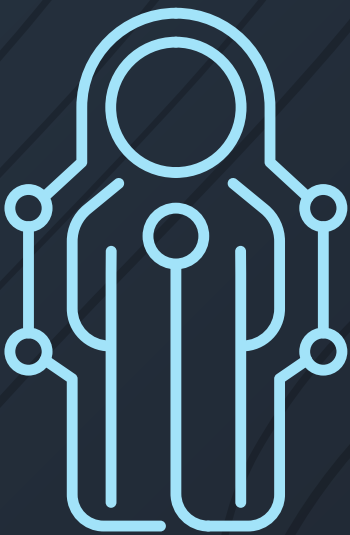
Model Results
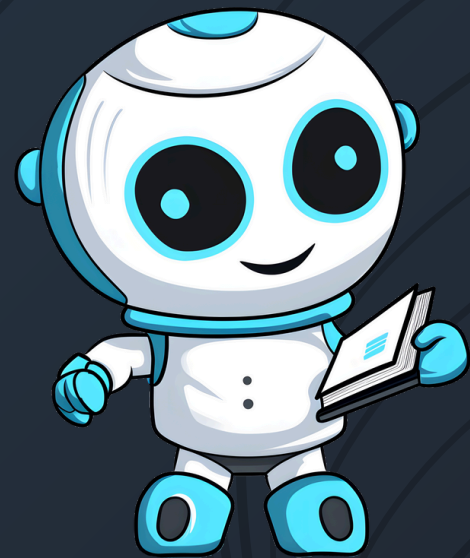
Predictive of whether they have a positive view of AI	
Metric	**Score**
F1-Score	0.82
Accuracy	0.7
Precision	0.7
Recall	0.99

Key Findings

After the feature engineering and cleaning was conducted we found that the model was much more successful in predicting whether the public would be more receptive toward AI

Recommendations

Exoskeleton the way to go

Public reception towards Exoskeltons scored the highest amongst AI technologies

Reception toward different AI Technologies		
AI Technology	**Positive**	**Negative**
General AI	69.6%	30.4%
Brain Chips	69.6%	30.4%
Gene Editing	66.6%	33.4%
Exoskeletons	72.4%	27.6%

Conclusions

- Data alone did not present any strong correlation on the public perception of AI

- Feature engineering was conducted and put all together to acquire an accurate model

- Assigned the top 70% of the variables to either (Top 70%) 1 or (Bottom 30%) 0.

Exoskeletons had the most positive response