

# IS 4800 | AI Industry Study

Final Presentation

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# Intro

*How are companies influencing Asian American students' interests in AI industries they may want to explore?*



## Background

- Began with topic in CS recruiting as a whole
  - Too broad, too much research done already!
- Spoke to manager at previous co-op about pain points in recruiting current generation of college students
  - Small AI drug discovery start-up in Greater Boston Area
- Lack of knowledge or awareness = major barrier to entry
  - Primary interests lie in NLP or Computer Vision

**Goal:** Understand and Analyze this Pain Point



# Major Sectors of AI

## AR/VR

28 billion

CAGR - 31.4%

## Chatbots

17.7 billion

CAGR - 34.75%

## Natural Language Processing

10.7 billion

CAGR - 26.8%

## Predictive Analytics

10 billion

CAGR - 36.0%

## Computer Vision

9.45 billion

CAGR - 16.0%

## Healthcare

6.1 billion

CAGR - 48%

## Autonomous Driving

1.64 billion

CAGR - 31.3%


## AI Drug Discovery


1 billion

CAGR - 36.0%

\*Industry size is for 2021, CAGR is for 2022-2030

\*\*CAGR = compound annual growth rate

 Blue represents primarily-private sector

 Pink represents primarily public sector  
(or academia)



## Experiment Breakdown

### **HYPOTHESIS: Companies Have High Influence on Student Interests!**

- ◉ Asian American college students' interests for post-grad jobs are heavily influenced by what companies and products they know
- ◉ More technically-versed students have a more sophisticated understanding of their options

### **Variables**

- ◉ Independent Variables: Technical Experience with AI, Knowledge of AI Companies, AI Products Recognition
- ◉ Dependent Variables: AI Industries of Interest
- ◉ Moderator Variables: Major

**Target Demographic:** Asian American College Students



# You may be wondering...

What research has been done in this space?



## Not Much!

CS Recruiting  
760k

Interviewing  
Student Interests  
Social Media

My Study  
300k

Student Interests  
Company Marketing  
Industry Growth  
Asian American  
Focus

AI Industry  
2.5 M

Company Marketing  
Industry Growth  
Sector Specifics

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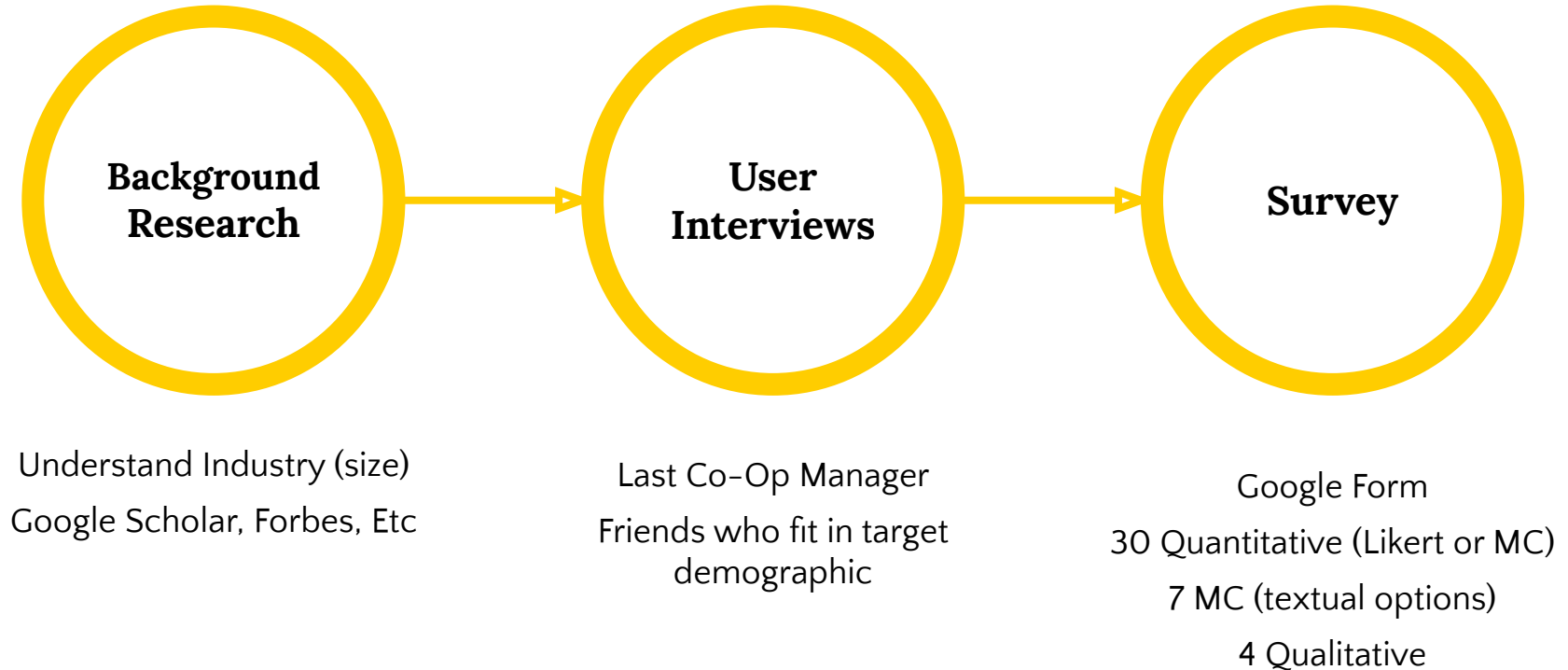
# Methods

How did I approach this question?





## Methods Employed





# Survey - Google Form

## General

Generic Experience with AI

## Company Familiarity

11 companies that represented largest players in respective AI industries

## Product Familiarity

11 associated products to those companies that represent largest products for

## Courses & AI Knowledge

AI Courses taken in undergrad  
Skillset knowledge  
AI Industries familiarity  
Subjective feelings on courses

## Industry

Internships Completed  
Data or AI Focus  
Prospective Industries

## Demographic

University, Major,  
Current Age, Race, Sex,  
Undergrad graduation  
Year

Which industry do you think has the lowest barrier of entry? \*

- ☐ Corporate (Private Sector)
- ☐ Academia/Research
- ☐ Government (Public Sector)



# Key Survey Questions

## Company Familiarity

Please rank your familiarities with the listed companies, based off their names.

Alphabet (Google) \*

1      2      3      4      5

Never Heard of Them   ☐   ☐   ☐   ☐   ☐   Very Familiar

## Product Familiarity

Please rank your familiarities with the listed products, based off their names. Please only select 5 if you have specifically used the product before.

Google Assistant \*

1      2      3      4      5

Never Heard of Them   ☐   ☐   ☐   ☐   ☐   Very Familiar

Based on your experience, how important are these skill sets to go into AI jobs? \*

	Don't Know What This Is	No Relevance	Low Importance	High Importance	100% Crucial
Python	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Javascript	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Java	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SQL	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C++	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shell Scripting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
K Cluster Analysis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Signal Processing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deep Learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Calculus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Probability and Statistics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Linear Algebra	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Graph Analysis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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# Findings

What does the data show?

Total

64

Age

21.30

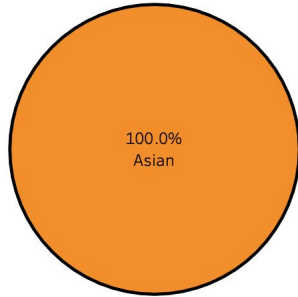
Grad Year

2,022.27

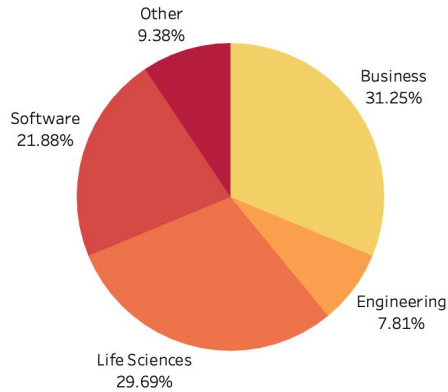
Region

Boston	40
Midwest	8
South	7
New England	5
California	2
DMV	2

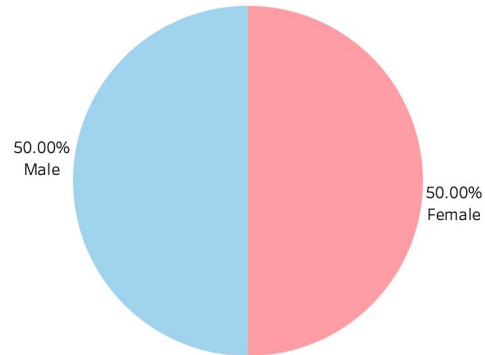
Race



Major



Sex



## Exploratory (Demographics)

64 Total Respondents

Average **Age** || 21.30

Average **Grad** || 2022.27

**Major**

~30% Software/Engineering

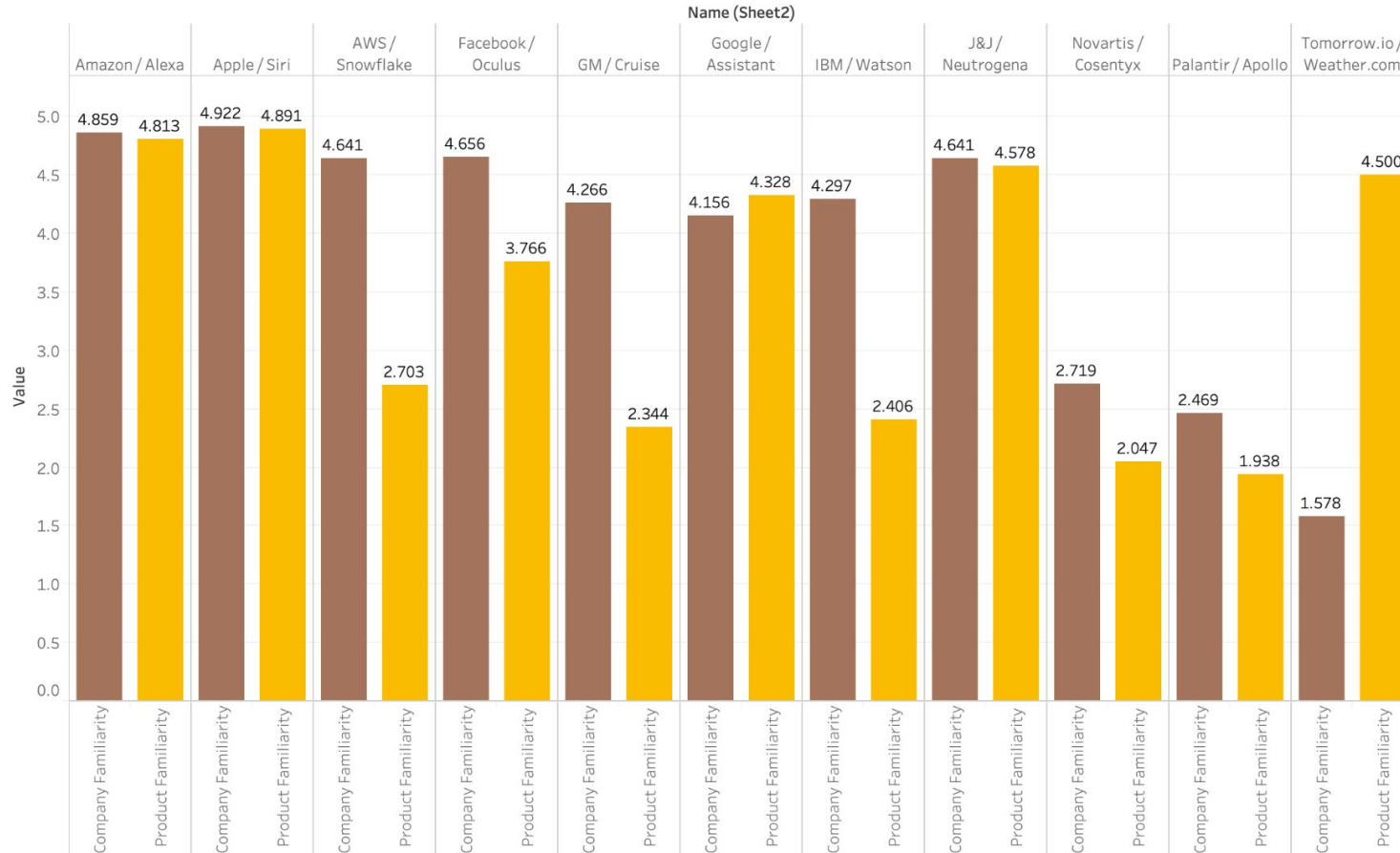
**Sex** || 50% male 50% female

**Race** || 100% Asian

(target demographic)

# Exploratory (Familiarity)

Company/Product Familiarity



Measure Names

Company Familiarity  
Product Familiarity

AWS (4.6)  
Snowflake (2.7)

GM (4.3)  
Cruise (2.3)

IBM (4.3)  
Watson (2.4)

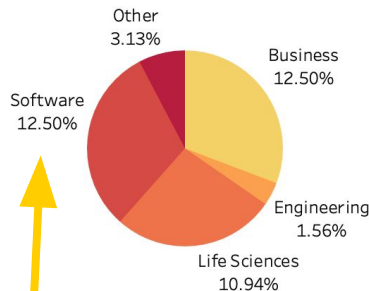
Tomorrow.io  
(1.6)

Weather.com  
(4.5)

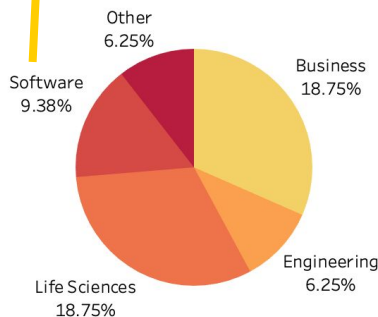
## Major by Quiz Score Group

Quiz Score Group

above\_50



below\_50



## Exploratory (Major by Win Status)

“Above 50” is someone who **scored better than a 50%** on the AI technical skills section

Software majors are the only ones that take up a greater share of the Above\_50 than Below\_50

- **Software:** 9% -> 13%
  - (+4)
- **Life Sciences:** 19% -> 11%
  - (-8)
- **Engineering:** 6% -> 2%
  - (-4)
- **Other:** 6% -> 3%
  - (-3)



## Statistical Analysis Pt. 1

- Comparing Average Product Familiarity Scores between 2 groups
  - Groups split by “above 50” and “below 50” (26, 38)
- 2 Sample T Test (alpha = .05, variances are equal, distribution is normal)
  - $H_0$  = College students who are NOT as knowledgeable in AI technical skills are **equally as familiar** with major products in various AI industries as college students who ARE knowledgeable in AI technical skills
  - $H_1$  = College students who are MORE knowledgeable in AI technical skills are **more familiar** with major products in various AI industries than those who are NOT
- T Stat: 2.10 || P Value 0.04
  - Reject null hypothesis!





## Statistical Analysis Pt. 2

- Comparing Barrier to Entry Question between 2 mutually exclusive groups
  - Groups split by whether their product familiarity scores were > average
- 2 Prop Z Test (alpha = .05, 2 tailed, sample sizes of 26 and 38)
  - $H_0$  = College students who are MORE familiar with major products in various AI industries consider **corporate** jobs to be **equally as easy** to break into as non-corporate jobs, as compared to college students who are LESS familiar with major AI products
  - $H_1$  = College students who are MORE familiar with major products in various AI industries consider **corporate** jobs to be **EASIER** to break into than non corporate jobs, as compared to college students who are LESS familiar
- Z: 3.8062 || P Value 0.00014
  - Reject null hypothesis!

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## Discussion

What real-life takeaways does this analysis give us?



## Findings Summary

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- Certain companies are only recognizable by their products and vice versa
- Software majors have more sophisticated understanding of what technical skills are needed to break into AI
- Higher understanding of AI technical skills leads to better recognition of major products in AI industry
- Higher recognition of major products in AI industry leads to considering corporate jobs easier to break into



## Implication of Findings

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- Not all major consumer products are made by the most well-known consumer brands
- Software majors are way better geared for a successful AI career
- Knowledge of the AI industry is not solely taught through the news – one must actually take the time to learn the skills to be successful
- People who are more knowledgeable of the AI industry are less intimidated by the prospect of job opportunities in that industry



## Advancing State of the Art

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- Increasing exposure and options to Asian American students so they're not just following companies that they see on the news
  - Give them the tools to figure out what they actually love
- For recruiters/employers
  - Increased retention rate from increased job satisfaction
  - Increase applicants to lesser known companies (that make equally as much, if not more, money)



## Limitations

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- Data Pitfalls
  - Sample Size
  - Mostly at BU or Northeastern ( $\sim \frac{2}{3}$ )
- Lack of Resources
  - Money
  - Time
  - # of People



## Future Work

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- Expand research to not just be about Asian Americans
- Get enough data to run analysis based on major (CS)
- Run technical proficiency tests
- Do more user interviews (gather more qualitative data)
  - Sentiment analysis
- Collect and utilize more data about education and internships



# Thanks!

*Any* **questions** ?

- ◉ [public.tableau.com/app/profile/nickhil.tekwani](https://public.tableau.com/app/profile/nickhil.tekwani)
- ◉ [github.com/nickhil-tekwani/is4800\\_final\\_project](https://github.com/nickhil-tekwani/is4800_final_project)



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