

Group Project, *Names Removed*
Final Project Report
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Semantic Status: How Job Titles Influence Perceptions of Value

Abstract

This study examines how college students view different tech-related job titles about social well-being, personal interest, and prestige. Participants were asked to rank 36 distinct computing roles using a card sort method in three categories: perceived earning potential and prestige, personal appeal, and the social well-roundedness of the people they believed to be in each role. We discovered important trends in the ways that language, familiarity, and stereotypes affect how the general public views job titles through this exercise. While personal interests and field of study had a significant impact on the appeal of a role, buzzwords, and exaggerated language were strongly associated with prestige. Lastly, more technical or specialized roles were linked to emotional detachment and loneliness, whereas roles that were seen as creative or collaborative were consistently seen as more socially balanced. Our research shows that job titles convey implicit messages about character, competence, and lifestyle in addition to function; these messages are frequently influenced more by association and bias than by actual information.

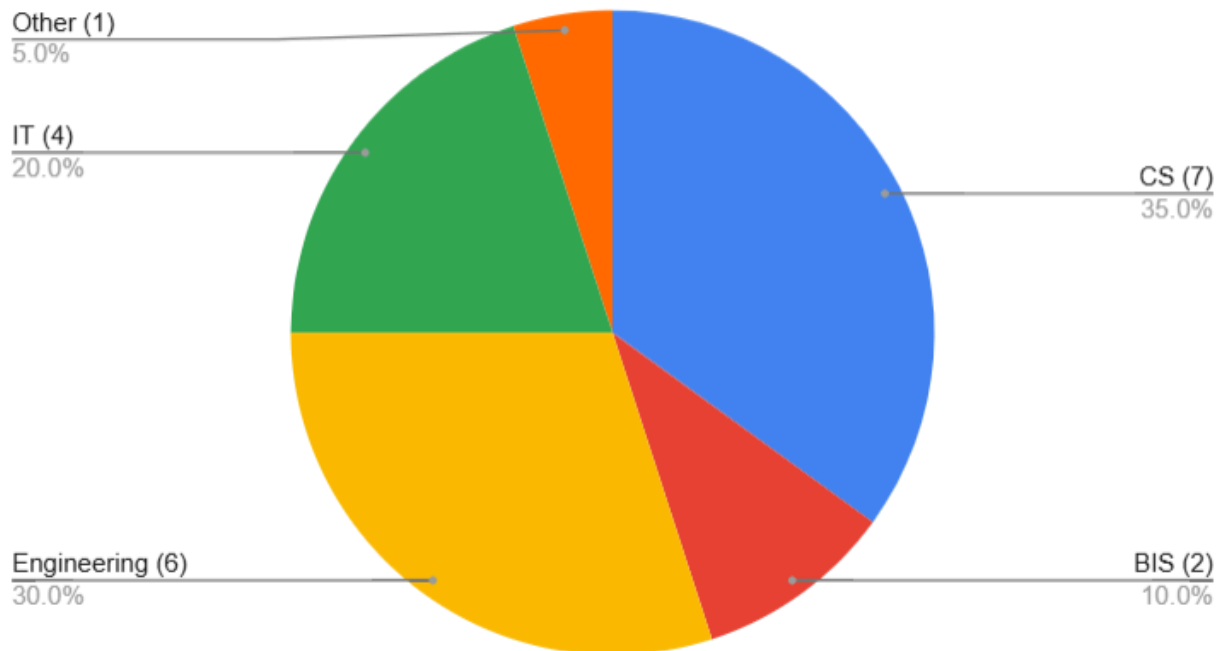
Rationale

The purpose of this study was to see how people perceived different computer related jobs and careers among different individuals. We wanted to discover if there is a correlation between job title and perceptions of prestige, respectability, earning potential, and personality. We also hoped to investigate biases held by the participants. From these results, we wanted to see whether certain job titles had different types of stereotypes or assumptions, and how our participants would react to hearing each title.

Participants and participant recruitment

We got our data from 20 different participants. These individuals were all students from the New Jersey Institute of Technology. This did lead to a bias of students who knew a bunch of computing fields, but we did try to also get participants from non-computing fields. We ended up most of our participants being from Computer Science and miscellaneous Engineering Majors, with a handful of other majors.

Participant Majors



Our group decided to get 5 participants each, which, with our group of 4 teammates, gave us plenty of data to use. Since we only had a limited amount of time to do the study and had to get participants fast, we mainly got people we knew. Each teammate will conduct the studies on their own. Upon completion, we were going to look for specific themes and patterns throughout the data.

Data collection

Our group decided to use a card sort study. We felt that this would be the most enjoyable and informative way to see how our participants felt about each specific job title. For our specific card sort, we had a wide variety of computing related jobs, spanning from the generic "Computer Programmer," "Data Scientist," and "IT Support Specialist" to more obscure ones like "Embedded System Engineers," "IT Auditor," and "Cloud Solutions Architect." We also wanted to have jobs that had different job titles but basically did the same thing or had a similar broader topic, like "Cybersecurity Analyst" and "Information Security Manager," as well as "AI Researcher" and "Machine Learning Engineer." In total, we had 36 individual cards for 3 different sorts.

For our meetings with the participant, we first tell them a bit about the study and what they were going to be doing, as well as telling them to explain their thoughts throughout the sorting process. From there, after the participants consented to doing the study as well as recording their process, we started the sorts. The participants first sorted based on perceived prestige and earning potential. Some participants explained their thoughts while in the process of doing it, while some others decided to go over it one by one at the end. After that was completed, we took a photo of their completed sort and then went on to the second and third. Our second sort was based on how

interesting our participants found the job and if they would want to do it. Our final sort was how social and well-adjusted our participants thought our job titles would be. After the completion of the sorts, we were going to analyse and compare the data using the images we took as well as using transcripts. Each participant took from 15–45 minutes, which meant we had a lot of data to use.

Data Analysis Methods

Our data analysis started during the interviews themselves, as after a participant did a card sort, we would ask questions to gain a deeper understanding of their thought process. Afterwards, we transcribed the audio of the participants, taking notes of important things they said when they narrated their perspective. With this in mind, we also took note of general patterns and themes we saw through the card sort—such as similarities in grouping or categorization. As mentioned earlier, this process was done individually.

To put all of our data together for analysis, we met as a team to discuss our findings. We uploaded all of our materials and data collection to the shared drive, taking some time to look through each other's card sorts. Then, we shared key points, observations, and interesting notes in our own participants, and as a team would share if we also saw those points. We decided that our 3 themes would be the 3 questions we were looking to understand, and we could have 2-3 main findings underneath each theme. We jotted down our most frequent ideas and bolded the most strongest findings. Our workflow can be seen below.

Workflow/Analysis Process:

Question 1: Prestige

- Buzz words helped people think of something as prestigious, (ex: AI and Ethical Hacker)
- **Participants found titles that sounded more superfluous to be more prestigious, even if they didn't know what the role entailed. (e.g. Quantum Computing Researcher, Embedded Systems Engineer)**
- Participants rated roles that they hope to aspire to post grad at the top of prestige
- For one participant, roles that family members may operate in are put at the top of prestige, even if that role otherwise wouldn't be as high (P2, user shared how watching how hard their father worked in that role, to not give it prestige would be to disrespect him)
- Sometimes, our participants mixed interest and fun with prestige, saying how the more interesting jobs can seem the most prestigious in their opinion (AI, Engineers)
- **Engineers and developers were higher up on the categorization-, technical writer was consistently ranked lowest/lower**
- Jobs that came off as entry level were seen in a less prestigious light (e.g. IT Support Specialist)

Question 2: Allure

- Participants found out difficult to categorize roles they had little to no familiarity with
- **Bias was the most seen here, participants gravitated towards their own interests and education.**

- Some participants pulled from the top of their prestige category, even specifying that money and prestige played a big factor on if they would pursue it as a career
- The more pedestrian and repetitive a role was perceived, the less interesting it was thought to be.

Question 3: Balance

- The ranking process was significantly influenced by the participants' innate negative bias toward technology roles being "less adjusted."
- Participants assumed individuals working in roles that involved less technology were regarded as more well-adjusted (e.g., Design Technologist, Product Manager, Product Designer) since these roles are thought to focus on communication and the arts, which are seen as both necessary for the job and indicative of personality.
 - Professions in management and design were consistently ranked higher as these fields were considered to require creativity and interpersonal interaction.
- Due to the assumption that more specialized education and training are needed for more specialized roles, and therefore fewer social skills are expected, people in perceived niche fields were assumed to be less well-adjusted than their more mainstream counterparts (e.g., Quantum Computing vs. Software Engineering).

Fun fact: penetration testers got weird looks, even though it's the exact same thing as an ethical hacker. Some people didn't know what it is, and some others thought of the other definition of penetration.

Written Analysis

Theme 1: Prestige - How respectable did participants feel each role was?

Our main findings for prestige were that engineers and developers were generally ranked higher up than design-oriented roles. This is likely due to the overall culture assumption or association that STEM jobs, specifically ones that are more math-focused, such as engineering or developing, pay more than design jobs such as technical writing, which can be associated with humanities, even though both these professions fall under the technology field. Participants specifically said that they saw that design makes less money than engineering/developing and that engineer/developing seemed more challenging. This likely also allowed more superfluous titles to be ranked higher in terms of prestige. A few participants specifically stated that they used words and association to make connections. For example, one participant said "I was looking at the last words more than I was looking at the first word...So like, database administrator or project manager, I was looking at the manager part or the administrator part." The same participant also stated that they were "influenced by how cool it sounds", so buzz words such as "quantum computing", along with the following words of developer or engineer would increase its ranking over other titles.

Theme 2: Allure - How interesting did participants perceive the roles and how likely were they to want to do it as a job?

The second card sort revealed the most biases amongst our participants - more so than either of the other two sorts. The majority of our participants seemed to follow a similar internal algorithm when sifting through the cards. Their first step was to single out roles that most closely aligned with their own fields of study as well as roles that aligned closely with their extra curricular interests; many explained their rationale for finding these areas interesting. Participants also tended to find many of the roles they found prestigious to also be alluring, with there being much overlap between their top options in each sort. Once participants had singled out their own interests they then went on to categorize the roles they were unfamiliar with, albeit with great difficulty. Participants trended towards using the verbiage of the job titles as well as specific keywords to determine how interesting each unfamiliar job was. Many explicitly stated that they were organizing them based on the wording of the title. Lastly, in every single sort that was conducted, participants found roles that were (or at least sounded) repetitive and pedestrian to be the least alluring of the bunch.

Participant Quotes:

"Basically, if the name isn't interesting, then you're not interesting"

"They're more aligned with developing products and developing new devices, and that's something I'm interested in as a biomechanical engineer"

"Have you ever asked someone what they did and they said 'IT Support' and you were like 'wowww'? No, it's never happened."

"Ethical hacker. That's awesome. I'm trying to get into an ethical hacking class."

"I'm an engineer so anything that had to do with building was most interesting. If they had key words like engineer and developer and analyst as well."


Theme 3: Balance/Well-Roundedness - How socially well-adjusted did participants perceive hypothetical employees in each role?

The final card sort explored participants' perceptions of the social balance or "well-adjustment" of people in various tech occupations. Despite the purposeful humor of the prompt, which asked if people in these roles "shower, have friends, or touch grass," the data showed significant trends in the way participants connected job function to lifestyle, hygiene, and personality. The notion that a person would be less balanced in a job that required more technical or specialized skills was a recurring pattern. Roles such as Full Stack Developer, Embedded Systems Engineer, and Quantum Computing Researcher were often linked by participants to workaholicism, poor personal hygiene, and limited social lives. Stereotypes were frequently the basis for this bias; one participant said, *"If the only thing you need to do is be on your laptop and code, then you tend to be more on your laptop... you're not going to want to interact with people."* Another added, *"They're always at their desks, working on code all day. 24/7 they don't take breaks. They don't see the grass."* Many participants admitted that, in spite of their exaggerated language, they were

basing these conclusions more on the word choice of the title itself, stereotypes, and gut instincts than on in-depth subject-matter expertise. One participant self-reflected in reference to computer science majors, *"They all shower. That's the real answer. They all shower, but I can't say that, can I?"* In the end, this exercise demonstrated how job titles serve as cultural indicators of personality and lifestyle in addition to job function and prestige. Participants predicted how emotionally and socially "normal" a person in a role would be based on their understanding (or assumptions) of the role's daily demands, degree of collaboration, and visibility. In addition to biases regarding tech culture, their responses also highlighted how language, exposure, and representation affect how we perceive humanity and balance in the workplace.

Visual and /or UX artifacts

Persona



Anonymous Participant

- 20 years old
- NJIT 2nd Year Student
- Business & Information Systems Major

Bio

This participant ranked prestige with engineers and developers higher up with design-roles lower down on the tier, much like other participants. She claimed that those engineering roles make more money, easily 6 figures and more, correlating it to prestige. However, she is very creative and design-oriented, putting design roles high on the tier of what she would pursue as a career, while the engineering and developing was much lower on her tier. Fun fact, she hates coding and would only do it if you gave her a very large sum of money. In terms of the well-adjusted question, she put design and managing roles on top as those individuals are more likely to have people skills. She put developers and engineers on the bottom as she claimed they spend all their time behind the computer or even working from home, meaning they had less social time and less likely to be social and well-adjusted.

Interests

Design-oriented roles, would like product design, product management

App developer, front-end, full stack developer, game developer

Pain points and frustrations

Coding - hates coding

Being job - would not do them

Motivations

Creativity

Visually seeing outcomes (such as through front end development)

A lot of money

Empathy Map



Conclusion

From all our testing, our card sorts showed how participants' perceptions of jobs were based on many factors, including stereotypes, interests, familiarity, and of course, bias. Prestige tended to align with buzzwords, aspirations, well established titles, and financial rewards. Interest in the job was more related to, well, personal interest, as well as excitement, repetitiveness, and even factors that tied back to prestige. Perceptions of how well adjusted someone in the role might be were mainly based on social interaction and time spent away from a screen or a typical desk job. Overall, these sorts have shown us that each job title carries its own persona, shaped by assumptions about the work, passions, and lifestyle associated with it.