

## **Speed Dating Analysis and Matching Recommendation Systems**

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The goal of our analysis is to find out the correlation or patterns in speed dating to build strategies for a matching recommendation system. What kind of elements people are looking for when they are choosing dating partners? We had a close look into people's preferences. Are there any preferences people set up in the first place, such as same race, same religion, common interests? Are there any characteristics that people would consider important when looking for partners, including attractive appearances, intelligence, sense of humor, ambition, sincerity? Based on our analysis, we built up recommendation systems. Through which, we aim at providing people with good matching recommendations and better first happy dating experiences.

The team used the data sets from Kaggle (see the Appendix\_1 for the link) and performed three types of analytics which are descriptive analytics, predictive analytics, and prescriptive analytics.

First, our team split descriptive analytics into three phases: cleaning, summarizing, and visualizing. After cleaning the dataset, we found out that some certain attributes make an individual more attractive to others. Our team summarized the trends and patterns that were the foundation of our recommendation systems. Then, for visualizing, our group used plotdata function to display in an intuitive graph as to what the trends and patterns are contained within the dataset. Knowing the correlation between variables gave us key insights about the dating world.

According to the data, the age group between 23 to 29 (Appendix\_2) was the main demographic participating in speed dating. This group also had the highest matching rate. In addition, in our findings, we discovered that speed dating participants were from various work fields. Most of the participants were from law, social work, chemistry, psychology, and finance (see Appendix\_3 for the demographics of each field). For most of the respondents in this survey, they responded that they tended to find their dates who shared the same interests, who were in the same age group, and who were intelligent and funny (Appendix\_4). Interestingly, the survey

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also shows that the attributes they cared least about were the same race, attractiveness, and hobbies, such as reading, hiking, art, dining, and sports.

The second analytics that our group tackled was predictive analytics. After conducting descriptive analysis, our group had a relatively decent grasp of what patterns and trends the dating dataset contains. Based on the historical data summarized from the descriptive analytics, we identified key features and used them to match couples through our recommendation systems. Through the machine learning analysis (Appendix\_4), we found out that shared interest is the most critical factor that people look for in their partners. People value attractiveness, age, professional career, as well. Through these analysis we made decisions on how we build the recommendation systems for blind dating.

Lastly, our team conducted prescriptive analytics. Based on the findings, we built up two robust blind date recommendation platforms that are able to identify good matching people who have similar interests. Our primary recommendation system was designed to ask users to input age, gender, lifestyle, professional career, hobby, and the preferred pastimes, and then identify all the potential matched dates for users (Appendix\_5). Our secondary recommendation system, we ask users to input their gender, their date preference, and rate their interests on the seven hobbies listed below on a scale of 1-10. The program can then find all observations of people that share the same interests within the range and will print out the number of dates found, age and field of work/ study of matched partners (Appendix\_6).

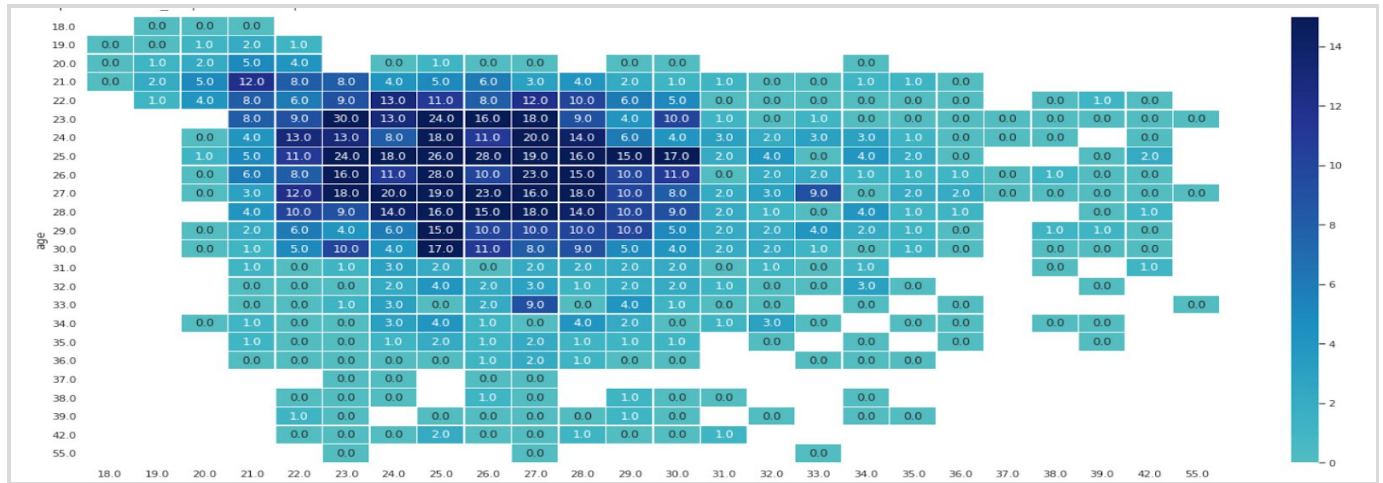
In closing, after the team performed descriptive analytics, predictive analytics, and prescriptive analytics, we are able to match the users with their preferences, which increases the matching rate and helps them find the life-long partner.

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<Appendix\_1> <https://www.kaggle.com/somesh24/speeddating>

<https://datahub.io/machine-learning/speeddating#attribute-information>

<Appendix\_2>



<Appendix\_3>



#### <Appendix\_4>

	feature	importance
12	shared_interests_o	0.395000
1	age_o	0.145472
20	clubbing	0.086523
5	pref_o_intelligence	0.085948
6	pref_o_funny	0.076571
16	museums	0.074710
4	pref_o_sincere	0.056023
0	age	0.046269
19	gaming	0.033483
14	exercise	0.000000
21	reading	0.000000
18	hiking	0.000000
17	art	0.000000
15	dining	0.000000
11	funny_o	0.000000
13	sports	0.000000
10	intelligence_o	0.000000
9	attractive_o	0.000000
8	pref_o_shared_interests	0.000000
7	pref_o_ambitious	0.000000
3	pref_o_attractive	0.000000
2	samerace	0.000000
22	tv	0.000000

#### <Appendix\_5>

```
print("\nPlease pick one of the following careers: ")
gps = str(input("Art, Biology/Chemistry/Ecology/Medicine/Engineering/Healthcare/History/Literature/Mathematics/Philosophy/Physics/Political Science/Psychology/Social Sciences/Visual Arts/Other: "))
perf = matched2[
    (matched2['Age'] == typ) &
    (matched2['Gender'] == gen) &
    (matched2[actH] == actH_rating) &
    (matched2[actH2] == actH_rating2) &
    (matched2["Career"] == gps)
]
else:
    perf = matched2[
        (matched2['Age'] == typ) &
        (matched2['Gender'] == gen)
    ]

print(f"\nThank you {name} for using our service.")
print(len(perf), "potential matches found!")
print("You can view all matches below:")
print(perf[["ID", "Race", "Sports", "Reading", "Concerts"]])

anotherEntry = input("Another entry? (y/n) ")
if anotherEntry == "n":
    break
print("Have a great time with your blind date(s)!")
```

Great! Now let's go over some preferences.

Interested in female or male? female

Do you want to have an active lifestyle? (y/n) y

Would you rather spend your time indoors at home? (y/n) n

Would you rather be indoors somewhere else? (y/n) y

Do you want your partner to have the same career? (y/n) n

Which activity is your favorite?

Sports, Exercise, Hiking, Yoga: Hiking

How would you rate it? (1-10) 10

Choose your favorite place to be:

Theater, Museums, Concerts, Night Club: Concerts

How would you rate it? (1-10) 10

Thank you James for using our service.

2 potential matches found!

You can view all matches below:

ID	Race	Sports	Reading	Concerts	
336	337	european/caucasian-american	3.0	7.0	10.0
337	338	european/caucasian-american	3.0	7.0	10.0

Another entry? (y/n) |

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<Appendix\_6>

```
Enter your gender: male
Enter your preference: female
Enter your interest in sports: 6
Enter your interest in exercise: 7
Enter your interest in dining: 6
Enter your interest in art: 4
Enter your interest in clubbing: 7
Enter your interest in music: 8
Enter your interest in shopping: 7

We found 86 potential matches:
Match 1 Female age 25.0 working in social work
Match 2 Female age 25.0 working in social work
Match 3 Female age 25.0 working in social work
Match 4 Female age 25.0 working in social work
Match 5 Female age 25.0 working in social work
Match 6 Female age 25.0 working in social work
Match 7 Female age 25.0 working in social work
Match 8 Female age 25.0 working in social work
Match 9 Female age 25.0 working in social work
Match 10 Female age 25.0 working in social work
Match 11 Female age 25.0 working in social work
Match 12 Female age 25.0 working in social work
Match 13 Female age 25.0 working in social work
Match 14 Female age 25.0 working in social work
Match 15 Female age 25.0 working in social work
Match 16 Female age 25.0 working in social work
Match 17 Female age 23.0 working in law
Match 18 Female age 23.0 working in law
Match 19 Female age 23.0 working in law
Match 20 Female age 23.0 working in law
Match 21 Female age 23.0 working in law
Match 22 Female age 23.0 working in law
Match 23 Female age 23.0 working in law
Match 24 Female age 23.0 working in law
Match 25 Female age 23.0 working in law
Match 26 Female age 23.0 working in law
Match 27 Female age 23.0 working in law
Match 28 Female age 23.0 working in law
Match 29 Female age 23.0 working in law
Match 30 Female age 23.0 working in law
Match 31 Female age 23.0 working in law
Match 32 Female age 23.0 working in law
Match 33 Female age 21.0 working in applied maths/econs

↓ ↓ ↓
Match 85 Female age 24.0 working in public health
Match 86 Female age 24.0 working in public health
```