

Analysis of user answers based on a scoring mechanism

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besample

tripleton

Content

Methodology

- The Origin and Methodology of the Project

Explore the User Answers

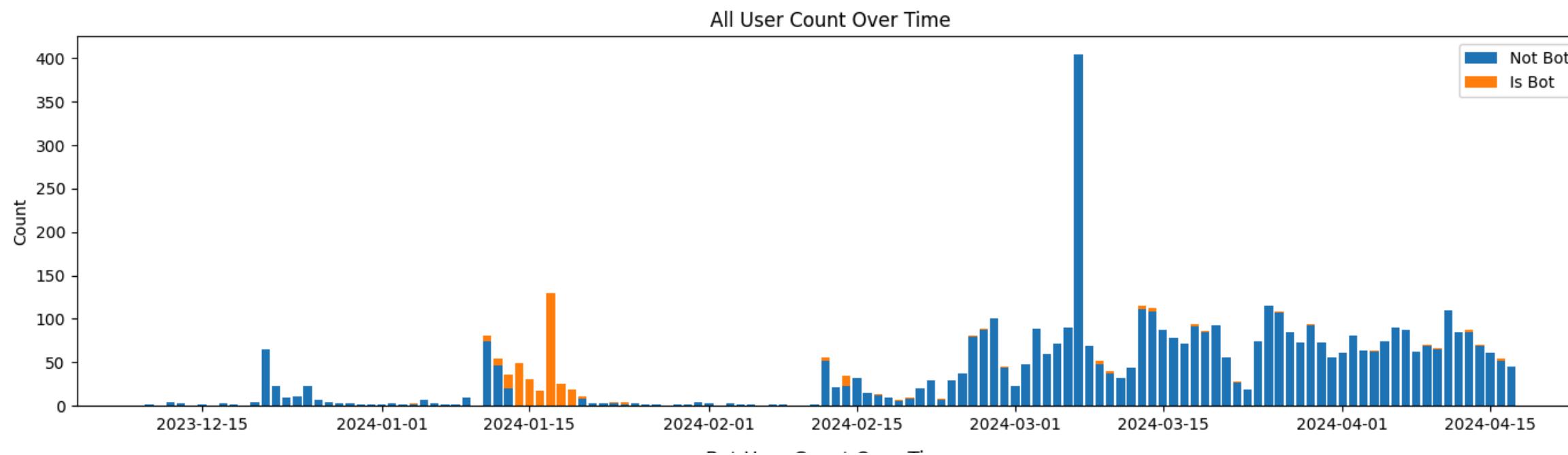
- Languages / Word Frequency
- Same Answers / Referral Ancestors
- IP Addresses and Registering Time
- Answer Patterns

Score Mechanism

Conclusion



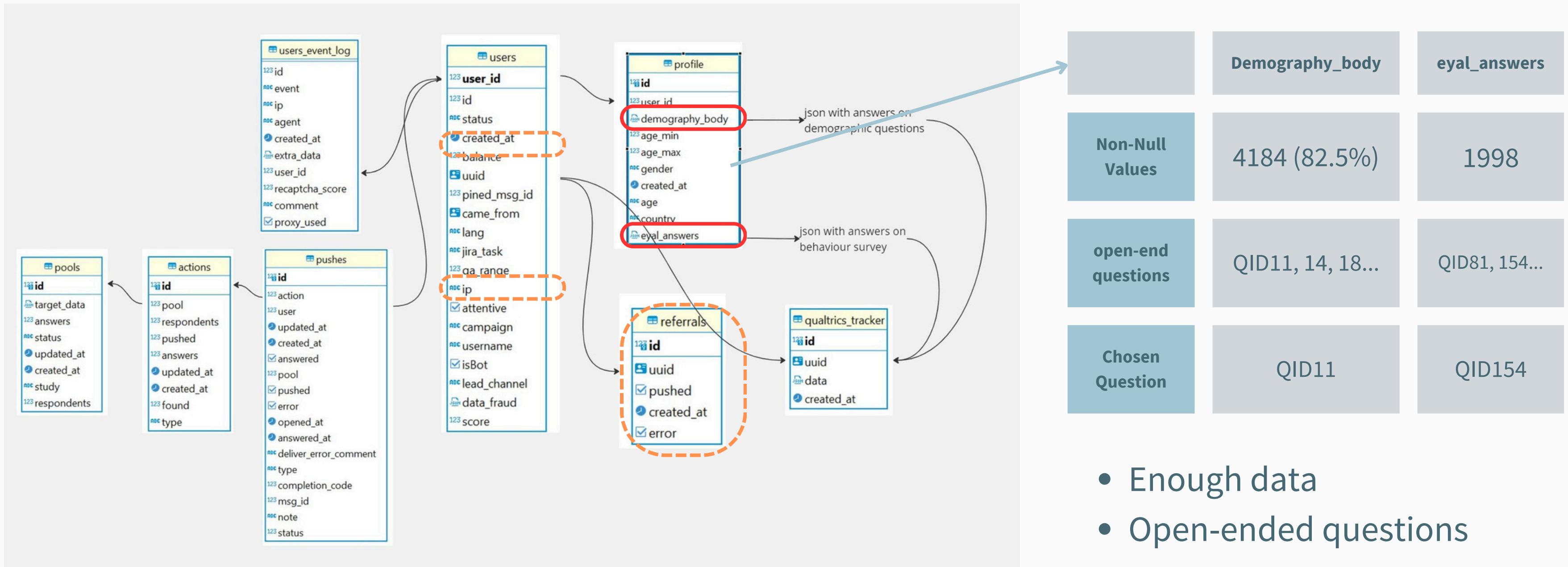
The Origin and Methodology of the Project



Challenges

- Realistic Bot users
- “isBot” limitation

Determine the dataset for researching



Explore the user answers data: Languages



Explore the user answers data: Word Frequency



QID 11 word cloud, 4500 words



QID 154 word cloud, 2300 words

Conclusion: Hard to extract fraud info from word frequency, except some adjectives

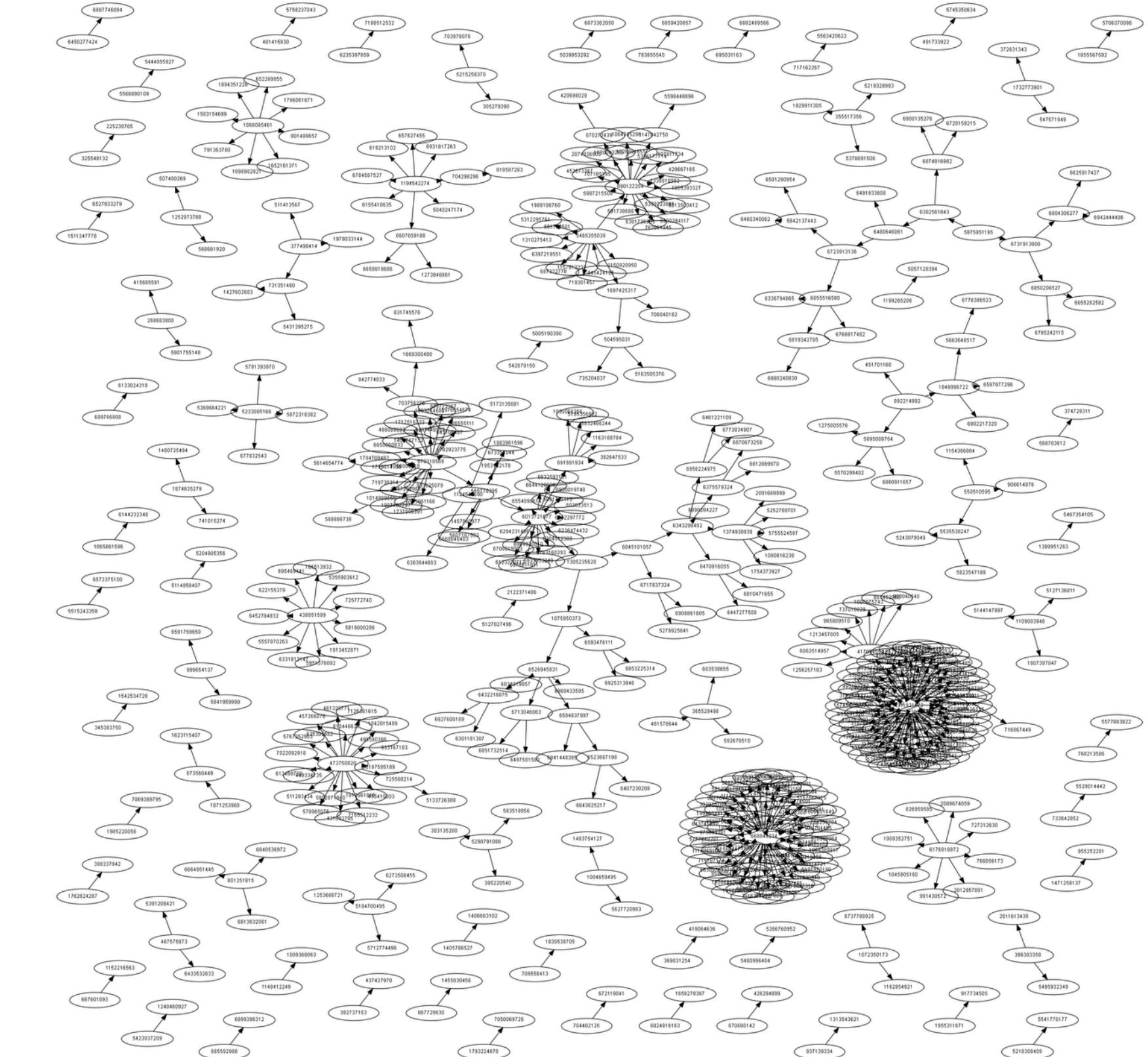
Note: The popular words such as “like”, “love”, “work”, “person” have been removed from the word cloud plots.

Explore the user answers data: Identical Answers

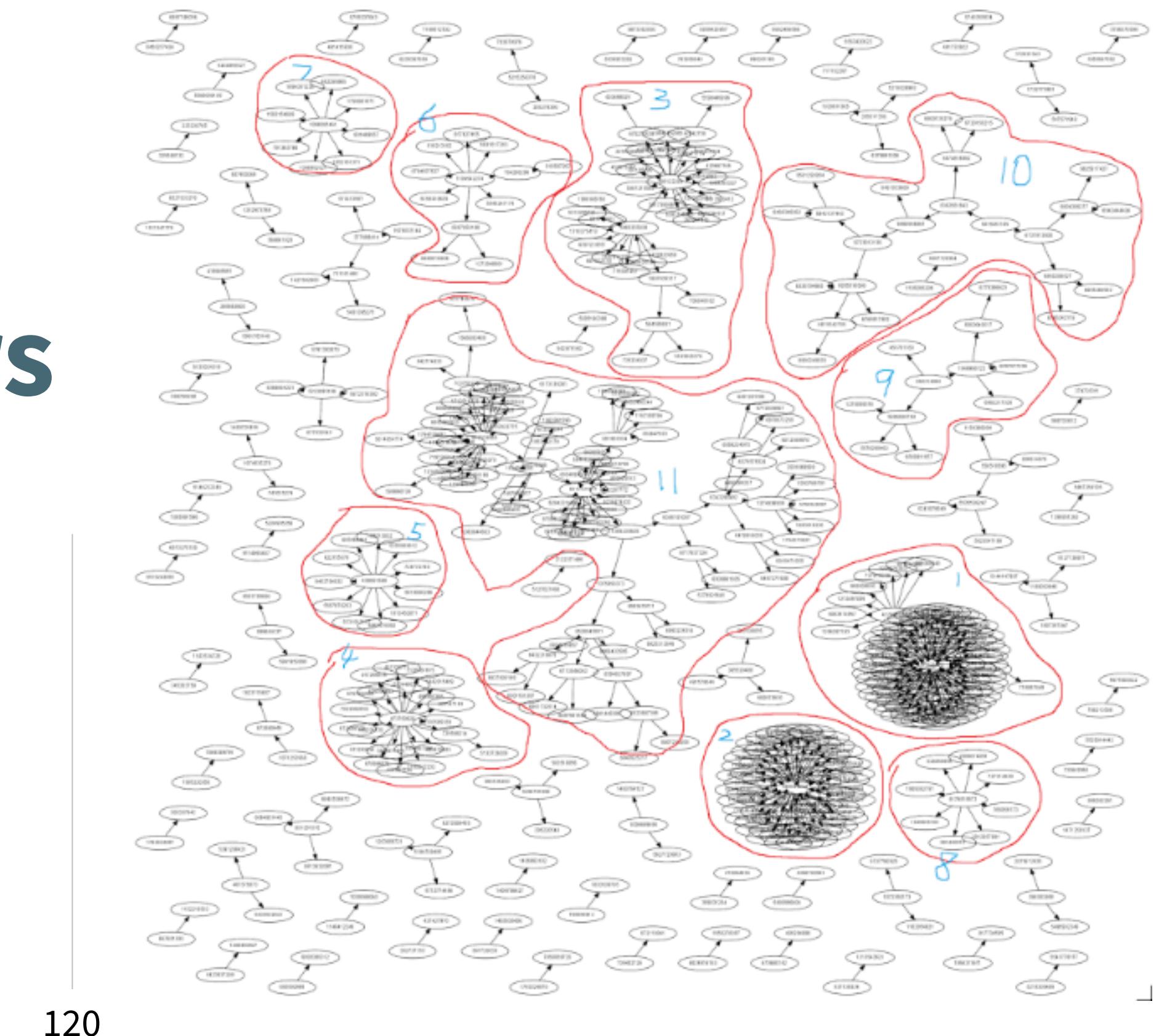
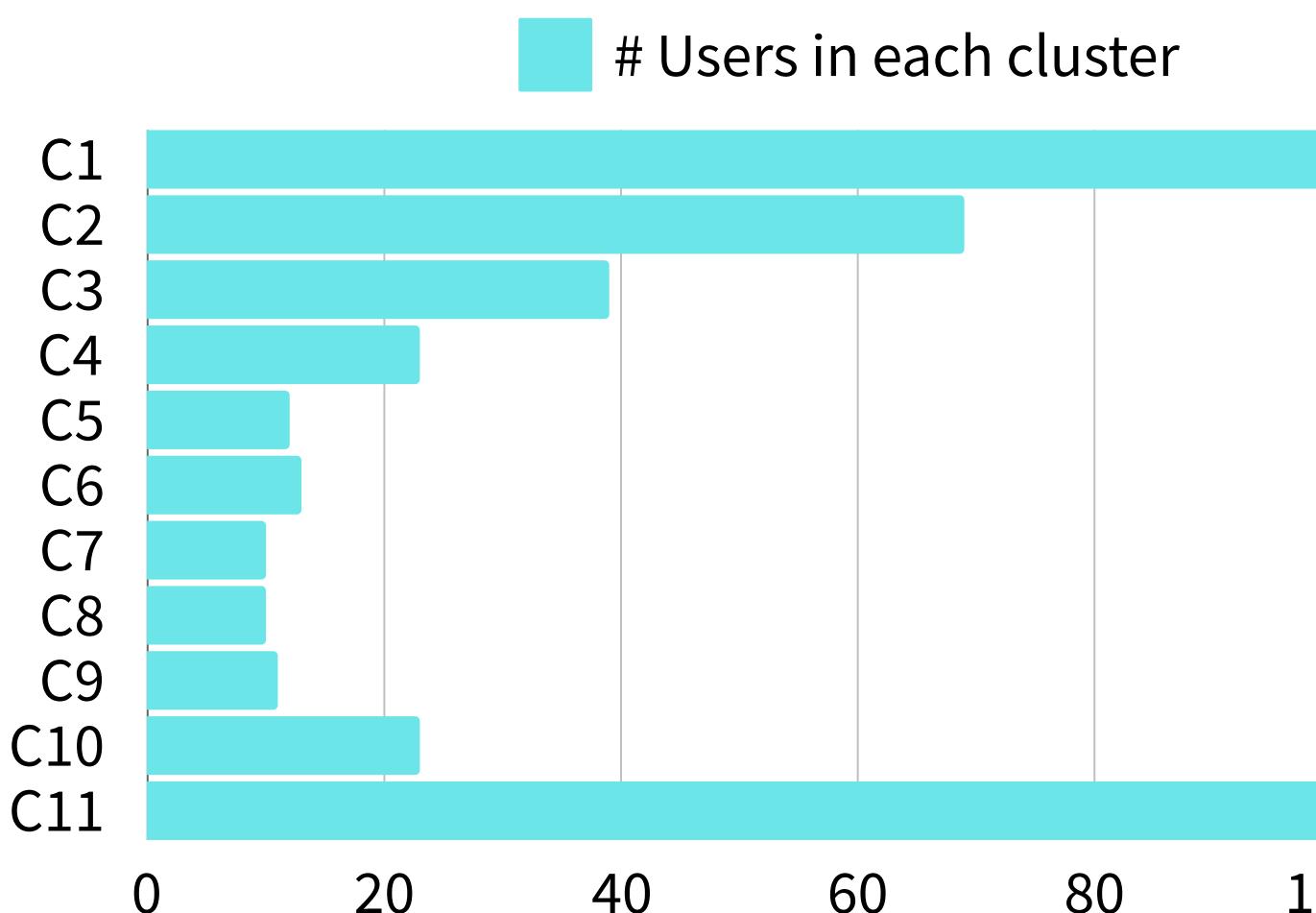
88.155.137.228	same IP with cluster	1/12/2024 12:48 norm
88.155.137.228	same IP with cluster	1/12/2024 14:27 norm
88.155.137.228	same IP with cluster	1/12/2024 12:52 norm
88.155.194.147	same IP	3/10/2024 7:12 Self-improvement, cryptocurrencies, business
88.155.194.147	same IP	3/10/2024 6:38 Self-improvement, cryptocurrencies, business
88.155.194.147	same IP	3/9/2024 17:56 Self-improvement, cryptocurrencies, business
88.155.194.147	same IP	3/9/2024 18:10 Self-improvement, cryptocurrencies, business
88.155.194.147	same IP	3/12/2024 10:22 Self-improvement, cryptocurrencies, business
88.155.194.147	same IP	3/9/2024 19:09 Self-improvement, cryptocurrencies, business
88.155.194.147	same IP	3/9/2024 17:49 Self-improvement, cryptocurrencies, business
88.155.194.147	same IP	3/11/2024 17:58 Self-improvement, cryptocurrencies, business
88.155.194.147	same IP	3/7/2024 16:13 Self-improvement, cryptocurrencies, business
88.155.194.147	same IP	3/7/2024 16:20 Self-improvement, cryptocurrencies, business

Conclusion: Same answers can be identified easily, but there are only 40 same answers in QID 11

Explore the user answers data: Referral Ancestors



Explore the user answers data: Referral Ancestors



Explore the user answers data: Referral Ancestors

1/17/2024 17:53 As a 21-year-old Ukrainian with the status of "Looking for a job" and a specialization in th
1/17/2024 16:17 As a 22-year-old Ukrainian working full-time in the field of social sciences, I describe mys
1/17/2024 18:19 As a 22-year-old Ukrainian, I work full-time in the field of science, technology, engineerin
1/17/2024 18:05 As a 23-year-old Ukrainian who is self-employed in the field of marketing and sales, I can
1/17/2024 18:13 As a Ukrainian aged 19 and employed in the field of transportation, distribution and logis
1/17/2024 18:23 As a Ukrainian looking for a job in the field of art, I have the following personality traits:1.
1/17/2024 22:21 As a Ukrainian with the status "Looking for a job" in the field of marketing and sales, I des
1/17/2024 16:30 As a Ukrainian, at the age of 21, I am self-employed in the field of marketing and sales. Th
1/17/2024 17:54 As a Ukrainian, I am 18 years old and have the status of self-employed. My main field of e
1/17/2024 15:53 As a Ukrainian, I brought with me work culture, responsibility and principles. In addition,
1/17/2024 21:49 As a Ukrainian, I consider myself a responsible and hardworking person. Thanks to my sel
1/17/2024 17:58 As a Ukrainian, I consider myself a responsible, hardworking and purposeful person. Ever
1/17/2024 22:12 As a Ukrainian, I consider myself energetic, hardworking and responsible. I always have a
1/17/2024 15:59 As a Ukrainian, I feel a deep sense of patriotism and am proud of my country. In my 23 ye
1/17/2024 21:56 As a Ukrainian, I feel a deep sense of patriotism and love for my country and national cult
1/17/2024 18:18 As a Ukrainian, I value my national identity, culture and language. I would like to practice
1/17/2024 17:58 As a Ukrainian, I will gladly tell you about my personality, my attitude to work and my favo
1/17/2024 22:27 As a young Ukrainian, I am engaged in marketing and sales as a self-employed person. I w

Examples from Cluster 10

3 I am a person who loves life!!! I am interested in learning something new. I love active recreation
3 I am a responsible and diligent person!
5 I am a responsible, Czech person who treats everything with great responsibility. I like my job. I lil
7 I am a very friendly person, I love communication. I love animals)
5 I am active, attentive and responsible towards any type of activity. Favorite type of activity - main
5 I am an open, sincere, hardworking person. She worked as a salesperson, took responsibility for I
4 I am creative, creative, positive and take responsibility for my work
0 I am currently on maternity leave, but I am trying to work through Instagram. I enjoy selecting an
4 I am punctual and responsible. I like to learn something new. I am a creative person.
5 I am purposeful, I like to learn something new, I read a lot, I work a lot
4 Responsible and always ready to work
4 Responsible for work, in my free time I read and watch movies
4 Responsible, attentive, idealistic. I always diligently perform any wo
4 Responsible, competent,
4 Responsible, honest answers
4 Responsible, I like to cook, sew clothes, embroider pictures, grow fl
4 Responsible, I love communication

Examples from Cluster 2

Conclusion: Can find similar answer patterns from “Cluster” users

Limitations: Only 1/10 of all users

Explore the user answers data: IP Addresses and Registering Time

IP Address	Date	Answer
188.163.114.145	1/17/2024 18:24	Unfortunately, I cannot answer this question.
188.163.114.145	1/17/2024 18:37	Unfortunately, I cannot answer this question.
188.163.114.145	1/17/2024 17:53	Unfortunately, I cannot answer this question.
188.163.114.145	1/17/2024 18:04	Unfortunately, I cannot answer this question.
188.163.114.145	1/17/2024 18:04	Unfortunately, I cannot answer this question.
188.163.114.145	1/17/2024 18:13	Unfortunately, I cannot answer this question.
188.163.114.145	1/17/2024 21:56	Unfortunately, I cannot answer this question.

488 Users shared reduplicated IP, 82 of them with similar answers

3/13/2024 8:35	I like to learn something new, take surveys, take various courses, I like to sing, draw
3/14/2024 20:57	I like to listen to music, animals, walks in the park, excursions. Do-it-yourself decorative art
3/13/2024 14:53	I like to play computer games, cook and ride a bike
3/14/2024 20:54	I like to read art books, shopping. after the end of the war I plan to travel. cheerful and sociable
3/13/2024 15:17	I like to read books. I also play computer games.
3/14/2024 16:43	I like to read, I am responsible in my work, I can spend a lot of time if I am interested and I succeed in my goals
3/13/2024 21:16	I like to repair cars
3/13/2024 13:41	I like to take such surveys
3/13/2024 21:35	I like to travel, I work in the garden, I plant flowers. I get stuck on my phone
3/14/2024 13:25	I like to watch movies and series, I draw, but I also often try other hobbies, recently I started reading books
3/14/2024 16:53	I like to work and I am happy if work brings not only pleasure but also income. Despite my age, I am still energetic and full of energy
3/13/2024 14:57	I like to work and I like to earn money more
3/13/2024 19:02	I like to work and learn something new
3/13/2024 17:01	I like to work and try new things
3/13/2024 20:41	I like to work with children
3/14/2024 20:43	I like to work with children, pets and walks. I like to cook and go to the gym
3/13/2024 12:55	I like to work with children. To spend time together not only at school, but also to travel around the world
3/14/2024 17:01	I like to work with documents. I would really like to find a job closer to home
3/14/2024 20:18	I like to work with people, help them and work in the service industry
3/13/2024 6:02	I like working with people, constantly learning something new
3/14/2024 1:15	I love all your works) After all, they are related to people and the field of service. And communication is very important
3/13/2024 14:07	I love life and my family
3/13/2024 20:11	I love my family and Ukraine. I want and strive for development and financial stability
3/13/2024 17:55	I love my job
3/14/2024 10:13	I love my job very much
3/14/2024 21:12	I love my work
3/13/2024 19:41	I love my work
3/13/2024 19:52	I love my work
3/13/2024 15:17	I love my work and have an interesting hobby - knitting. I like to talk to people, but I prefer to spend time alone
3/14/2024 10:16	I love my work. I am interested in IT and banking
3/13/2024 15:11	I love nature. I try to do quality work.
3/14/2024 20:20	I love solitude. I treat work responsibly, but without enthusiasm. A calm atmosphere contributes to better performance
3/13/2024 17:42	I love the field in which I work, I try to constantly improve
3/13/2024 8:43	I love to embroider, it was my hobby since childhood and became the main job in adulthood

Similar answer patterns with the peak registering time

Explore the user answers: Similar Patterns

- The answers within one pattern are not exact same, but have **tiny differences**
- **Seems normal** during checking **single** answer text
- **If put them together**, can find some similar patterns

Conclusions:

Many user answers were **generated** by some key words or clause patterns.

1/17/2024 17:53	As a 21-year-old Ukrainian with the status of "Looking for a job" and a specialization in th
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1/17/2024 17:58	As a Ukrainian, I consider myself a <u>responsible, hardworking and purposeful person</u> . Ever
1/17/2024 22:12	As a Ukrainian, I consider myself <u>energetic, hardworking and responsible</u> . I always have a
1/17/2024 15:59	As a Ukrainian, I feel a deep sense of patriotism and am proud of my country. In my 23 ye
1/17/2024 21:56	As a Ukrainian, I feel a deep sense of patriotism and love for my country and national cult
1/17/2024 18:18	As a Ukrainian, I value my national identity, culture and language. I would like to practice

Responsible and diligent in performing tasks. I always try to do my job as well as possible. I like the
Responsible and disciplined, a good mother and wife, a creative person, a collector and restorer, I c
Responsible and friendly. I love paper work. I easily find contact with people.
Responsible and hardworking
Responsible and hardworking worker.
Responsible and honest. Attentive and striving for the ideal in everything
Responsible and interesting person. Like travelling. But I admire nature
Responsible and persistent
Responsible and punctual person
Responsible and punctual person. I treat work with the same responsibility. I like to study. Get new
Responsible and punctual. I calmly accept other people's mistakes, but I punish myself for any mist
Responsible and punctual. I love my work
Responsible and purposeful
Responsible and purposeful
Responsible and purposeful
Responsible and purposeful. I make time for work, where it takes first place. I am engaged in sports
Responsible at work. But I like more lively work. I like to sing and learn something new

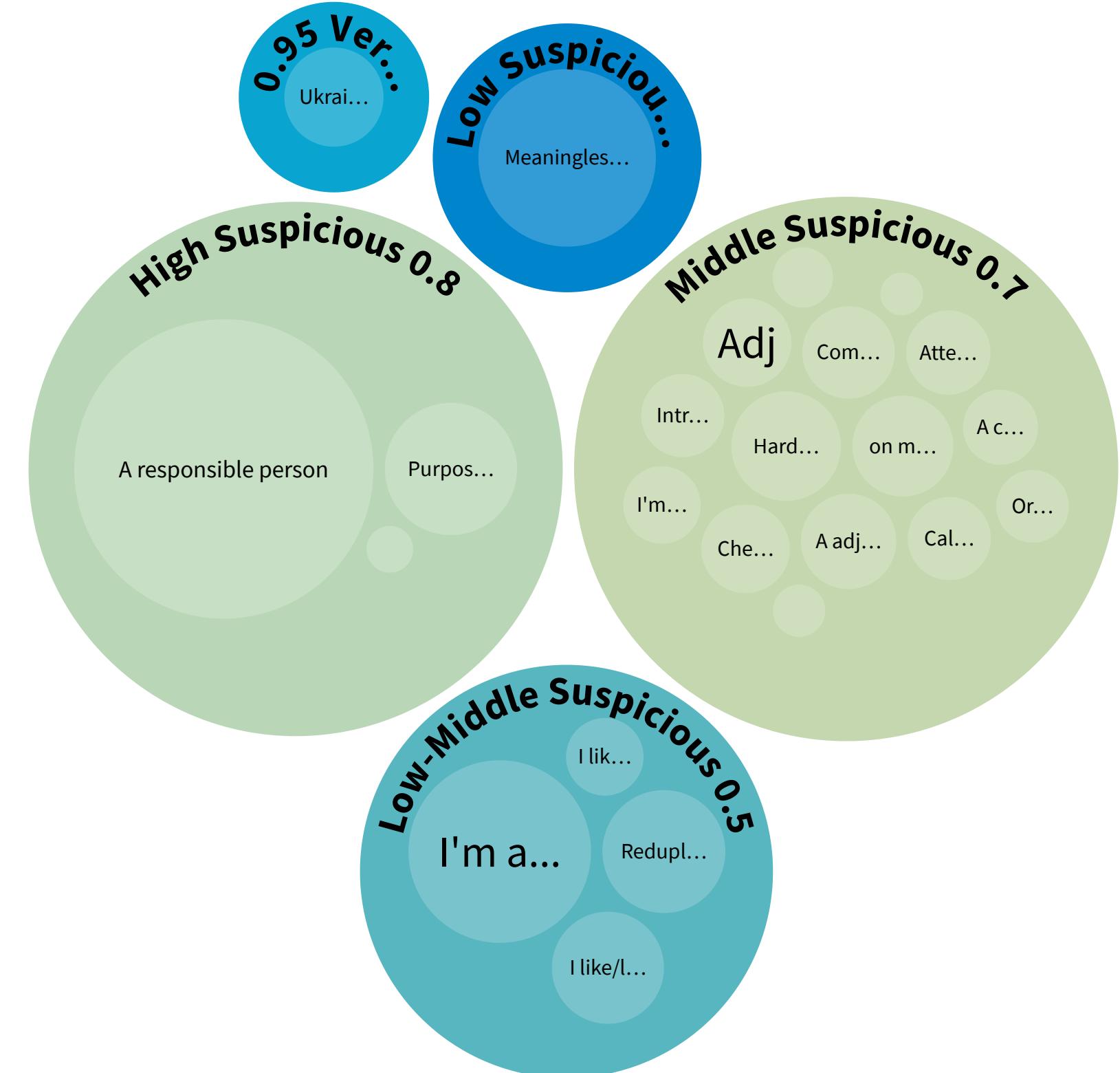
Explore the user answers: Similar Patterns

Finding:

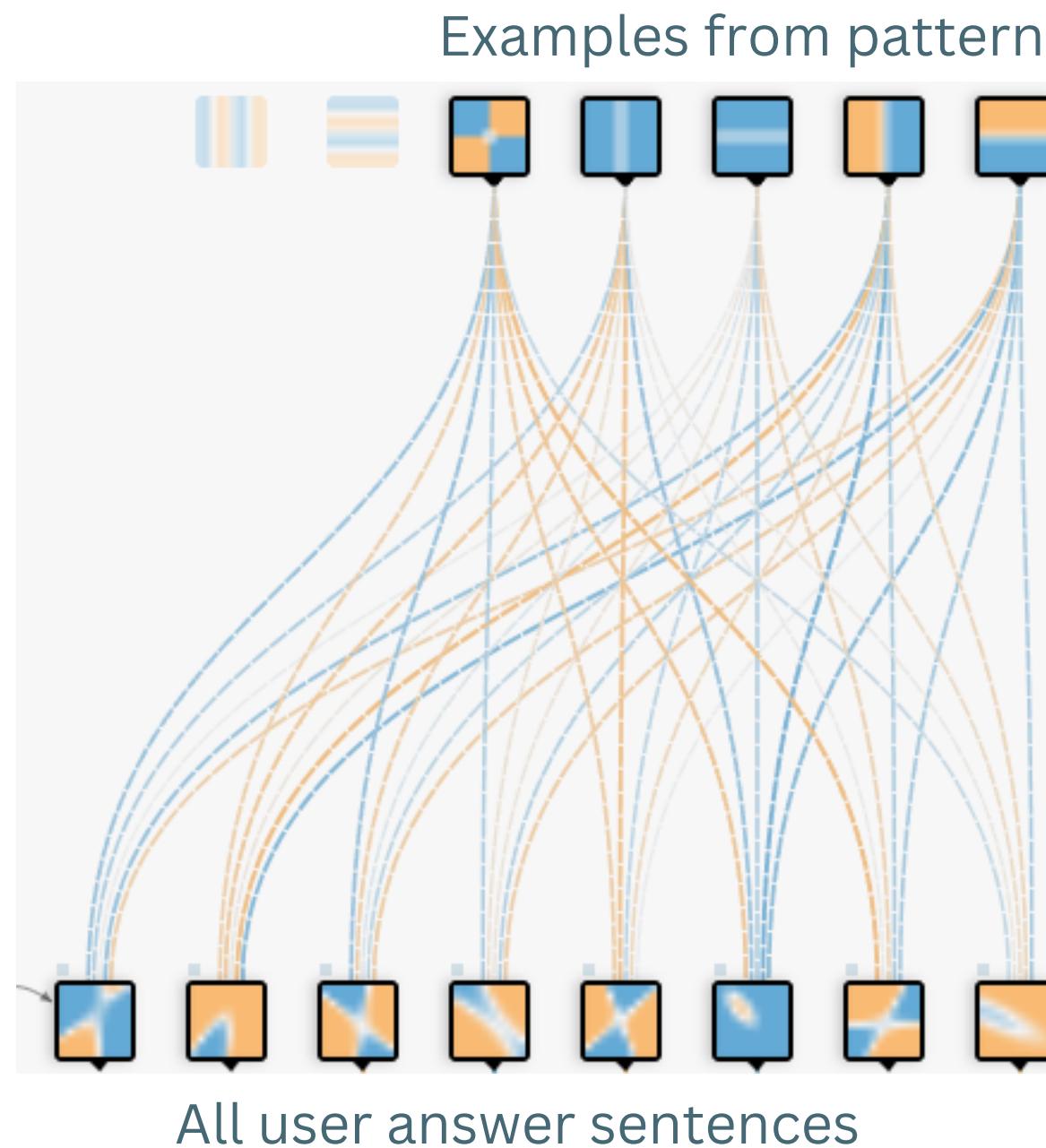
- 5 Suspicious levels
- 27 Patterns
- 1753 Users

Limitation:

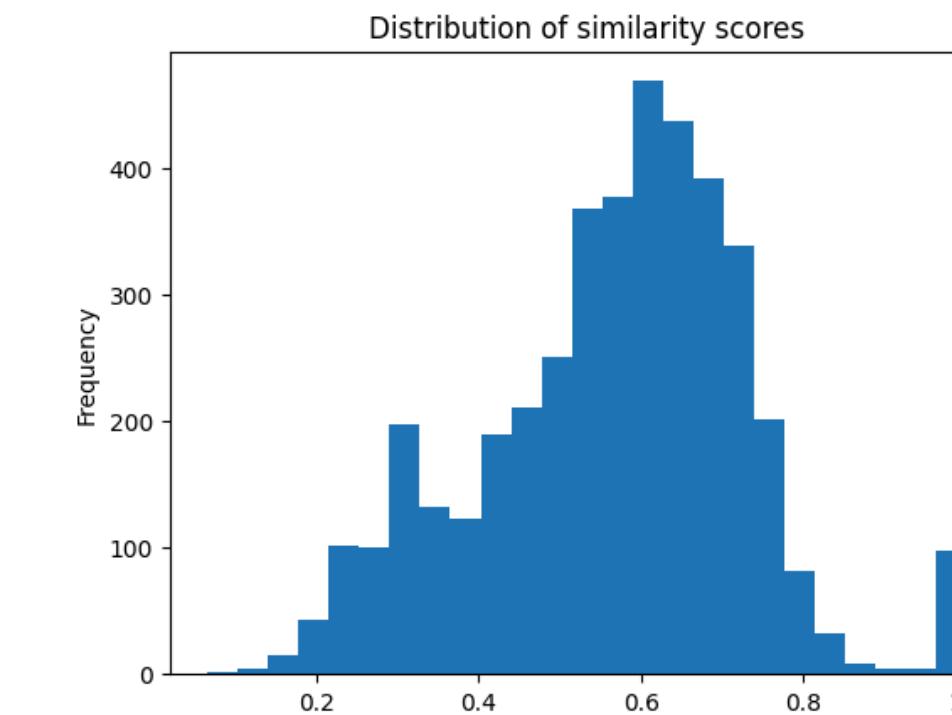
- Subjective judgment errors



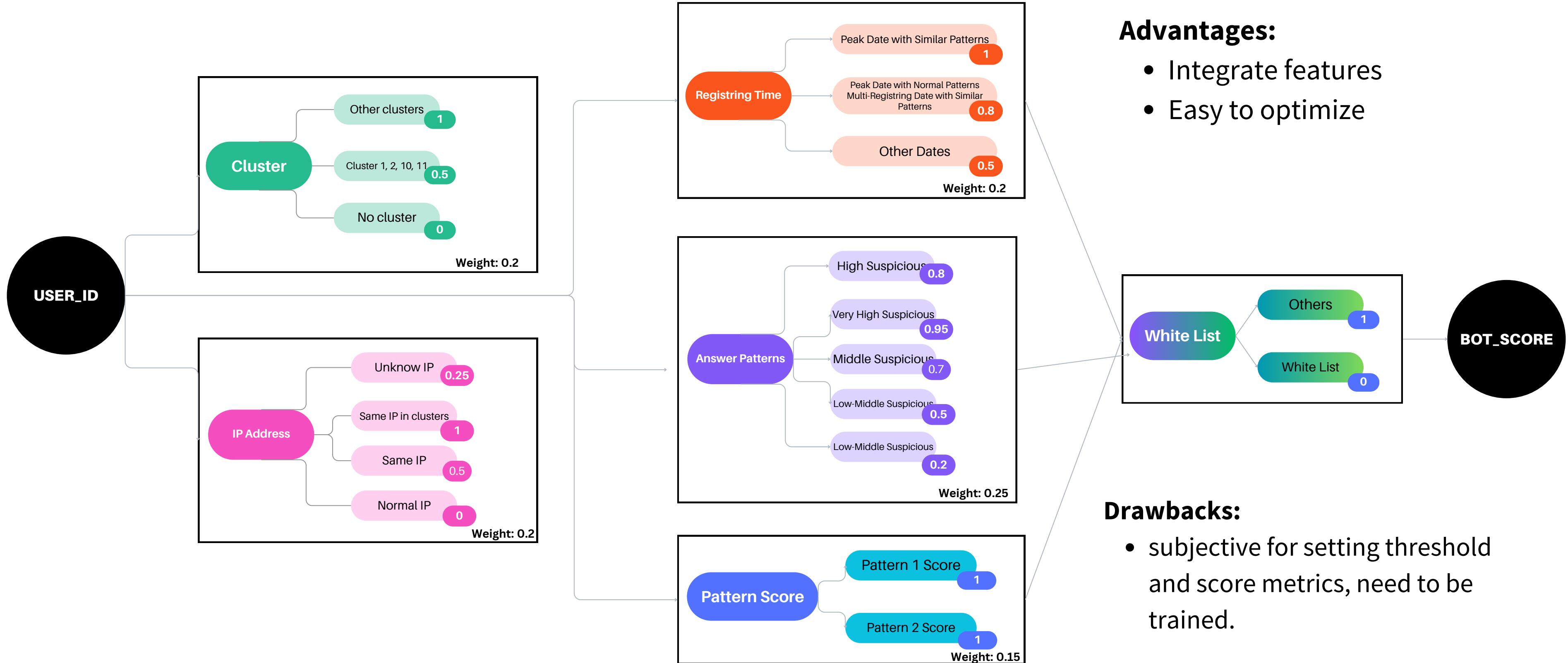
Explore the user answers: Similarity



- Pick 118 **examples** from patterns
- **Calculate similarity** of each user answers
- If **put them together**, can find some similar patterns
- **Model:** sentence-transformer based on BERT



Scoring Mechanism

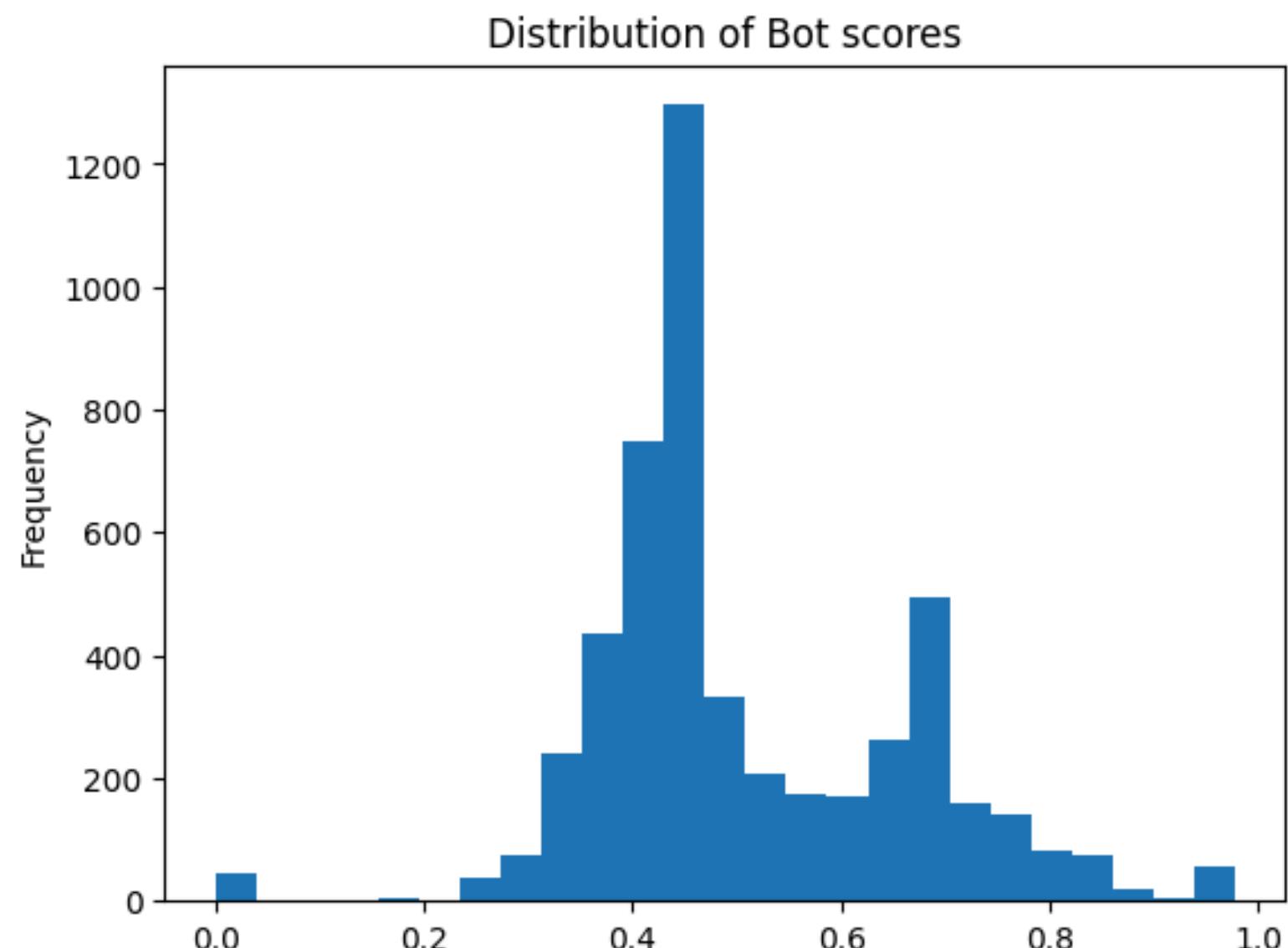


Estimate The Final Score

Threshold = 0.7

Predicted Bot user = 755

Evalued by “isBot” = 40%



Next Steps:

- **Optimize the scoring weights**
- **Add other important features to the scoring system**
- **Find better models to train the similarity score.**

Q & A

