

Rhythmic Unicorn

Building a music suggestion database through gamified crowdsourcing

Duy Nguyen
David Schabelski





1. Overview

1. Overview

- Our project: A Gamified Crowdsourcing application that relates similar songs with one another.
- The app is unique, as in there hasn't been any similar project.
- We'll take a look at the effectiveness of gamification by analyzing user's emotions.
- Conducted an experiment with ten individuals and surveyed them using the PAD Emotional State Model.
- Favorable results.
- Other findings & data.





2. Implementation



2.1. Game design

Survey Mode

- Given a song.
- Challenge: List out similar songs.
- Time limit: 5 minutes.
- Only *seed songs* can appear.
- Gain Tokens for each answer.

Quiz Mode

- Given 10 pairs of song.
- For each pair, rate if the two songs are similar. (Yes / No)
- Gain Tokens for rating every pair.



2.2. Database Visualization

Song

< Information taken from Spotify >

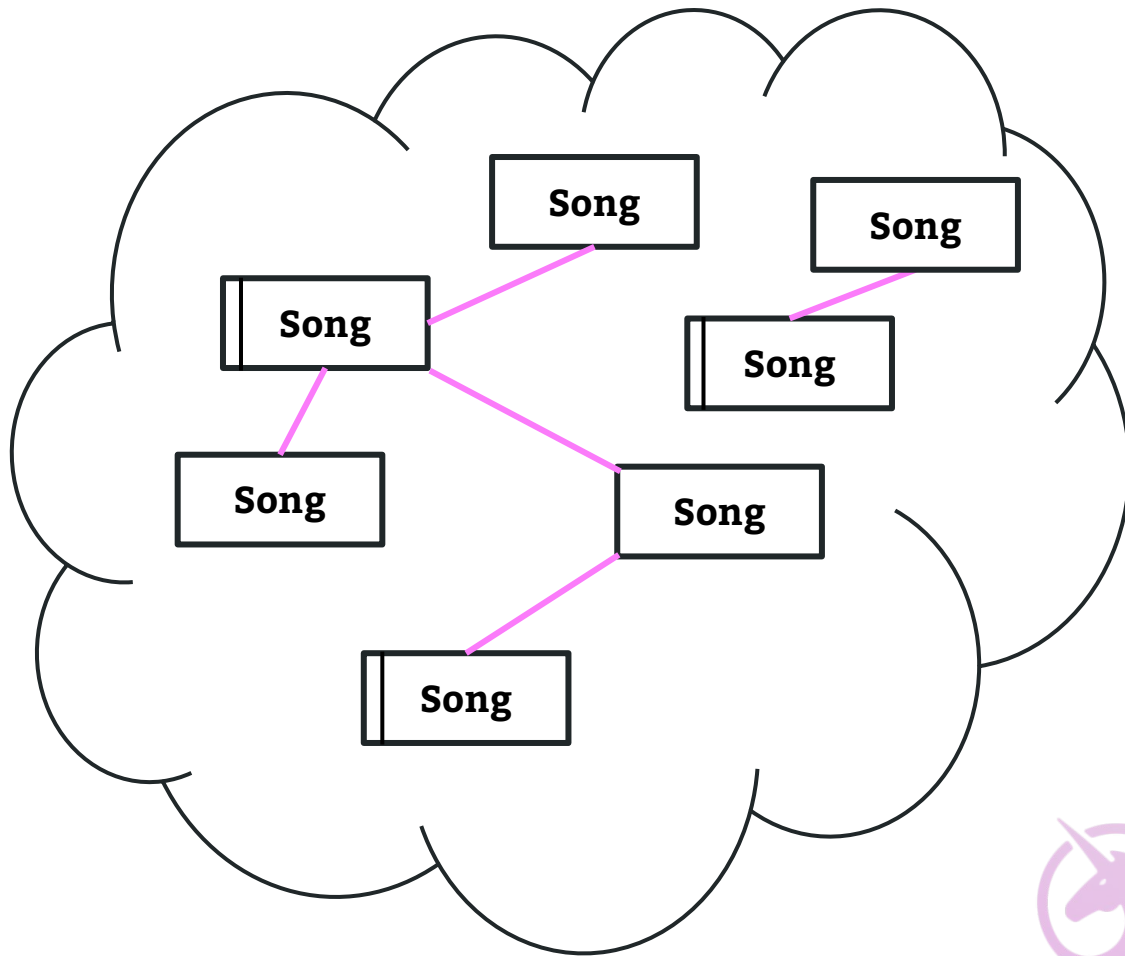
Relation

[songId1, songId2]
upvote, total, ratio

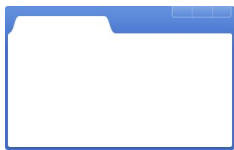


2.2. Database Visualization

- **Songs** = nodes
- **Relations** = edges
- Seed songs & Normal songs



2.3. Full Stack Visualization



**Frontend
Client**



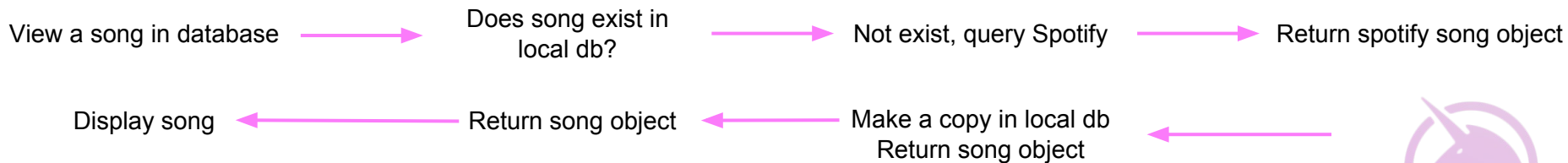
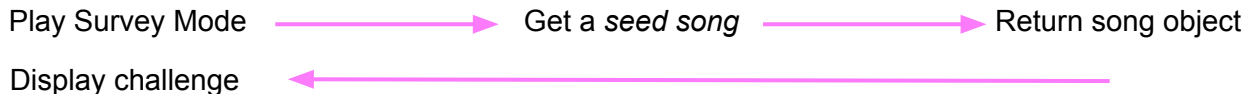
**Backend
Server**



Database



3rd Party API



2.3. Full Stack Visualization



**Frontend
Client**



**Backend
Server**



Database



3rd Party API

"These 3 songs
are related"



Does all songs
exist in local db?



1 exists, 2 doesn't



Return 2 spotify song
object

All songs now exist.
Make a new relation.



Make copies in local db



Relation is made.
Return relation object



Display score



Calculate score
Return score



2.4. Rating the relations

- Question: How do we rate the strength of relation between songs?
- Everytime a song is listed in Survey Mode: **upvote**
- Everytime a relation is voted yes: **upvote**
- Strength of relation: $\% \text{ of upvote} / \text{total votes}$.
- Only calculate the strength after 10 votes.



2.5. Reward System

- If the relation is New (< 10 total votes) will reward 5 Tokens.
 - Otherwise, 1 Token for each contribution.
- **Survey Mode:** 25 Tokens
- **Quiz Mode:** 10 Tokens
- Approximately, about 80-100 Tokens every playthrough.



2.6. Shop / Progression System

- Flag a song as seed song. (“Ask a song” / “Request Contribution”)
 - 700 Tokens
- Browsing the database (one song at a time)
 - 100 Tokens
- Ability to play only Survey Mode or only Quiz Mode.
 - 500 Tokens



Online Demo! unicorn.anythingbut.me

Rhythmic Unicorn

Play games, get music suggestions!

PLAY NOW

More Info

Extra





3. Experiment & Results

3.1. The Experiment

- Ask participants to play the game.
- Brief introduction to the study and the application.
- Play through twice.
- Provided clarification only when asked.
- Post-play survey to measure enjoyment.



3.2. The Survey

Post Survey for Rhythmic Unicorn

Please rate your experience with the application based on how it made you feel.

Annoyed	1	2	3	4	5	6	7	8	9	Pleased
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Unsatisfied	1	2	3	4	5	6	7	8	9	Satisfied
-------------	---	---	---	---	---	---	---	---	---	-----------

Relaxed	1	2	3	4	5	6	7	8	9	Stimulated
---------	---	---	---	---	---	---	---	---	---	------------

Calm	1	2	3	4	5	6	7	8	9	Excited
------	---	---	---	---	---	---	---	---	---	---------

Controlled	1	2	3	4	5	6	7	8	9	Controlling
------------	---	---	---	---	---	---	---	---	---	-------------

Influenced	1	2	3	4	5	6	7	8	9	Influential
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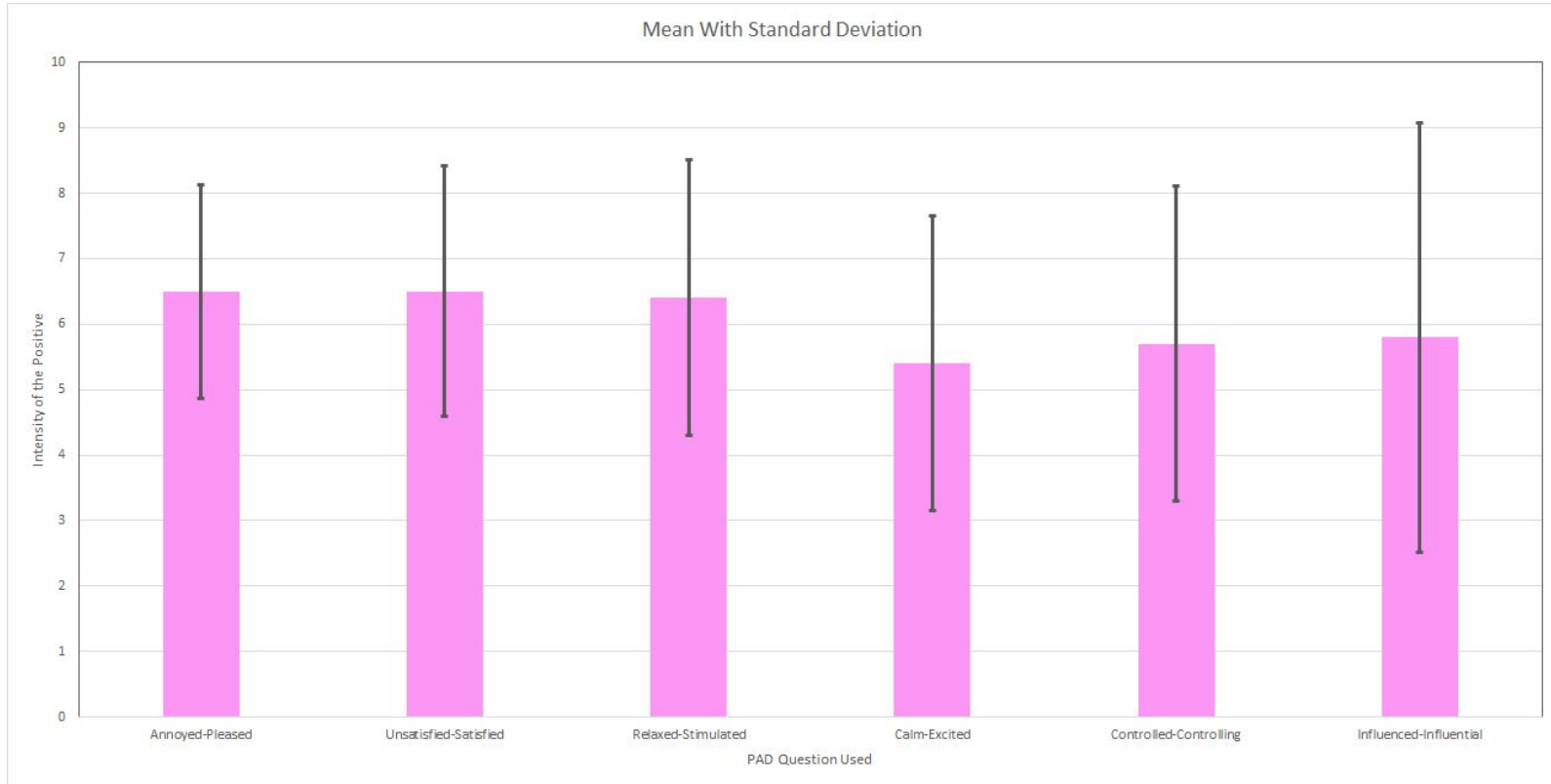


3.3. Results

Question Asked	Mean	Standard Deviation	95% CI for Mean	Percent Chance of it Being Negative
Annoyed-Pleased	6.5	1.72	5.4-7.5	0.01%
Unsatisfied-Satisfied	6.5	2.01	5.2-7.6	0.23%
Relaxed-Stimulated	6.4	2.22	5.1-7.7	0.23%
Calm-Excited	5.4	2.29	4.0-6.8	12.6%
Controlled-Controlling	5.7	2.54	4.1-7.1	7.5%
Influenced-Influential	5.8	3.46	3.7-7.7	12%



3.3. Results (Mean and SD)





4. Other findings & data

4.1. Database Statistics

- Initial database
 - 12 seed songs.
 - For each seed songs, 2 sample relations.
 - Total: 36 songs, 24 relations.
- Database status as of today (05/22/18)
 - Total songs: 185
 - Total seed songs: 13
 - Total relations: 172
 - Average votes per relation: 4
 - Average relations per seed song: 13
 - Anomalies: 3 or 4 relations have 30-60 votes, but among those only 1-2 upvotes.



4.2. But do people want to play it?

- Observation: People liked the idea, but only play it once or twice.
- Possible reason:
 - Learning curve to the game.
 - No immediate results.
 - Limited music knowledge.
 - Being a test.
- Possible changes:
 - More approachable experience.
 - Highscore system to add competition.
 - More meaningful feedback.



4.3. Further Study

- Modify the PAD model further for more accurate.
- Conduct study on a larger scale.
- Keep an eye on the growth of the database.



Thanks for listening!

