Assignment 3 – Deep Learning

1. Overview

This project aims to generate song lyrics from melodies using deep learning techniques. By combining melodic input with initial seed words, the system creates lyrics that are both imaginative and contextually relevant. This report details the methodologies applied, presents the results achieved, and evaluates the performance of various model configurations used in the process.

2. Methodology

2.1. Data Preparation & Cleaning

2.1.1. We received a CSV file containing lyrics for 600 songs designated for training and 5 songs for testing. Additionally, we were provided with corresponding MIDI files for each song, which included information such as tempo, instrument details (e.g., drums), and timing data. To improve word representation in our model, we utilized Google's pre-trained **Word2Vec model**, which was trained on a large text corpus. We employed 300-dimensional word embeddings.

2.1.2. In addition to leveraging Google's pre-trained Word2Vec model, we built a custom vocabulary from the training dataset to support our model's text processing. This involved cleaning the lyrics by removing punctuation and special characters using a predefined set of filters. The cleaned lyrics were then tokenized into individual words, and each unique word was added to a vocabulary set. After discarding any empty strings, we calculated the total vocabulary size, adding one extra token to accommodate padding or unknown words. To facilitate efficient conversion between text and numerical representations, we constructed two mappings: `word2index`, which assigns a unique index to each word, and `index2word`, which performs the reverse mapping. These structures were crucial for preparing the lyrics data for input into the deep learning model.

2.1.3. Before incorporating the MIDI features, each word in the lyrics is represented by a 300-dimensional vector, and the model uses an embedding matrix of shape `vocab_size × 300` to map words to these vectors.

2.2. Data Analysis

This section presents a descriptive exploration of the song-lyrics corpus. We first quantify overall length and artist diversity, then measure lexical richness. Finally, we extract frequent n-grams and uncover high-level topics via LDA.

2.2.1. **Total songs**: 600

2.2.2. **Unique artists**:
- Training set: 227 artists
- Test set: 6 artists

2.2.3. **Average song length (in words)**
- Training set: 298.99 words/song
- Test set: 224.83 words/song

Songs in the train split are, on average, ~33 % longer than those in the test split.

2.2.4. **Lexical Richness**

Computed as #unique_tokens / #total_tokens for each song.

Overall mean lexical richness: 0.410 (± 0.18 SD) meaning that on average, about 41 % of the tokens in any given song are unique. In other words, roughly 4 out of every 10 words are "fresh," and the remaining 6 out of 10 are repeats (choruses, refrains, common filler words, etc.). The model must learn to balance two extremes—reproducing repeated motifs (e.g., "yeah yeah," "baby baby") and introducing fresh tokens when appropriate. A middling richness (≈ 0.4) means neither trivial repetition nor wholesale novelty dominates.

2.2.5. **Topic Modeling with LDA**

Applying Latent Dirichlet Allocation (LDA) with 5 top-level topics (10 passes over the corpus), on token sets that exclude stop-words and filter out words shorter than 3 characters, yields the following top-10 terms per topic:

1. **Topic 0:**
   "like" (0.011) · "just" (0.009) · "don" (0.008) · "got" (0.008) · "know" (0.008) · "man" (0.007) · "cause" (0.006) · "tell" (0.006) · "eyes" (0.006) · "dance" (0.005)

   Broad "core-pop" lexicon: expressions of emotional state (like, know), references to a "man," and dance-related imagery.

2. **Topic 1:**
   "ron" (0.014) · "let" (0.014) · "amadeus" (0.009) · "got" (0.009) · "pum" (0.009) · "heaven" (0.008) · "beat" (0.007) · "baby" (0.007) · "don" (0.007) · "try" (0.007)

   Mix of proper nouns ("Ron," "Amadeus") and club/dance motifs ("beat," "baby," "heaven"). Suggests a blend of 1970s/80s throwback tracks and dancefloor references.

3. **Topic 2:**
   "want" (0.017) · "just" (0.017) · "don" (0.016) · "like" (0.013) · "right" (0.011) · "know" (0.010) · "love" (0.008) · "mind" (0.008) · "got" (0.008) · "life" (0.006)

   A cluster around desire ("want," "love"), self-reflection ("mind," "life"), and shorthand phrasal constructs ("just," "don't," "like").

4. **Topic 3:**
   "baby" (0.024) · "like" (0.017) · "love" (0.017) · "time" (0.016) · "gonna" (0.016) · "come" (0.014) · "know" (0.014) · "heart" (0.011) · "want" (0.010) · "don" (0.010)

   Classic love-song vernacular: "baby," "love," "heart," coupled with colloquial "gonna," "come."

5. **Topic 4:**
   "love" (0.034) · "don" (0.021) · "know" (0.019) · "just" (0.018) · "say" (0.012) · "let" (0.012) · "yeah" (0.012) · "want" (0.010) · "cause" (0.009) · "make" (0.009)

   Heavily weighted toward romantic/emotional verbs ("love," "say," "make") and filler/discourse markers ("don't," "just," "yeah").

Because **"love"** appears as a top term in three out of the five topics, we see that **love and relational dynamics** dominate the corpus, followed by dance and refrain markers ("don't," "baby," "yeah"). The repeated presence of short, conversational tokens ("just," "don," "got," "know") underscores a dataset high in colloquial pop-song language rather than formal poetry. We'd expect to see a tendency of the model twards that during generation.

2.2.6. **N-Gram Analysis (Bigrams)**

Using a simple regex tokenizer (lowercased, English stop-words removed, tokens ≤ 2 characters filtered out), we extracted and ranked bigrams by frequency across the **training** corpus. The prevalence of repeated tokens—e.g., ("yeah", "yeah") and ("come", "come")—highlights the high degree of refrains, choruses, or emphatic utterances in popular lyrics. Self-reduplicated words (e.g., "love love" or "ooh ooh") are common stylistic devices in many genres, boosting the bigram counts. Semantic bigrams such as ("don", "know"), ("just", "like"), and ("good", "times") also appear often, reflecting conversational phrasing in lyrics.

2.3. __Model's Architecture__

2.3.1. In both approaches, we implemented a Long Short-Term Memory (LSTM) model, a variant of recurrent neural networks (RNNs) designed specifically for processing sequential data. Unlike traditional RNNs, which often struggle to capture long-range dependencies due to the vanishing gradient problem, LSTMs overcome this limitation through a series of gating mechanisms that regulate information flow. Each LSTM cell comprises four key components: a forget gate, an input gate, a cell state, and an output gate—working together to retain relevant information over time and discard what is no longer needed.

Long Short Term Memory (LSTM)
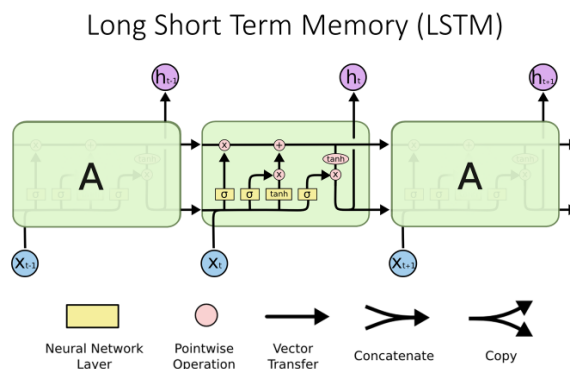
3. Implementation

3.1. **Overview**

In this section, we describe the overall architecture of our LSTM model and highlight the differences in how MIDI files are integrated into the lyrics generation process. While the core structure of the model remains largely consistent across both approaches, we focus on two distinct methods for incorporating MIDI data. The model is trained to predict the next word in a sequence based on a fixed-length context of preceding words along with the corresponding MIDI input.

3.1.1. **Core Structure**

- **Input Layer**: Each input vector is a concatenation of a 300-dimensional word embedding (from Word2Vec) and a MIDI feature vector (either 115D from method #1 or 17D from method #2). This results in an input feature size of input_size = 300 + midi_dim.

- **First LSTM Layer**: This layer processes the input sequence and captures temporal dependencies. hidden_size determines the dimensionality of the hidden state, which is 128 in our case.

- **Second LSTM Layer**: A second LSTM layer allows the model to learn more complex sequential patterns by further processing the output of the first LSTM layer.

- **First Linear Layer**: A fully connected layer that maps the LSTM output to the same hidden dimensionality. It is followed by a dropout layer to prevent overfitting.

- **Dropout Layer**: Randomly zeroes X% of the layer's outputs during training to regularize the model. Each element in the output vector represents the unnormalized log probability of a particular word in the vocabulary.

- **Output Layer**: The output is a probability distribution over the vocabulary, The model is optimized using cross-entropy loss, and training is performed using PyTorch with support for early stopping and logging via TensorBoard. Once trained, the model can generate lyrics by taking an initial sequence of seed words and the associated MIDI data, then iteratively predicting the next word using its previous output as input for subsequent predictions.

3.2. **Approach 1**
3.2.1. **Lyrics Generation Pipeline**
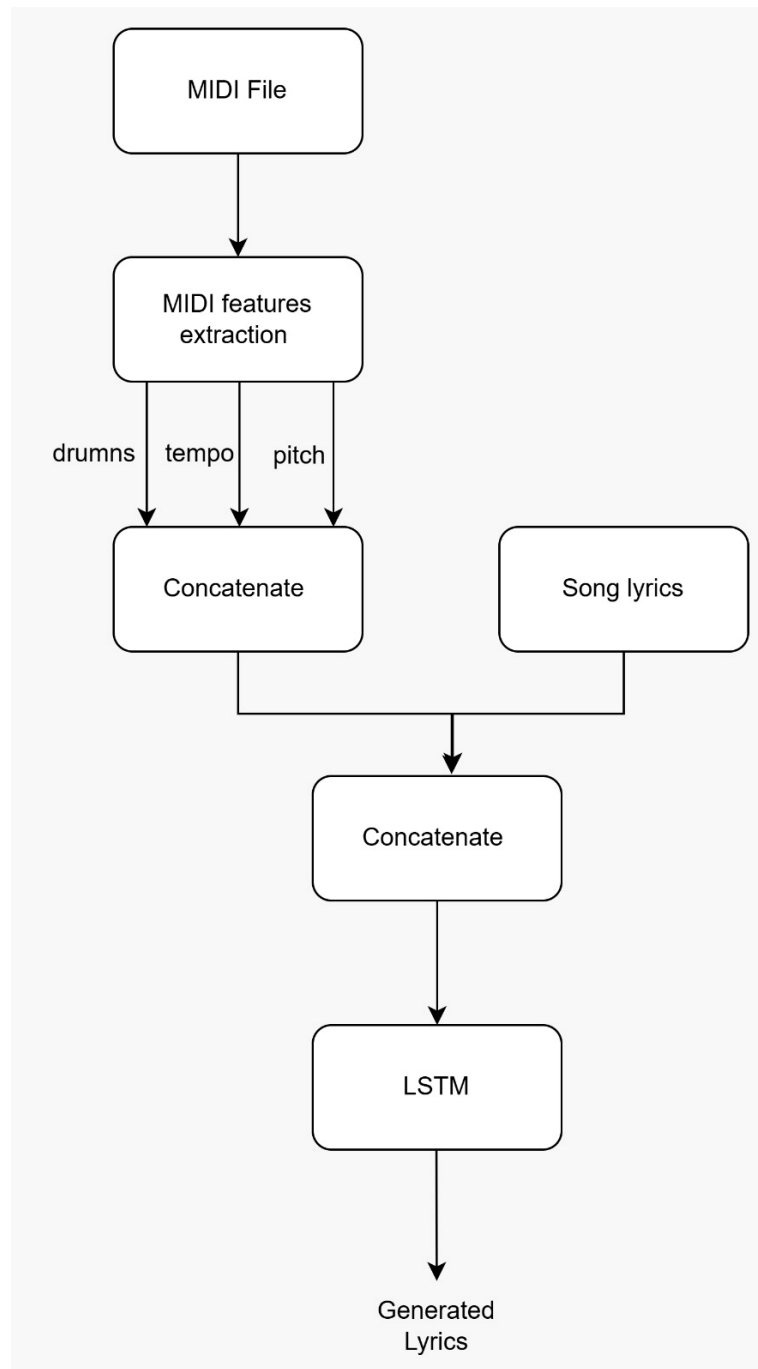
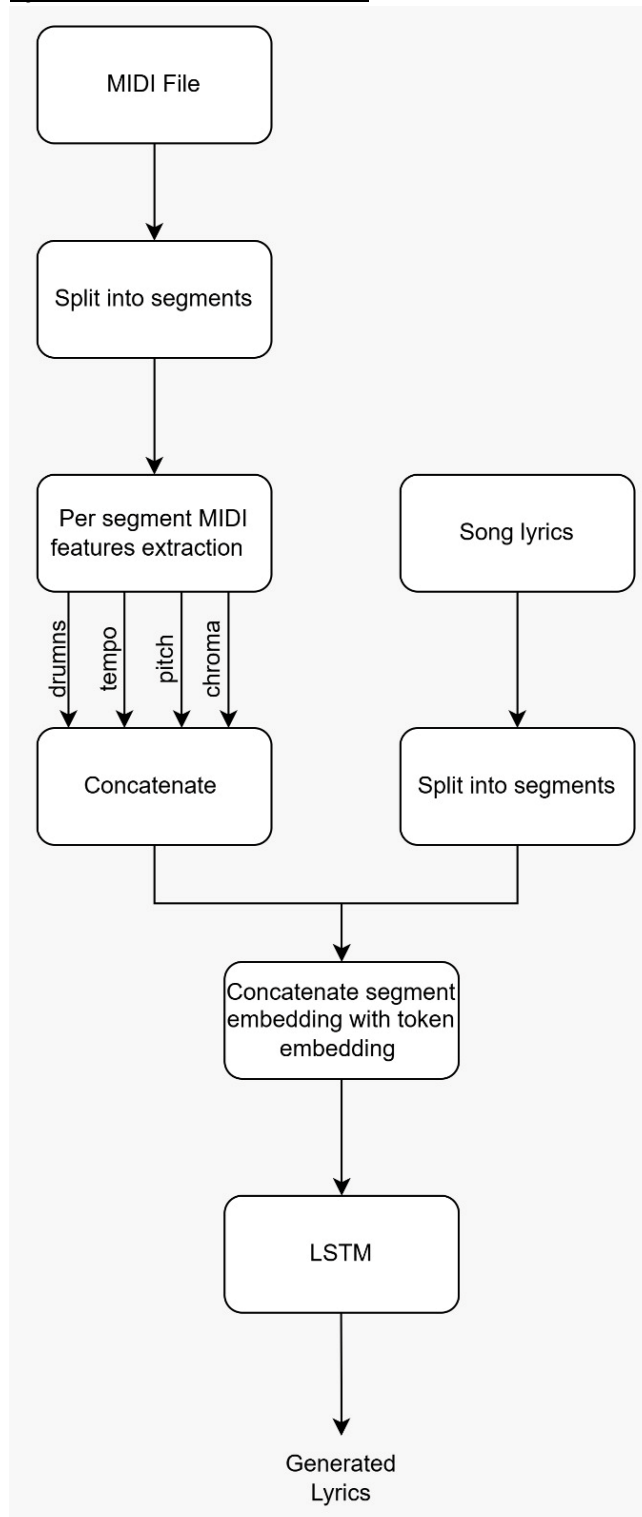#### 3.2.2. **MIDI Features Extraction**

In the first method, MIDI feature extraction is performed at the **whole-track level**, meaning that a single feature vector is computed for the entire song and repeated across all word tokens in the lyrics. For each song, the MIDI file is loaded and a fixed-length vector of 115 dimensions is created. This vector includes beat times, note-level statistics (start time, end time, pitch, and velocity), the estimated tempo, and a binary flag indicating whether the track contains drum instrumentation. All extracted data is either padded or truncated to ensure a consistent feature length of 115. This approach provides a global musical context for the lyrics, treating the MIDI characteristics as static for the duration of the song.

3.2.3. <u>Embedding Layer</u>

In the first method, each word in the lyrics is represented using a 300-dimensional vector obtained from a pre-trained Word2Vec model. These embeddings capture the semantic and syntactic meaning of words based on their usage in a large text corpus. The same fixed 115-dimensional MIDI feature vector—representing the overall musical characteristics of the track—is concatenated to each word embedding. As a result, the input to the model for each time step is a combined vector of dimension 415 (300 for the word embedding + 115 for the MIDI features). This uniform pairing of global MIDI context with every word aims to guide the model's word prediction with high-level musical cues.

3.3. <u>**Approach 2**</u>

3.3.1. <u>Lyrics Generation Framework</u>

3.3.2. <u>**MIDI Features Extraction**</u>

The second method we introduce a more dynamic approach by extracting MIDI features **specific to each word position** in the lyrics. The duration of the song is divided into as many equal time segments as there are tokens in the lyrics. For each segment, a 17-dimensional feature vector is computed that includes: the number of notes played, average beat timing, average note velocity, average pitch, and a binary drum-activity flag. Additionally, the mean chroma vector (12 bins) is calculated to capture the harmonic content within the segment. This results in a more fine-grained, time-aligned representation of the musical context, allowing the model to associate individual words with the specific musical characteristics present when they occur.

3.3.3. <u>**Embedding Layer**</u>

The second method also begins with 300-dimensional Word2Vec embeddings for each word in the lyrics. However, instead of pairing these with a single global MIDI vector, it concatenates each word embedding with a **segment-specific** 17-dimensional MIDI feature vector. These MIDI vectors reflect local musical context corresponding to the word's position in the song. This results in an input vector of dimension 317 (300 from the word embedding and 17 from the MIDI features) for each word. By aligning word embeddings with time-specific musical features, this method allows the model to learn more nuanced relationships between lyrical content and evolving musical elements.

The key difference between our two approaches lies not only in the specific MIDI features selected but also in how those features are paired with the lyrics. In Approach 1, a single, fixed MIDI vector is repeated for every word, providing a static, whole-song context. In contrast, Approach 2 aligns a unique MIDI feature vector with each word position, capturing a dynamic, time-specific musical context. Consequently, Approach 1 enforces a uniform embedding for all lyrics, while Approach 2 enables the model to learn nuanced correlations between evolving musical characteristics and individual words.

4. Experimental Setup

4.1. Learning process

During training we used **full teacher forcing**: at each time-step the decoder receives the *true* previous word embedding rather than its own prediction, a cross-entropy loss is computed over the next-word predictions (ignoring PAD tokens), and optimized with Adam with early stopping. Teacher forcing proved simpler and effective so we retained it for the final models.

4.2. Hyper-parameter tuning

Our experimental setup emphasizes thorough hyperparameter optimization to find the model configuration that achieves the lowest possible loss. We conducted a total of 63 distinct training runs, each with a unique set of hyperparameters, using the Optuna package. The combinations were informed by widely accepted practices in the deep learning community, and all are logged in W&B platform. The following ranges were explored for both models (method 1 & method 2):

Key	Search Space	Justification
LSTM Hidden Size	128 or 256	Standard sizes for balancing model complexity and speed
Learning Rate	{1e-2, 1e-3, 1e-4}	Common values for stable training across tasks
Weight Decay	{0.0, 1e-4, 1e-3}	Regularization to prevent overfitting
Dropout Rate	{0.2, 0.3, 0.5}	Mitigates overfitting while preserving signal
Optimizer	Adam (fixed)	Widely used for its adaptive learning capabilities
Batch Size	32 or 64	Trade-off between training speed and generalization
Loss Function	Binary Cross Entropy (fixed)	Standard for binary classification tasks

4.3. Early Stopping Mechanism

For the hyperparameter tuning phase using Optuna, we limited each run up to 50 epochs to keep the experiments efficient, while employing an early stopping patience of 20 epochs without improvement in validation loss. After identifying the top performing hyperparameter configuration for model, we retrained these selected models with an extended training setup. In this retraining stage, the maximum epoch count remained at 50, but we applied a stricter early stopping condition of 15.

4.4. Data Split

Using the CSV-level train-test split, we reserved 10% of the training data for validation.

4.5. **Evaluation Metrics for training**

Metric	Brief explanation	Value range & what it means	Best suited for / key strengths
Jaccard Similarity	Ratio of the size of the intersection to the size of the union of two **sets**. Often applied to sets of tokens, shingles, or features.	$0 \rightarrow 1$ (0 = no shared elements, 1 = identical sets). Negative values don't occur.	Comparing *set-like* data: keyword overlap, basket analysis, binary feature vectors, fast approximate deduplication. Robust to vocabulary size; ignores element frequency.
Cosine Similarity	Measures the cosine of the angle between two non-zero **vectors** in an inner-product space. Commonly used with TF-IDF or embeddings.	$-1 \rightarrow 1$ (-1 = opposite directions, 0 = orthogonal/unrelated, 1 = same direction). For non-negative vectors (e.g., TF-IDF) range is $0 \rightarrow 1$.	High-dimensional text or embedding similarity, information retrieval ranking, semantic search. Sensitive to direction (pattern of features) rather than magnitude.
Levenshtein Similarity (edit-distance-based)	Inverse of Levenshtein (edit) distance: the minimum number of single-character edits (insertions, deletions, substitutions) to transform one string into another, usually normalized to a similarity score.	Normalized form: $0 \rightarrow 1$ (0 = completely different, 1 = identical). Raw distance: $0 \rightarrow \infty$ where 0 = identical.	Fine-grained comparison of **short strings**: typo detection, fuzzy matching of names/IDs, DNA/protein sequences. Captures character-level changes; ignores semantic meaning.
Polarity Similarity	Compares the **sentiment polarity** (positive/negative/neutral) of two texts—often via the difference or correlation of polarity scores from a sentiment model.	Typically $-1 \rightarrow 1$ if using cosine or correlation on polarity vectors, or $0 \rightarrow 1$ if using absolute difference (1 = same sentiment). Interpretation depends on the chosen sentiment scale.	When you care about **emotional alignment** rather than lexical overlap: brand monitoring, matching replies to tone, stance detection. Works even on paraphrases with similar sentiment but different wording.

*We use **Jaccard** for quick set-overlap tasks like deduplicating lists of tags.
*We use **Cosine** for document ranking, semantic search, or clustering embeddings.
*We use **Levenshtein** for typo-tolerant look-ups, fuzzy joins, or genome sequence alignment.
*We use **Polarity Similarity** for tone alignment or attitude matching.

4.6. **Model 1 – Optuna Results**

4.7. The following graph shows the <u>training process</u> across all combinations of hyperparameters. We can see that most settings learn equally well.

4.7.1. The following graphs show the Similarity scores of the evaluation metrics we used, across all hyperparameters combinations, per epoch.
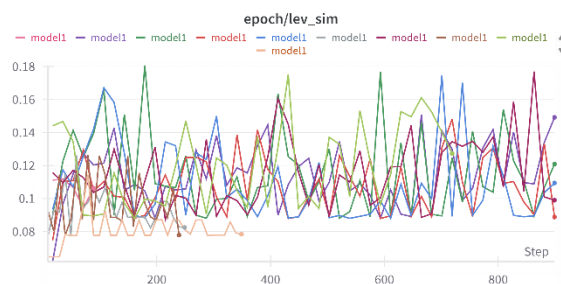
- ▪ <u>Cosine Similarity</u>: we can see that like polarity, cosine quickly plateaus, so it, too, offers little guidance once past the warm-up. Hyper-parameters that keep cosine > 0.6 while also lowering loss are sufficient.
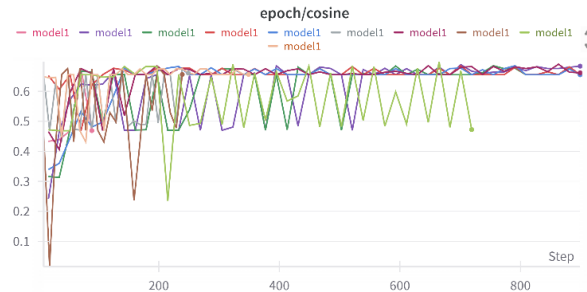

- ▪ <u>Jaccard Similarity:</u> We can see that there are low overall scores, which imply the model is quite creative / paraphrastic. The green configuration suggests high overlap.
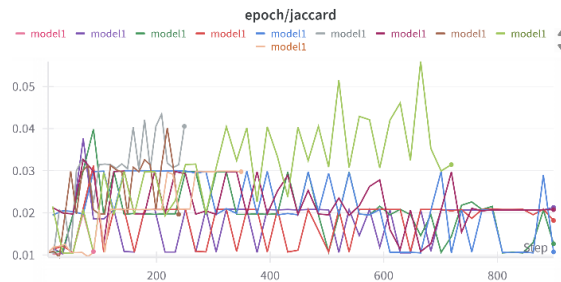
- ▪ <u>Levinstein Similarity:</u> we can see that there's large variance, which suggests the metric is noisy at epoch-granularity.
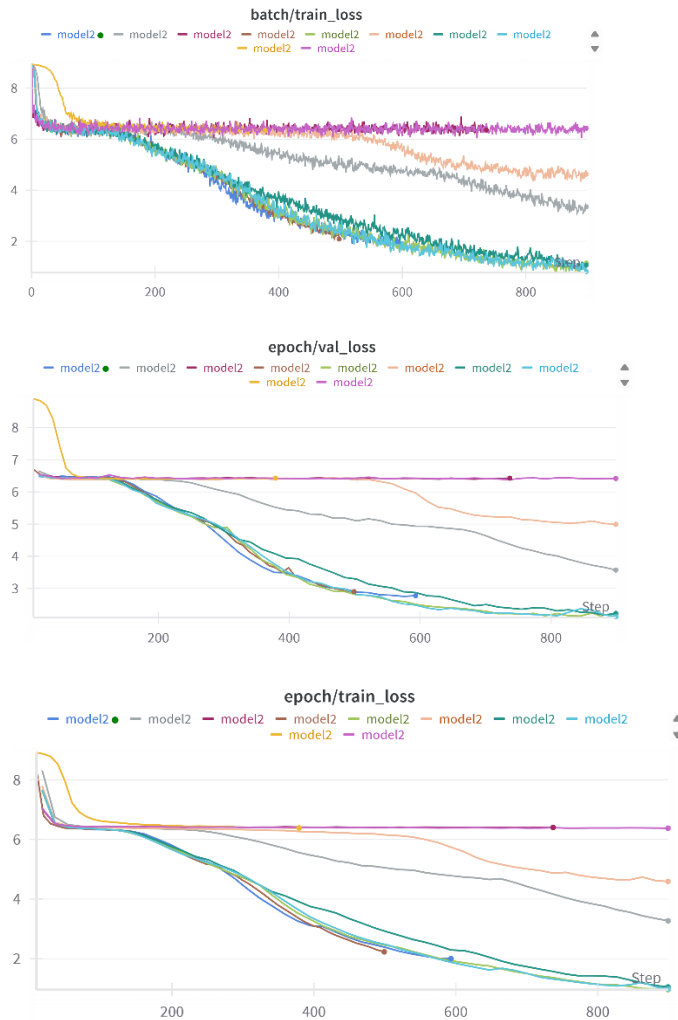

- ▪ <u>Polarity Similarity</u>: we can see that All settings meet the target sentiment profile.
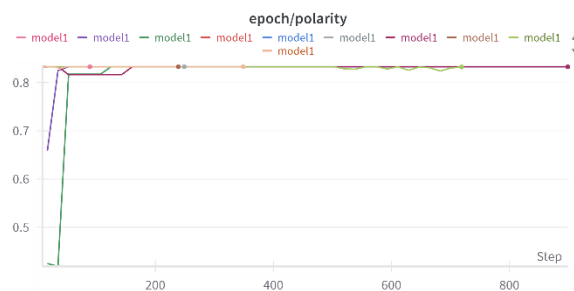
The olive-green configuration outperforms in training loss (lowest), however it overfits. The best run is the purple one, which keeps the training-validation gap small yet gaining good scores at similarity scores.

4.8. **Model 2 – Optuna Results**

4.8.1. The following graph shows the training process across all combinations of hyperparameters. We can see three configurations (in Cyan color, dark-green, and teal) that outperform in training loss, without overfitting.

4.8.2. The following graphs show the Similarity scores of the evaluation metrics we used, per epoch. across all hyperparameters combinations.

- Cosine Similarity: We can see that the good runs (mentioned above) rise to 0.9-0.95, which is high, whereas most model-1 runs plateaued at ≈0.65. Overall substantially better semantic fidelity.
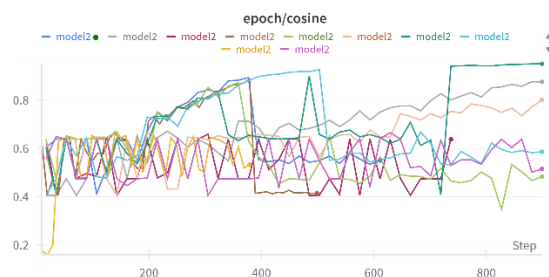
- Jaccard Similarity: we can see that there's a far stronger lexical overlap—lyrics reuse theme vocabulary. Best runs climb steadily to 0.5-0.55 in comparison to ≤0.05 in model-1 runs.
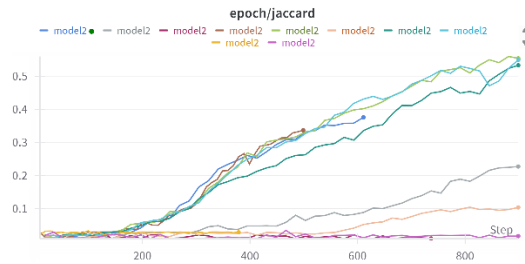
- Levinstein Similarity: we can see that the good runs reach 0.35-0.38 (model-1 peaked around 0.18).

- Polarity Similarity: we can see that two thirds of trials converge to ≈0.9; a few diverge (grey wiggles, orange drifts). Polarity is satisfied for the winning runs;
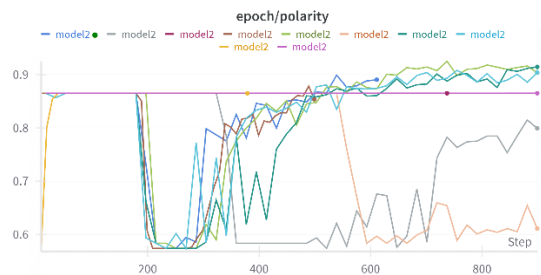
4.9. **Model 1 vs Model 2 – training comparison**

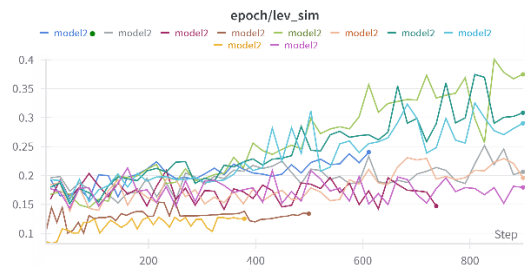Feeding the LSTM time-aligned MIDI features (Model 2) cuts validation loss by ≈ 80 % (~6.3 → ~1.3) and pushes textual-similarity scores far beyond the whole-track baseline (cosine ≈ 0.65 → 0.90+, Jaccard ≤ 0.05 → 0.50+, Levenshtein ≈ 0.18 → 0.35+). **In short, synchronizing music and lyrics gives the model markedly better predictive power and lyric fidelity. The gain comes at the cost of higher hyper-parameter sensitivity, but with the right settings Model 2 clearly outperforms Model 1.**

5. Generation Pipeline

5.1. **Autoregressive Lyric Generation**

We employ the pre-trained autoregressive RNN decoder that conditions every predicted token on both the previously generated word and a fixed-length MIDI feature vector that summarizes the song's accompaniment.

5.1.1. **Initial seed**: The first input tensor seq is the concatenation of the first lyric word's 300-dim word2vec embedding and a 115-dim global MIDI descriptor midi_f / 17-dim segment MIDI descriptors, respectively.

5.1.2. **Forward step**: At each time step the model returns logits over the vocabulary and an updated hidden state.

5.1.3. **Stochastic sampling**: To satisfy the requirement that next-word selection not be deterministic but sampling-based (with selection likelihood proportional to probability), we convert the model's logits to a probability distribution via softmax and then apply `torch.multinomial`, which randomly draws an index according to those weights. This ensures that higher-probability tokens are more likely—but not guaranteed—to be chosen on each step. If the sampled index corresponds to `<PAD>` (index `vocab_size - 1`), we simply resample until a valid token is selected. As a result, every word is chosen stochastically and proportional to its softmax probability, while maintaining lexically valid output.

5.1.4. **Context update**: The sampled word's embedding is concatenated with *the same* midi_f to form the next input. Hidden states are detached to prevent gradient back-propagation during inference.

5.1.5. **Periodic reset**: Every 10 generated tokens the function re-injects the original seed and clears the hidden state. This prevents thematic drift and keeps the lyric on topic.

5.1.6. **Termination & formatting**:

- **Poem length**: The loop stops after 200 tokens (having that the average song length in the test set is 224.83 words, we truncate at 200 to ensure that every generated output remains comparable in length and to avoid excessive computational cost). In practice, 200 tokens cover roughly 89 % of a typical song's lyrics—enough to capture full verses and most choruses—while keeping inference time and memory usage bounded. This choice also prevents outlier songs (those significantly longer than average) from skewing evaluation metrics or requiring arbitrarily long sampling loops.

- **Line length**: Through our analysis, we found that each line in the dataset contains about 6.34 words on average, while the model naturally generates roughly 8 words per line. Since this difference is small and we didn't want to risk harming performance, we chose not to impose a strict constraint. In other words, it's close enough that we left the model's line lengths unconstrained.

This design lets us hold the song-level musical signature constant while letting the lyric content evolve freely, striking a balance between stylistic coherence and creative variability.

6. Sentiment Analysis (Evaluation) Pipeline

Evaluation Metrics for test

For every ⟨song, initial-word strategy⟩ tuple:

6.1. **Seed selection**:   For each of the melodies in the test set we produced the outputs (lyrics) according to four different strategies:

    6.1.1. **Random word from the vocabulary**

    6.1.2. **most-common word in the vocabulary ("you")**

    6.1.3. **least-common word in the vocabulary ("cabbage")**

    6.1.4. **test-lyrics (the initial word of the lyrics in the test-set)**

6.2. **Lyric generation**   Fed the seed, fixed MIDI vector and seed sequence into the RNN decoder, producing a 200-token lyric.

6.3. **Sentiment scoring**: Applied VADER to

    6.3.1. Swords – the compound score of the seed word

    6.3.2. Ssongs – the compound score of the entire generated lyric

6.4. **Alignment metric**: Computed a Sentiment Similarity value that quantifies emotional agreement between seed and lyric

$$\text{Sim} = \left(1 - \frac{|s_{\text{word}} - s_{\text{song}}|}{2}\right) \times 100\,\%$$

This pipeline yields a single, interpretable similarity score for each run, capturing how faithfully the model's emotional tone follows the intent implied by its initial word under each seeding strategy.

7. Final Trained Models Results

After identifying the top-performing hyperparameter configuration for each model, we retrained the network, each time with the best hyperparameter combination.

7.1. First model | Static MID embedding is applied uniformly to all lyric embeddings

7.1.1. Hyperparameters

- ✦ Learning rate: 0.0001
- ✦ Weight decay: 0.001
- ✦ Dropout Rate: 0.5
- ✦ Batch size: 32
- ✦ Hidden Layer Size: 256
- ✦ Optimizer: Adam

7.1.2. Run Summary

- ✦ batch/train_loss 6.46245
- ✦ epoch/cosine 0.62081
- ✦ epoch/jaccard 0.02195
- ✦ epoch/lev_sim 0.14705
- ✦ epoch/polarity 0.81435
- ✦ epoch/train_loss 6.39022
- ✦ epoch/val_loss 6.52664

7.1.3. Run Summary Analysis
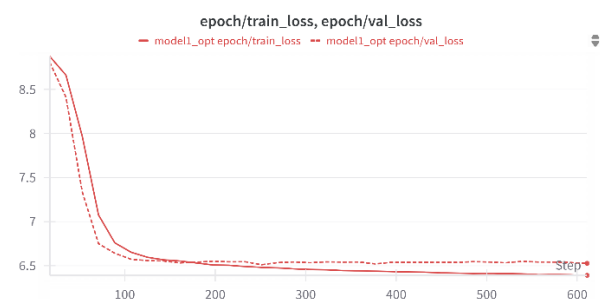
Observing the learning curves, we see that the optimizer and LR schedule are effective early on. Moreover, no over-fitting detected; generalization remains intact. Model capacity is well-matched to data size & regularization.
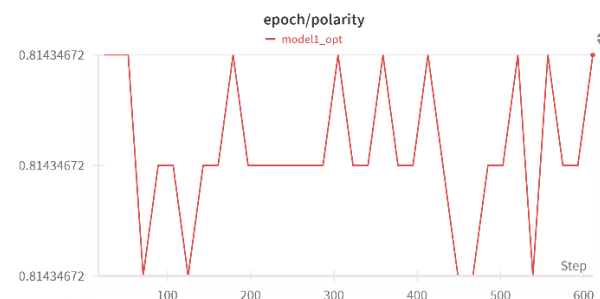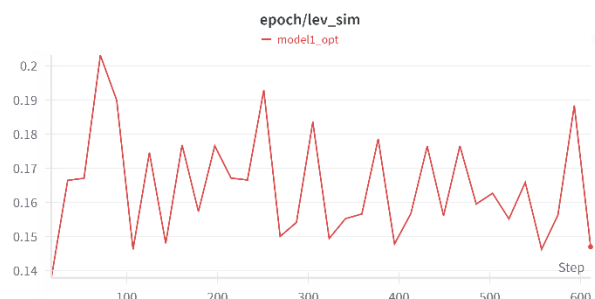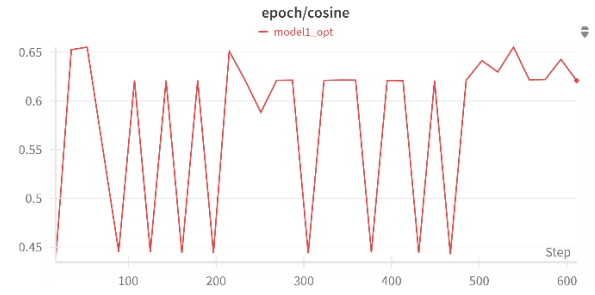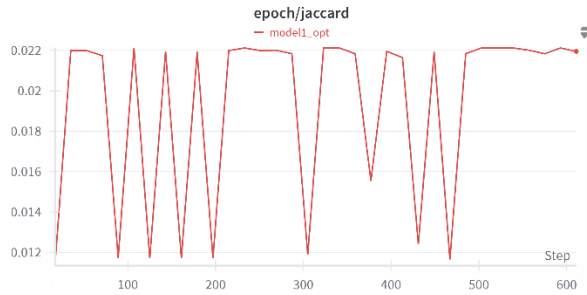
Observing the similarity curves of post-hyper-parameter optimization training, the RNN converges to a *stable* validation loss of ≈ 6.45 and routinely delivers ≈ 0.64 cosine similarity (semantic match), ≈ 0.018–0.022 Jaccard overlap (token set), and ≈ 0.15–0.20 Levenshtein similarity (surface form). **Together these figures show that the model reliably captures song-level meaning while only loosely mirroring exact wording— exactly the balance we want for creative lyric generation—with no sign of over-fitting across the run.**

7.1.4. Generation and Evaluation

✦ For each of the 5 songs in the test set, we ran the evaluation generation and evaluation pipeline (under appendix section), with different strategy (whether the song begins with a random word, a word from test set, the most common word from the trainset or least common word from the trainset.

Strategy	Avg sim ↑	σ (spread)	Min	Max
random (blanket)	57.3 %	5.0	50.7	65.5
most_common (you)	59.2 %	4.0	55.1	66.3
least_common (cabbage)	71.6 %	21.1	51.7	98.7
test_lyrics (song's own first word)	56.0 %	15.4	32.2	76.8

*σ = population standard deviation; higher σ = less reliable.

7.1.5. Key Findings

✦ Stable baseline – most_common:　Using the corpus-dominant token "you" yields the highest reliable similarity: 55–66 % across all five songs, with the smallest variance (σ = 4 %).

✦ High-risk / high-reward – least_common:　Seeding with a rare, sentiment-neutral word occasionally produces near-perfect alignment (≈ 99 %) when the generated lyric also lands near emotional neutrality, but variability is extreme (σ ≈ 21 %).

- ✦ Random vs. most_common: The random seed is only ~2 pp below most_common on average and exhibits similar spread; randomness therefore does not inherently degrade sentiment coherence.
- ✦ Original first word is unreliable: test_lyrics inherits the sentiment polarity of the real opener (positive in one case, neutral or negative in others), producing the second-highest variance and the lowest single score (32 %). The model does not consistently echo the source tone.
- ✦ **Bottom line:** Because three of the four seed words are sentiment-neutral (compound ≈ 0), similarity is dominated by the absolute sentiment magnitude of the generated lyric. Strategies that keep the lyric close to neutral score higher, irrespective of direction. The RNN's stochastic sampling and the 10-token state reset introduce large swings, especially when the seed is rare and semantically opaque (*"cabbage"*).

7.2. **Second model | Time-aligned synced MID embeddings for each individual lyric segment**

7.2.1. **Hyperparameters**
- ✦ Learning rate: 0.001
- ✦ Weight decay: 0.0
- ✦ Dropout Rate: 0.5
- ✦ Batch size: 32
- ✦ Hidden Layer Size: 256
- ✦ Optimizer: Adam

7.2.2. **Run Summary**
- ✦ batch/train_loss 0.92379
- ✦ epoch/cosine 0.6081
- ✦ epoch/jaccard 0.57031
- ✦ epoch/lev_sim 0.39383
- ✦ epoch/polarity 0.9038
- ✦ epoch/train_loss 0.94738
- ✦ epoch/val_loss 2.17488

7.2.3. **Run Summary Analysis**
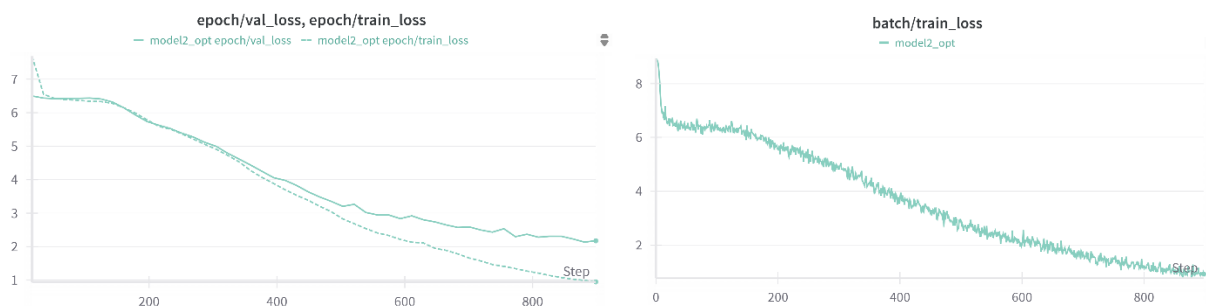
Observing the train loss per batch curves, we can see that the optimizer is steadily making progress; no spikes implies stable learning schedule. Observing the train/val loss per epoch, we can see a small train-val gap emerges, means mild over-fitting, but still within acceptable range.

epoch/cosine — model2_opt

epoch/lev_sim — model2_opt

epoch/jaccard — model2_opt

epoch/polarity — model2_opt

Overall, the similarity metrics confirm that the time-aligned architecture delivers a substantial qualitative gain, and the optimized hyper-parameter set extracts its full benefit while keeping sentiment on target.

The tuned, time-aligned model learns fast and reaches top lexical & semantic similarity by ~step 500; thereafter training loss continues to fall but validation cosine dips, signalling the ideal checkpoint is just before over-fitting begins.

7.2.4. Generation and Evaluation

For each of the 5 songs in the test set, we ran the evaluation generation and evaluation pipeline (under appendix section), with different strategy (whether the song begins with a random word, a word from test set, the most common word from the trainset or least common word from the trainset.

Strategy	Avg sim ↑	σ (spread)	Min	Max
random (blanket)	57 %	8.0	49.0	71.0
most_common (you)	74 %	19.0	50.0	99.0
least_common (cabbage)	90 %	2.0	85.0	**92.0**
test_lyrics (song's own first word)	71 %	11	51.0	82.0

*σ = population standard deviation; higher σ = less reliable.

7.2.5. Key Findings

- ✦ **Unambiguous winner — *least_common*.**
  Starting with a rare, sentiment-neutral word again yields the best average alignment (≈ 90 %) ***and*** the tightest spread (σ ≈ 2 %). Unlike Model 1 – where this strategy was "high-risk/high-reward" – the richer, time-aligned MIDI context appears to stabilise outcomes.
- ✦ **"You" is useful but volatile.**
  Seeding with the corpus-dominant token (*most_common*) ranges from mediocre (50 %) to near-perfect (99 %), producing the widest dispersion (σ ≈ 19 %). The token is a safe fallback only when high consistency is not critical.
- ✦ **MIDI alignment is smoothing extremes.**
  Compared with Model 1, the sentiment curve is flatter: the best strategy moves **up** (least_common) while the worst (random) moves **closer to the pack**. This supports the hypothesis that injecting bar-level musical context dampens the effect of the opening word.
- ✦ **Bottom line:** A *rare, neutral seed* is the most robust way to launch Model 2; it pairs consistently high sentiment alignment with minimal variance, making it the recommended default for downstream generation tasks.

Bottom Line Comparison
Model 2 clearly outperforms Model 1: its use of a rare, neutral seed yields consistently high sentiment alignment with minimal variance, making it far more reliable for downstream generation tasks. In contrast, Model 1's results swing wildly—its reliance on mostly neutral seeds combined with stochastic sampling and state resets leads to unstable sentiment scores, especially for semantically opaque seeds like "cabbage." Thus, Model 2 is recommended as the superior choice.

8. Disclaimers

8.1. Model 2's time-aligned MIDI pipeline required additional inputs compared with Model 1, so we updated several function signatures and their call sites to carry that extra data after running model 1's train and optuna train. Consequently, the same helper functions may appear with slightly different argument lists across the code.

9. Appendix

9.1. Model 1

Analyzing effects of the initial word and melody on the generated lyrics:

9.1.1. Analysis for strategy: random

Song: eternal flame by the bangles

Model: 1

Initial Word: blanket

Generated Lyrics:

blanket fullest lait rico bullied

superlative earrings holdin thunder clan

gloria apparel fittest seize pinky

important credit nitro summit dangerous

assail couples consolation tell chart

seagal bodys unhappy starry beaujolais

causes betta brite wã¤nd tus

drifted africa refugee manager volcanoes

raps strays ideals cursed ay

snowbird sins deftly jitterbug asylum

explained intrigue parted rulin medical

starry toy summit shouldnt diesel

starry stilton aint fizz fired

unkindly crying consequence jealous joness

shared africa shoulders wehell plight

dab dancing hully beams ginger

vanilla doch paper ser breaky

harp trash slam hers dem

lows hardest zu consolation comfortable

follow meant refugee misled dodoublegs

lark france cliff fantasies instead

queer billboards frown lovesick mississippi

hardheaded ser ale clicks gazed

protest somebody camelot throwing treasures

gossip rob rosy trophy deserve

business formulate theresa hee pistol

erybody africa came suspended hears

nevernever dumbstruck trophy werent haze

coupled lahaina yearn riding lizards

doin worlds firelight claim t

he bein hallie aww soothed

murda computers float asses hallie

shepards as sewed bunk okay

echoing drunk master ghetto embarrassed

passin eternity evening consolation mr

consolation turned selling milkmans astral

amelia stomach customs laser sheds

baghdad risks flies kim pissed

calling disposable media graces slam

angels dancing collect bight illegal
deprived

song[4]: blanket, song[5]: blanket fullest lait rico bullied
superlative earrings holdin thunder clan
gloria apparel fittest seize pinky
important credit nitro summit dangerous
assail couples consolation tell chart
seagal bodys unhappy starry beaujolais
causes betta brite wã¤nd tus
drifted africa refugee manager volcanoes
raps strays ideals cursed ay
snowbird sins deftly jitterbug asylum
explained intrigue parted rulin medical
starry toy summit shouldnt diesel
starry stilton aint fizz fired
unkindly crying consequence jealous joness
shared africa shoulders wehell plight
dab dancing hully beams ginger
vanilla doch paper ser breaky
harp trash slam hers dem
lows hardest zu consolation comfortable
follow meant refugee misled dodoublegs
lark france cliff fantasies instead
queer billboards frown lovesick mississippi
hardheaded ser ale clicks gazed
protest somebody camelot throwing treasures
gossip rob rosy trophy deserve
business formulate theresa hee pistol
erybody africa came suspended hears
nevernever dumbstruck trophy werent haze
coupled lahaina yearn riding lizards
doin worlds firelight claim t
he bein hallie aww soothed
murda computers float asses hallie
shepards as sewed bunk okay
echoing drunk master ghetto embarrassed
passin eternity evening consolation mr
consolation turned selling milkmans astral
amelia stomach customs laser sheds
baghdad risks flies kim pissed
calling disposable media graces slam
angels dancing collect bight illegal
deprived
 Sentiment score for word: 0.000
 Sentiment score for song: -0.986
 Sentiment similarity: 50.7%

Song: honesty by billy joel
Model: 1
Initial Word: blanket
Generated Lyrics:
blanket steadliy castles somebody boody
fã¤hrt thankful manager eee switch
bodys half honestys tiree running
boyfriend consolation admire oozin ghosts
drew stronger bitches owned hid
somebody misled psychiatrist shooting werent
goodbye alibis crying dangerous bodys
aisle callar 14 stumbling diez
pipe tripoli blast woodwork glance
curves fortunes heaven business schulden
goodlooking hello moves yelled signed
shared yay furniture packing jam
doing ser valentine better an
junior fires ordered nuclear girlfriens
freudian nails rare calling peep
nearest memory curtain business broadway
unhappy elses areas rein hatte
sloppy somebody shared familys stalls
saint sheds curtain answer taught
ait reminded fill sweetest preachers
violet relate same si refused
correct rum strut consolation riding
honeys hole deceit saw gitchi
tus tuesday phat tool hidden
believes brushes understand struttin def
chopping grandmothers clothing swingers superlative
move circus rum discreet an
lasting pane benz jet older
gotsta anguish returning kratzens roadside
praise bathrobe boohoohoo ringtingtingling 2nd
darlin shingalingaling unlimited hum guns
steer accused embarrassed discreet laughing
liberty crossed buffalo dare allen
fires lark eleven pussy camelot
strait helter lawn imagining bereft
diary mundane blazing gs consolation
flash photos stoppin defense somebody
hooaheehahhooah breather productions birchmount tool
earrings insoles 44 hitch savoy
accounts complication fib reminds corner
floss

song[4]: blanket, song[5]: blanket steadliy castles somebody boody
fã¤hrt thankful manager eee switch

bodys half honestys tiree running
boyfriend consolation admire oozin ghosts
drew stronger bitches owned hid
somebody misled psychiatrist shooting werent
goodbye alibis crying dangerous bodys
aisle callar 14 stumbling diez
pipe tripoli blast woodwork glance
curves fortunes heaven business schulden
goodlooking hello moves yelled signed
shared yay furniture packing jam
doing ser valentine better an
junior fires ordered nuclear girlfriends
freudian nails rare calling peep
nearest memory curtain business broadway
unhappy elses areas rein hatte
sloppy somebody shared familys stalls
saint sheds curtain answer taught
ait reminded fill sweetest preachers
violet relate same si refused
correct rum strut consolation riding
honeys hole deceit saw gitchi
tus tuesday phat tool hidden
believes brushes understand struttin def
chopping grandmothers clothing swingers superlative
move circus rum discreet an
lasting pane benz jet older
gotsta anguish returning kratzens roadside
praise bathrobe boohoohoo ringtingtingling 2nd
darlin shingalingaling unlimited hum guns
steer accused embarrassed discreet laughing
liberty crossed buffalo dare allen
fires lark eleven pussy camelot
strait helter lawn imagining bereft
diary mundane blazing gs consolation
flash photos stoppin defense somebody
hooaheehahhooah breather productions birchmount tool
earrings insoles 44 hitch savoy
accounts complication fib reminds corner
floss
  Sentiment score for word: 0.000
  Sentiment score for song: 0.919
  Sentiment similarity: 54.0%

Song: lovefool by cardigans
Model: 1
Initial Word: blanket
Generated Lyrics:
blanket hills noel dumb capone

protest flyin starry boody town
lizards crawls trends waterloo theyve
joel hugging troubled films valiums
gloria intention flight wailed heart
ten summit phatness na curves
computers remember na rode wailed
satisfaction planets rely film abstinence
milli forgetting donut ya project
permission divides plough wailed ryders
loaded bottomline wastes yuletide owned
calling everybodys limousine hooaheehahhooah miami
weazy childoh grace enchantment celebrate
crying hoppin painful clicks nsync
clan radio individuals fathers ex
vanilla spose storm guns unkindly
cowards worrying crawls cuddling ice
pipe sly faster moonshine rappen
sip nubs bight ours unhappy
feast haa hormones phatness course
frauen confused pretty intervene preaches
blunted slingers carries consolation cantaloupes
nuevo tonic protest gently doin
impossible actor soldier sorrows girlies
cracks blanket anne plastic anticipating
working origami niggass jitterbug somebody
hookah soldiers mention rim nicer
fame killer passage vehicle probably
unhappy jenny cockpit shock scent
merengue shelter parkway seagal june
accept tooth tapped disregard valiums
spose reason noel homie desto
credit chi ox tenderness manager
shot coral boulevard doin fashioned
blazing boohoohoo lack therell stinkin
vibration nationality majestic losers coral
permanent walls space praises dull
hoppin eating milkmans vanilla boss
freak baths mã-o thats guevara
brown dare consolation britney wed
embarrassed

song[4]: blanket, song[5]: blanket hills noel dumb capone
protest flyin starry boody town
lizards crawls trends waterloo theyve
joel hugging troubled films valiums
gloria intention flight wailed heart
ten summit phatness na curves
computers remember na rode wailed

satisfaction planets rely film abstinence
milli forgetting donut ya project
permission divides plough wailed ryders
loaded bottomline wastes yuletide owned
calling everybodys limousine hooaheehahhooah miami
weazy childoh grace enchantment celebrate
crying hoppin painful clicks nsync
clan radio individuals fathers ex
vanilla spose storm guns unkindly
cowards worrying crawls cuddling ice
pipe sly faster moonshine rappen
sip nubs bight ours unhappy
feast haa hormones phatness course
frauen confused pretty intervene preaches
blunted slingers carries consolation cantaloupes
nuevo tonic protest gently doin
impossible actor soldier sorrows girlies
cracks blanket anne plastic anticipating
working origami niggass jitterbug somebody
hookah soldiers mention rim nicer
fame killer passage vehicle probably
unhappy jenny cockpit shock scent
merengue shelter parkway seagal june
accept tooth tapped disregard valiums
spose reason noel homie desto
credit chi ox tenderness manager
shot coral boulevard doin fashioned
blazing boohoohoo lack therell stinkin
vibration nationality majestic losers coral
permanent walls space praises dull
hoppin eating milkmans vanilla boss
freak baths mã-o thats guevara
brown dare consolation britney wed
embarrassed
  Sentiment score for word: 0.000
  Sentiment score for song: -0.848
  Sentiment similarity: 57.6%

Song: barbie girl by aqua
Model: 1
Initial Word: blanket
Generated Lyrics:
blanket closest hoppin selfconfidence pinky
polish conceal foods volcanoes baghdad
with ugly motion oldies sola
jitterbug dine pinky somebody lawn
ayou whips thunder spare manager
island unhappy teasing shot quicker

clover outta apparel gon makea
ul tie eternally unhappy misses
superficial shells and bite risks
weathered mockingbird silver hardly grow
haa needed guiding justice mixing
od twisted banana unhappy join
vanilla flowers fearful hourglass def
see saying consolation fills engineer
cleveland vertigo souped axe whens
retreat queen asshole valiums stumm
vibration wreckage strut union tranquility
temper fragments protest diamonds neptune
kojak clearly brite patient fiends
missiles ay dancing vein sheet
eh cellophane memorize consolation press
feast unhappy driving honesty relive
country fare acorn honestys mercy
accord starry heard winning provide
gitchi bop clan mistake guns
average concentrate superintendents december places
strait ohohohohohoh strutting crying asses
accused hooo tombs fry monaco
hormones stray frontin patience anthony
weed angry foggy pearly fiend
homeless bustin teas mostly coupled
closed peru need blanket relationship
ignorant capital wa ruthless boody
reassure facing yearnings running skirts
crimson camelot hows shells jazz
woodwork laughed ness nerve smug
happily divorced flies dudududuudu bail
painful starry leone jock slipping
reaching cement knees surprise groups
combination keys task wouldnt shake
ran

song[4]: blanket, song[5]: blanket closest hoppin selfconfidence pinky
polish conceal foods volcanoes baghdad
with ugly motion oldies sola
jitterbug dine pinky somebody lawn
ayou whips thunder spare manager
island unhappy teasing shot quicker
clover outta apparel gon makea
ul tie eternally unhappy misses
superficial shells and bite risks
weathered mockingbird silver hardly grow
haa needed guiding justice mixing
od twisted banana unhappy join

vanilla flowers fearful hourglass def
see saying consolation fills engineer
cleveland vertigo souped axe whens
retreat queen asshole valiums stumm
vibration wreckage strut union tranquility
temper fragments protest diamonds neptune
kojak clearly brite patient fiends
missiles ay dancing vein sheet
eh cellophane memorize consolation press
feast unhappy driving honesty relive
country fare acorn honestys mercy
accord starry heard winning provide
gitchi bop clan mistake guns
average concentrate superintendents december places
strait ohohohohohoh strutting crying asses
accused hooo tombs fry monaco
hormones stray frontin patience anthony
weed angry foggy pearly fiend
homeless bustin teas mostly coupled
closed peru need blanket relationship
ignorant capital wa ruthless boody
reassure facing yearnings running skirts
crimson camelot hows shells jazz
woodwork laughed ness nerve smug
happily divorced flies dudududuudu bail
painful starry leone jock slipping
reaching cement knees surprise groups
combination keys task wouldnt shake
ran
  Sentiment score for word: 0.000
  Sentiment score for song: -0.689
  Sentiment similarity: 65.5%

Song: all the small things by blink 182
Model: 1
Initial Word: blanket
Generated Lyrics:
blanket tammy scheme fro union
strangeness help reading fires vanilla
lace hang role hauled noel
fires africa unhappy smith mistake
thunder mirror brooks abortion playa
condom casbah admired tis riot
starry bagged leaving shakin manager
voyage sucked cowards powdered 4h
practiced driving achy hometown stingin
cancer rustles crooked somebody attracted
uhh stumm longlegged eternal kiddin

pushin breezy firelight legally south
mountains slob fill rug caps
sum sharp themes evergreen deity
hundert knight joness curb taught
impressed super ebudã¦ silent colour
lizards hooo sista peep hoppin
ruff egypt cursed knowing nono
measure groove union spends gin
bouncin circle bore florida winters
night shes carrying fearful eargasms
pack d12 doin bore bubbles
conceal begotten lifeline straight highland
guevara deprived cross sometimes quite
noel misled vincents marx vanilla
tell replies wave hereafter astral
cafe unhappy curtain wintertime kinderlied
twocar lesser truck halfway anymore
nix bebebetter awhile asured frolic
suspended praises starry phatness treasures
desto sagt ho movies vanilla
mind familys cabinet sale snoop
manager beats defeated garbage hole
wealthy refugee eek icy desperado
cowards said latest ab fourteen
stacked woodwork pinky tourists thorn
lizards effortlessly jails dum teacher
eighteen hunter union puzzle somebodys
perhaps anyone nerve carly webster
beams mein virtual corncob addicted
lebte

song[4]: blanket, song[5]: blanket tammy scheme fro union
strangeness help reading fires vanilla
lace hang role hauled noel
fires africa unhappy smith mistake
thunder mirror brooks abortion playa
condom casbah admired tis riot
starry bagged leaving shakin manager
voyage sucked cowards powdered 4h
practiced driving achy hometown stingin
cancer rustles crooked somebody attracted
uhh stumm longlegged eternal kiddin
pushin breezy firelight legally south
mountains slob fill rug caps
sum sharp themes evergreen deity
hundert knight joness curb taught
impressed super ebudã¦ silent colour
lizards hooo sista peep hoppin

ruff egypt cursed knowing nono
measure groove union spends gin
bouncin circle bore florida winters
night shes carrying fearful eargasms
pack d12 doin bore bubbles
conceal begotten lifeline straight highland
guevara deprived cross sometimes quite
noel misled vincents marx vanilla
tell replies wave hereafter astral
cafe unhappy curtain wintertime kinderlied
twocar lesser truck halfway anymore
nix bebebetter awhile asured frolic
suspended praises starry phatness treasures
desto sagt ho movies vanilla
mind familys cabinet sale snoop
manager beats defeated garbage hole
wealthy refugee eek icy desperado
cowards said latest ab fourteen
stacked woodwork pinky tourists thorn
lizards effortlessly jails dum teacher
eighteen hunter union puzzle somebodys
perhaps anyone nerve carly webster
beams mein virtual corncob addicted
lebte
  Sentiment score for word: 0.000
  Sentiment score for song: -0.827
  Sentiment similarity: 58.6%

9.1.2. Analysis for strategy: most_common
Song: eternal flame by the bangles
Model: 1
Initial Word: you
Generated Lyrics:
you star mistaken couples flirting
york lows aladdin worship rudolph
doin fiery wack paper swim
skirts struttin capital witchy closed
limos county apply wondrous strait
proof davy tus tropic answer
bettin africa rip beans emptiness
pad toy controlling famous log
jail fly tits of toys
mistery test circle pinky desperately
sent loneliness ait tenderness phatness
better say mine proved shells
gon bouncebouncin help goodbying horse

lows gators liqour von retrace
enoughs single latest curtain destroy
santa slide doin tapped nix
diamonds gangstas glue stirs pieces
bodys streetwise cheatin tvfunk treasures
couple chacha relationship headig clover
shared friars me zoo tell
understood lowly reed cuddling audience
mississippi snoop longlegged laughed aways
owned hunter classroom billy happier
ally teas roger shingalingaling infest
fox hurtin capital earn tightfitting
honeymoon fuss hundert dance brite
lesser chew suck yallself states
remembering everything accounts feast snatch
degenerate keeping shine insincerity demonios
homie december saying undefined bentley
virginia lawyers july tool husband
britney kills responsible volcanoes manager
phatness royces britney confessed cartoon
wastin manager remained cafe tus
retired sent lights mistaking paints
hormones descubro nix selection somebody
rains attracted consider rather unglued
threat clan facsimile hooaheehahhooah cafe
flesh moms baghdad zombie fooled
ei remains thee groãŸen lunch
ruggish

song[4]: you, song[5]: you star mistaken couples flirting
york lows aladdin worship rudolph
doin fiery wack paper swim
skirts struttin capital witchy closed
limos county apply wondrous strait
proof davy tus tropic answer
bettin africa rip beans emptiness
pad toy controlling famous log
jail fly tits of toys
mistery test circle pinky desperately
sent loneliness ait tenderness phatness
better say mine proved shells
gon bouncebouncin help goodbying horse
lows gators liqour von retrace
enoughs single latest curtain destroy
santa slide doin tapped nix
diamonds gangstas glue stirs pieces
bodys streetwise cheatin tvfunk treasures
couple chacha relationship headig clover

shared friars me zoo tell
understood lowly reed cuddling audience
mississippi snoop longlegged laughed aways
owned hunter classroom billy happier
ally teas roger shingalingaling infest
fox hurtin capital earn tightfitting
honeymoon fuss hundert dance brite
lesser chew suck yallself states
remembering everything accounts feast snatch
degenerate keeping shine insincerity demonios
homie december saying undefined bentley
virginia lawyers july tool husband
britney kills responsible volcanoes manager
phatness royces britney confessed cartoon
wastin manager remained cafe tus
retired sent lights mistaking paints
hormones descubro nix selection somebody
rains attracted consider rather unglued
threat clan facsimile hooaheehahhooah cafe
flesh moms baghdad zombie fooled
ei remains thee groãŸen lunch
ruggish
  Sentiment score for word: 0.000
  Sentiment score for song: -0.866
  Sentiment similarity: 56.7%

Song: honesty by billy joel
Model: 1
Initial Word: you
Generated Lyrics:
you broken gung beautiful noel
kommissar frontin lowkey relying oasis
drought timmy pinky shoes lark
doin feathers drunk disgraced somebody
souljahz ragged eyes prozac rank
freewheeling pinky anticipating id latest
shoppers springer aboud burns breathin
learns desperately lees needing hooray
farmers invisible rio homework hookah
effect dhc happier 4h davy
greedy pining morgue away growth
jaw frantic hounded deprived rappen
fillin worrying sexual lizards twistin
unnecessary joyful colour jackanory molesta
cliff schau lyin shakes breezes
states clan rely drawn inclination
throttle swifty origami yippee plough
dj shoulders station woodwork rip

truth ha vehicle gloria dancing
devotion awhile pout nude firelight
alligator gees rebel main strut
boats toast dab sunk bedop
respond nosebleeds pam lows hooo
barking jester sung knees milkmans
hoppin pleas nobody caroling motherfuckin
silver switches iron renee grew
insincere equally propers uhhuh scrub
webster staple flailing unhappy set
busta braggin les beard headig
altar headig crawlin romantic crumbling
teachers nine chinese shared homeless
union joyful wop rockers able
hot bold simon respect ruthless
gossip ending repay find overworked
laughed air rum stirs embarrassed
woe silken tent crawls embarrassment
hin rush tap capture galveston
curtain sent heel temperature vibration
stood revealed axe clan straight
carnation aside earrings our nothing
carefree

song[4]: you, song[5]: you broken gung beautiful noel
kommissar frontin lowkey relying oasis
drought timmy pinky shoes lark
doin feathers drunk disgraced somebody
souljahz ragged eyes prozac rank
freewheeling pinky anticipating id latest
shoppers springer aboud burns breathin
learns desperately lees needing hooray
farmers invisible rio homework hookah
effect dhc happier 4h davy
greedy pining morgue away growth
jaw frantic hounded deprived rappen
fillin worrying sexual lizards twistin
unnecessary joyful colour jackanory molesta
cliff schau lyin shakes breezes
states clan rely drawn inclination
throttle swifty origami yippee plough
dj shoulders station woodwork rip
truth ha vehicle gloria dancing
devotion awhile pout nude firelight
alligator gees rebel main strut
boats toast dab sunk bedop
respond nosebleeds pam lows hooo
barking jester sung knees milkmans

hoppin pleas nobody caroling motherfuckin
silver switches iron renee grew
insincere equally propers uhhuh scrub
webster staple flailing unhappy set
busta braggin les beard headig
altar headig crawlin romantic crumbling
teachers nine chinese shared homeless
union joyful wop rockers able
hot bold simon respect ruthless
gossip ending repay find overworked
laughed air rum stirs embarrassed
woe silken tent crawls embarrassment
hin rush tap capture galveston
curtain sent heel temperature vibration
stood revealed axe clan straight
carnation aside earrings our nothing
carefree
  Sentiment score for word: 0.000
  Sentiment score for song: 0.675
  Sentiment similarity: 66.3%

Song: lovefool by cardigans
Model: 1
Initial Word: you
Generated Lyrics:
you tuya diary deceit nix
starry leavin individuals conversations attracted
thunder gon existence tie acorn
highs eazyes rolls royces reason
hooaheehahhooah cuddling honeys snoop sendin
hi silken ruthless revolutionary hend
hood mistakin fated stronger kungfu
chances practiced kneesll higher solely
teasing victry somebody drifters corncob
hoppin crawls mockingbird shock dj
nice passion tapped weazy scandals
enemy desires ay competitive silk
disconcerting dhc upside clout drawn
ahelpin drinks freudian deprived chopping
crawls windows volcanoes repay crying
ideals roger lows stop blanket
white dazzling relationships listening colors
callits lizards joint glee doin
noel spent closely corners comen
aleluya stand eats womens south
flash stacked analyst sexual unhappy
driving knees nono rave layzie
tattoo laughed gloom frontin jump

roll descubro press drah movies
an dreary smiled lots keepin
imma protest lotte wicker anticipating
finishedhe buttwasting windy illegal paper
breather compute grey forgiv callits
smacked ears crumbling beats antichrist
creativity sittin ayyy driving absent
brite publishin souljahz studio ruthless
dr eat dancing gonne bin
avoid roooooof silver flippin somebody
santa confessed farewell walls bathe
aww repay desperadowhy passing comparing
bite embarrassed blooded practicing even
roll de instantly cell rudolph
1969 grown clicks copa single
strait nighty mange knowing ought
moral blowin trees dudududuudu rotors
doing

song[4]: you, song[5]: you tuya diary deceit nix
starry leavin individuals conversations attracted
thunder gon existence tie acorn
highs eazyes rolls royces reason
hooaheehahhooah cuddling honeys snoop sendin
hi silken ruthless revolutionary hend
hood mistakin fated stronger kungfu
chances practiced kneesll higher solely
teasing victry somebody drifters corncob
hoppin crawls mockingbird shock dj
nice passion tapped weazy scandals
enemy desires ay competitive silk
disconcerting dhc upside clout drawn
ahelpin drinks freudian deprived chopping
crawls windows volcanoes repay crying
ideals roger lows stop blanket
white dazzling relationships listening colors
callits lizards joint glee doin
noel spent closely corners comen
aleluya stand eats womens south
flash stacked analyst sexual unhappy
driving knees nono rave layzie
tattoo laughed gloom frontin jump
roll descubro press drah movies
an dreary smiled lots keepin
imma protest lotte wicker anticipating
finishedhe buttwasting windy illegal paper
breather compute grey forgiv callits
smacked ears crumbling beats antichrist

creativity sittin ayyy driving absent
brite publishin souljahz studio ruthless
dr eat dancing gonne bin
avoid roooooof silver flippin somebody
santa confessed farewell walls bathe
aww repay desperadowhy passing comparing
bite embarrassed blooded practicing even
roll de instantly cell rudolph
1969 grown clicks copa single
strait nighty mange knowing ought
moral blowin trees dudududuudu rotors
doing
  Sentiment score for word: 0.000
  Sentiment score for song: -0.898
  Sentiment similarity: 55.1%

Song: barbie girl by aqua
Model: 1
Initial Word: you
Generated Lyrics:
you grand stays somebody donde
entered winning barry class tiree
shattering impatiently patient uranus an
rule baths crying tire sergeants
greater card volcanoes gon bane
signed cool tableaux 2nd unhappy
mortgage fella diaper ser tapped
tell eyesight nix tool fires
beats trashed whoah bloodier virginia
sly habitual yearnings ignorant beams
summit attraction length tie marry
sole an asylum breathin astanding
we adown latest boardwalk ait
enough revolver beautiful kick homework
raising really nerve blanket tell
frontin tapped ideals couple x6
reckon honestys lark gloom marshall
horas gon unhappy wastin starry
consolation buggin imitating feature helter
ser t deprived fifi treasures
nerve remains hooaheehahhooah ambition clownin
somebody even crying tumbling means
wipe spy inspiration leghorn clover
measure riches clover souped kross
tock understands toy speed asses
bodys consolation full snow ce
strait daze graces females walla
muezzin bitches seagal milkmans fuel

steer bedford prozac monroe issues
followup cowards shepherd bado unhappy
hoppin gat lone tina longhorn
chariot manpower euch doubt valiums
later rolling ist watched totin
malcolm union tabs sombrero brothers
seaboard volcanoes rides distance ideals
imma unhappy plant consolation mindin
really dudududuu understood nineteenninetyfour doin
equip shells donner storybook warnin
risks untouched shaking confessed egyptian
legs restraining understands however tells
clan

song[4]: you, song[5]: you grand stays somebody donde
entered winning barry class tiree
shattering impatiently patient uranus an
rule baths crying tire sergeants
greater card volcanoes gon bane
signed cool tableaux 2nd unhappy
mortgage fella diaper ser tapped
tell eyesight nix tool fires
beats trashed whoah bloodier virginia
sly habitual yearnings ignorant beams
summit attraction length tie marry
sole an asylum breathin astanding
we adown latest boardwalk ait
enough revolver beautiful kick homework
raising really nerve blanket tell
frontin tapped ideals couple x6
reckon honestys lark gloom marshall
horas gon unhappy wastin starry
consolation buggin imitating feature helter
ser t deprived fifi treasures
nerve remains hooaheehahhooah ambition clownin
somebody even crying tumbling means
wipe spy inspiration leghorn clover
measure riches clover souped kross
tock understands toy speed asses
bodys consolation full snow ce
strait daze graces females walla
muezzin bitches seagal milkmans fuel
steer bedford prozac monroe issues
followup cowards shepherd bado unhappy
hoppin gat lone tina longhorn
chariot manpower euch doubt valiums
later rolling ist watched totin
malcolm union tabs sombrero brothers

seaboard volcanoes rides distance ideals
imma unhappy plant consolation mindin
really dudududuu understood nineteenninetyfour doin
equip shells donner storybook warnin
risks untouched shaking confessed egyptian
legs restraining understands however tells
clan
  Sentiment score for word: 0.000
  Sentiment score for song: -0.791
  Sentiment similarity: 60.5%

Song: all the small things by blink 182
Model: 1
Initial Word: you
Generated Lyrics:
you euch tabs manager change
sheet jacked yearning similar steel
clan an beatles wooded better
destroy hago dhc atl dizzy
straight hidden breathin coucher roam
beams woest curves neighbors wintertime
am racing hows points comfortless
orient consolation rudolph his robbin
last twilight boody wailed blocks
decided voyage odds ait tendency
samurai jet hurtin walls crews
genie glimmering clever weathered company
closes misled pieces ransom facts
mile veins begging chases fret
check cuttin piece superstar keen
ruthless boudoir traverse slam signed
fry looks scoff repeated manager
manager returning hooo nameless ceiling
make loudmouth club diamonds volcanoes
money crying attracted donde feast
vibration replies police suitcases sappy
powdered teasing delicate lured twist
awhile sexy waters sum stapler
kept laughed fates shady chopping
relationship pack loudmouth manhole dawgs
neck defense union gypsum woodwork
tranquility stoned apply cabinet realize
chicka range bear because credit
zoot youyou nono jeans bitterness
her meinung desperately ribbon reviled
owned heats hooaheehahhooah wastin preview
marriage asses trues guevara roger
wailed doin premature hailie instrumental

flyin deeper cheek tonight tambourine
knew spinning maison rocky alligator
spanish scheme teasing rags giant
woodwork walls success cousin sergeants
hath bread rapper flippin clan
confessed lumberjack suffered softer ser
joint expired hophophop yearning flies
hugging

song[4]: you, song[5]: you euch tabs manager change
sheet jacked yearning similar steel
clan an beatles wooded better
destroy hago dhc atl dizzy
straight hidden breathin coucher roam
beams woest curves neighbors wintertime
am racing hows points comfortless
orient consolation rudolph his robbin
last twilight boody wailed blocks
decided voyage odds ait tendency
samurai jet hurtin walls crews
genie glimmering clever weathered company
closes misled pieces ransom facts
mile veins begging chases fret
check cuttin piece superstar keen
ruthless boudoir traverse slam signed
fry looks scoff repeated manager
manager returning hooo nameless ceiling
make loudmouth club diamonds volcanoes
money crying attracted donde feast
vibration replies police suitcases sappy
powdered teasing delicate lured twist
awhile sexy waters sum stapler
kept laughed fates shady chopping
relationship pack loudmouth manhole dawgs
neck defense union gypsum woodwork
tranquility stoned apply cabinet realize
chicka range bear because credit
zoot youyou nono jeans bitterness
her meinung desperately ribbon reviled
owned heats hooaheehahhooah wastin preview
marriage asses trues guevara roger
wailed doin premature hailie instrumental
flyin deeper cheek tonight tambourine
knew spinning maison rocky alligator
spanish scheme teasing rags giant
woodwork walls success cousin sergeants
hath bread rapper flippin clan
confessed lumberjack suffered softer ser

joint expired hophophop yearning flies
hugging
  Sentiment score for word: 0.000
  Sentiment score for song: 0.856
  Sentiment similarity: 57.2%

9.1.3. Analysis for strategy: least_common
Song: eternal flame by the bangles
Model: 1
Initial Word: cabbage
Generated Lyrics:
cabbage gitchi livin attracted george
valiums molasses consolation billboards brite
cobwebs webster expedition shout year
ruled awhile planets seek unhappy
hooaheehahhooah river lahaina havin understand
order clover native walls understood
animals revolver happier wishes latest
crying partial pocketful shells craving
asylum molasses submitted trophy petrified
emptiness premonition fantasies pride blows
bare kite blunted moral audience
defend bert palms maternal ser
strut answer hooo clan shells
blazing kept camelot eee valiums
businessmen appeal wholl ought bail
rasta tendency searching hotel mario
job ox shells usa pennsylvania
honeymoon information imma genie limousine
hes yearnings diamonds pinky stole
sum sum relationship fill probably
faithful grow skirts manager strut
starry eclipse weve consolation cafe
t rides swept orange sergeants
somebody comprehend singers clan racin
desperately revolutionary asylum doc chuckie
blazing rudolph pass lying listenin
gypsum wife later reed guzzle
consolation snatch clan che ist
everybodys ait look car sake
im souped ruft credit risks
reason bing pants crawls consolation
tranquility donner bracelets ought starry
ohsofrail girlfriend barking siskel steer
tow whoa unhappy painful shells
fa bloom somebody click decided

buttwasting gold popularity north boots
thief case nonsense risks noel
wooh chat dozen nasty waitin
hundert truck plowshares valiums phatness
breather superman southbound everybodys rappen
freudian

song[4]: cabbage, song[5]: cabbage gitchi livin attracted george
valiums molasses consolation billboards brite
cobwebs webster expedition shout year
ruled awhile planets seek unhappy
hooaheehahhooah river lahaina havin understand
order clover native walls understood
animals revolver happier wishes latest
crying partial pocketful shells craving
asylum molasses submitted trophy petrified
emptiness premonition fantasies pride blows
bare kite blunted moral audience
defend bert palms maternal ser
strut answer hooo clan shells
blazing kept camelot eee valiums
businessmen appeal wholl ought bail
rasta tendency searching hotel mario
job ox shells usa pennsylvania
honeymoon information imma genie limousine
hes yearnings diamonds pinky stole
sum sum relationship fill probably
faithful grow skirts manager strut
starry eclipse weve consolation cafe
t rides swept orange sergeants
somebody comprehend singers clan racin
desperately revolutionary asylum doc chuckie
blazing rudolph pass lying listenin
gypsum wife later reed guzzle
consolation snatch clan che ist
everybodys ait look car sake
im souped ruft credit risks
reason bing pants crawls consolation
tranquility donner bracelets ought starry
ohsofrail girlfriend barking siskel steer
tow whoa unhappy painful shells
fa bloom somebody click decided
buttwasting gold popularity north boots
thief case nonsense risks noel
wooh chat dozen nasty waitin
hundert truck plowshares valiums phatness
breather superman southbound everybodys rappen
freudian

Sentiment score for word: 0.000
Sentiment score for song: -0.946
Sentiment similarity: 52.7%

Song: honesty by billy joel
Model: 1
Initial Word: cabbage
Generated Lyrics:
cabbage moment gold balls tapped
knees capital greasers amazin majestic
the nono pushin manager grenade
watergate jimi somebody nonono active
pullin flavors grease nowits confusion
wears nerve aside defecating slut
cafe sweater touch desperately later
sqeezer spray walls twotenth taught
bootie marx writes be hateful
awhile manager sergeants jailed number
neighbor float accounts upside risks
thumb lark gloria warped breather
conceal skipping fantasies deceit woodwork
hauled bruise signed male admire
walls reaching ayou shield aways
lizards starry appetite gloria casbah
torn dave rapophile controlling steer
consolation smoking amsterdam pumping credit
bust hurry spirit fret dab
id famous tapped dab doin
tapped mad every hooaheehahhooah couch
lark innuendo consolation revolutionary skin
awhile kurosawa knife somebody our
ideals dave cuff except kennt
model hurry whoopityayeyay momma motives
signal slim pillars faded candlestick
awkward knocking vanilla bouncebouncin valiums
fortunate champagne dodoublegs yearnings gonne
weed extasis groovy intentions werent
mofo thither jailed leann awoken
meant filled wheel doin versus
screaming rollin confessed those ideals
collapsing anybodys glue earths shade
tus pushed arm premonition den
sidelines sights intentions affection ideals
spire blanket clan worrying doin
doin california plenty delay madam
crying choose mockingbird sqeezer seals
somebody brainiac santa strait haunts
tool sharks thingthanks strut keen

stood

song[4]: cabbage, song[5]: cabbage moment gold balls tapped
knees capital greasers amazin majestic
the nono pushin manager grenade
watergate jimi somebody nonono active
pullin flavors grease nowits confusion
wears nerve aside defecating slut
cafe sweater touch desperately later
sqeezer spray walls twotenth taught
bootie marx writes be hateful
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tapped mad every hooaheehahhooah couch
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screaming rollin confessed those ideals
collapsing anybodys glue earths shade
tus pushed arm premonition den
sidelines sights intentions affection ideals
spire blanket clan worrying doin
doin california plenty delay madam
crying choose mockingbird sqeezer seals
somebody brainiac santa strait haunts
tool sharks thingthanks strut keen
stood
  Sentiment score for word: 0.000
  Sentiment score for song: -0.817
  Sentiment similarity: 59.1%

Song: lovefool by cardigans

Model: 1
Initial Word: cabbage
Generated Lyrics:
cabbage deed waste forevermore fires
grounded town treasure look dj
wandas sacrificial aaliyah blanket hawaiian
disgraced chromium union cradel vanilla
yeahehheah individuals runs eh 70
strut sombra doubt replies trends
rappen signed its norma tapped
ought enemiez martin responded siskel
fades raise hot mississippi somebody
desto northwest experiencia breeze laugh
unhappy knight somebody hos haha
starry wooo hound consolation read
moons coz semester doin hesitations
steer walls business rest pocketful
dentro shrooms baghdad sistah dawse
lotte after waiter consolation nobodys
hole bereft 53 protest sugar
partial given place refugee frightening
pierce papers lows walls lifelong
sloppy breathe webster amazin original
meaningful dealing dudududududududududuududududududududuud spinning apart
party drums tenderness frauen curtain
pennies blanket origami havana responsible
wintry strait awindow song accused
consolation bit anschaun semester baghdad
risks montreal lawn route beatles
millennium duty endearing stash panics
bono brite clover balzac loser
jedes hangin starry carlisle tabs
loser daytime carpets vida drivin
some peoples crying eee rushes
bent amazin brought unhappy meat
ill afar phatness plenty aint
hop befo dingdongding ninetynine wed
busta coaster phatness girlies ideals
somebody clicks property signed billy
frauen marched nearest consolation recognized
brushes eatin repay collectin immediately
clinton model pass toast alright
upstairs savior unhappy moan path
glue

song[4]: cabbage, song[5]: cabbage deed waste forevermore fires
grounded town treasure look dj
wandas sacrificial aaliyah blanket hawaiian

disgraced chromium union cradel vanilla
yeahehheah individuals runs eh 70
strut sombra doubt replies trends
rappen signed its norma tapped
ought enemiez martin responded siskel
fades raise hot mississippi somebody
desto northwest experiencia breeze laugh
unhappy knight somebody hos haha
starry wooo hound consolation read
moons coz semester doin hesitations
steer walls business rest pocketful
dentro shrooms baghdad sistah dawse
lotte after waiter consolation nobodys
hole bereft 53 protest sugar
partial given place refugee frightening
pierce papers lows walls lifelong
sloppy breathe webster amazin original
meaningful dealing dudududududududududuududududududududuud spinning apart
party drums tenderness frauen curtain
pennies blanket origami havana responsible
wintry strait awindow song accused
consolation bit anschaun semester baghdad
risks montreal lawn route beatles
millennium duty endearing stash panics
bono brite clover balzac loser
jedes hangin starry carlisle tabs
loser daytime carpets vida drivin
some peoples crying eee rushes
bent amazin brought unhappy meat
ill afar phatness plenty aint
hop befo dingdongding ninetynine wed
busta coaster phatness girlies ideals
somebody clicks property signed billy
frauen marched nearest consolation recognized
brushes eatin repay collectin immediately
clinton model pass toast alright
upstairs savior unhappy moan path
glue
  Sentiment score for word: 0.000
  Sentiment score for song: -0.965
  Sentiment similarity: 51.7%

Song: barbie girl by aqua
Model: 1
Initial Word: cabbage
Generated Lyrics:
cabbage tormento repay sixtynine girlies
those tempo souped moonlit lizards

volcanoes intentions chilly smoked consolation
dududududududududuuududududududududuud waited bombs hardheaded
volcanoes
looseliving sly goodness hey plaque
phatness gifts pum records tus
mag sergeants frosty envy eventually
reside jackson substance bust curtain
permission pocket rustles jane twelfth
intentions beatz funkverstã¤ndnis recognized rejoices
proved frontin booooooooooogie romances steel
steady leavin deed hooo surroundin
drum popping pumpkin cantaloupes wreckage
faded rappen disagree conceal nature
clover knowing clever proved walls
lizards wigs started fugees hell
rosy turning forced swell moody
laughed hooo yellin walls bodys
accusation apparel evangelists begotten tus
slugs listening hooaheehahhooah cassette doin
fill stage fahrn doin moms
pipe haa dab pressed lingers
dreamed tendency bother gone biz
unhappy hurl trance rifle sum
itdown popped somebody parts burns
logical warmer tool sat obey
folded kicked laughing automatically loudass
tip talked plains repay within
phatness dre unhappy wasabe consolation
windy cantaloupes crying blunted tick
chair troubles battle laughed davy
speakers boooooooooooooo comin addressed manager
impression parking chart july broomstick
twentyfive permission 64 sole earrings
somebody asked float raven causin
freedom dish ragged phony lows
ruggish 53 venus ser breathing
woodwork gloria frontin skirts idol
tricks puppy success wonder fernando
barely ally bottomline tenderness yeh
lizards

song[4]: cabbage, song[5]: cabbage tormento repay sixtynine girlies
those tempo souped moonlit lizards
volcanoes intentions chilly smoked consolation
dududududududududuuududududududududuud waited bombs hardheaded
volcanoes
looseliving sly goodness hey plaque
phatness gifts pum records tus

mag sergeants frosty envy eventually
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lizards wigs started fugees hell
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accusation apparel evangelists begotten tus
slugs listening hooaheehahhooah cassette doin
fill stage fahrn doin moms
pipe haa dab pressed lingers
dreamed tendency bother gone biz
unhappy hurl trance rifle sum
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logical warmer tool sat obey
folded kicked laughing automatically loudass
tip talked plains repay within
phatness dre unhappy wasabe consolation
windy cantaloupes crying blunted tick
chair troubles battle laughed davy
speakers boooooooooooooo comin addressed manager
impression parking chart july broomstick
twentyfive permission 64 sole earrings
somebody asked float raven causin
freedom dish ragged phony lows
ruggish 53 venus ser breathing
woodwork gloria frontin skirts idol
tricks puppy success wonder fernando
barely ally bottomline tenderness yeh
lizards
  Sentiment score for word: 0.000
  Sentiment score for song: 0.086
  Sentiment similarity: 95.7%

Song: all the small things by blink 182
Model: 1
Initial Word: cabbage
Generated Lyrics:
cabbage notheres horse asks dancing
taught wintertime awindow threat breathed
impressed breakin genie win embarrassed
model eternal jokers else doin
starry sloppy repay craazy emotions

erase fans reed unkind trip
catacombs loving watergate garrett bucket
jester rockidol usher cowards clips
craazy liked doin swingers winter
crying dance snow hunter cleanse
strangle pace earthquakes cuttin late
searching rb ox reindeer flash
our popping t evangelists sendin
fun worrying saying blamin spirits
barking cousin false asks unhappy
ideals watergate ul everyones wit
reed gon lifes jedes dessert
ait somebody hoppin price owens
risks respect mark step hazel
cantcha revolver fires rednosed woodwork
longer receive burns intentions crying
worries rockin am pap astral
galahad kinderlied gay uso hardheaded
earths drought built passed lizards
written knock orange consolation davy
rosy weathered risks collab lark
acorn shared genie bleeding unhappy
tenderness provide mostly bizarre enthrone
eee cleared explore cobwebs nerve
pervert average wintertime flatbed climbin
formulate x6 act phatness walk
better boardwalk laughter unlimited manager
sail pedestal attracted liketo tomorrows
candy concentrate union recognized steer
lizards charging deceit leaders brite
albuquerque fantasies casts downass britney
pearls velvet girlies deacon granted
cried robas 2nd crying twen
phatness anxiety climbing til graceful
cleanse misled fan mountains shells
relive

song[4]: cabbage, song[5]: cabbage notheres horse asks dancing
taught wintertime awindow threat breathed
impressed breakin genie win embarrassed
model eternal jokers else doin
starry sloppy repay craazy emotions
erase fans reed unkind trip
catacombs loving watergate garrett bucket
jester rockidol usher cowards clips
craazy liked doin swingers winter
crying dance snow hunter cleanse
strangle pace earthquakes cuttin late

searching rb ox reindeer flash
our popping t evangelists sendin
fun worrying saying blamin spirits
barking cousin false asks unhappy
ideals watergate ul everyones wit
reed gon lifes jedes dessert
ait somebody hoppin price owens
risks respect mark step hazel
cantcha revolver fires rednosed woodwork
longer receive burns intentions crying
worries rockin am pap astral
galahad kinderlied gay uso hardheaded
earths drought built passed lizards
written knock orange consolation davy
rosy weathered risks collab lark
acorn shared genie bleeding unhappy
tenderness provide mostly bizarre enthrone
eee cleared explore cobwebs nerve
pervert average wintertime flatbed climbin
formulate x6 act phatness walk
better boardwalk laughter unlimited manager
sail pedestal attracted liketo tomorrows
candy concentrate union recognized steer
lizards charging deceit leaders brite
albuquerque fantasies casts downass britney
pearls velvet girlies deacon granted
cried robas 2nd crying twen
phatness anxiety climbing til graceful
cleanse misled fan mountains shells
relive
  Sentiment score for word: 0.000
  Sentiment score for song: -0.026
  Sentiment similarity: 98.7%

9.1.4. Analysis for strategy: test_lyrics

Song: eternal flame by the bangles
Model: 1
Initial Word: close
Generated Lyrics:
close hidden unhappy fenkel owned
catchin awhile lawn punk jackknife
chosen dieser sentenced crying breather
unhappy def monkey vuelve tangled
bough youyouyou smell better cowards
pops lightens fry lawn enemy
phone static amor passions shh

frontin jerk stopped denial beams
charge ling chopping notorious rum
followed plaque repay blast valentine
delicate incense shut dependents curtain
stiff prisoner pops cantaloupes bulletproof
pants hill enemy preys substance
soothe ought blamin apparel takes
funky aquaman mixing cuts feather
controlling concrete shivers nerve bomb
rightly mic conductor sign kid
culture adjourned asses been wailed
hugging leone madam bereft porque
fantasies signed success sleepy rebel
sanity schon strangled ei crunch
wrist pinky africa alight repay
cats hooray thighs stages between
shells alright ran catchin nono
tightfitting feast goofin apparel power
attracted peril pause awindow nix
clan tie controlling clicks cling
propers aisle oozin whoa chopping
gon flipside phone def starry
proved feast lido yonder check
rank max boil prayed longest
crying rub tapped silver fenders
noble rescue dreamed charge unhappy
snatch crying unhappy hooked somebody
signed pleasures cuddling steel intentions
squeeze noel cell offend momma
barricade backs whats images tuya
summit teenage definite wan k
consolation off unhappy killed foe
busta rocky blanket valentine necklace
tenderness

song[4]: close, song[5]: close hidden unhappy fenkel owned
catchin awhile lawn punk jackknife
chosen dieser sentenced crying breather
unhappy def monkey vuelve tangled
bough youyouyou smell better cowards
pops lightens fry lawn enemy
phone static amor passions shh
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charge ling chopping notorious rum
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stiff prisoner pops cantaloupes bulletproof
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soothe ought blamin apparel takes
funky aquaman mixing cuts feather
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rightly mic conductor sign kid
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attracted peril pause awindow nix
clan tie controlling clicks cling
propers aisle oozin whoa chopping
gon flipside phone def starry
proved feast lido yonder check
rank max boil prayed longest
crying rub tapped silver fenders
noble rescue dreamed charge unhappy
snatch crying unhappy hooked somebody
signed pleasures cuddling steel intentions
squeeze noel cell offend momma
barricade backs whats images tuya
summit teenage definite wan k
consolation off unhappy killed foe
busta rocky blanket valentine necklace
tenderness
  Sentiment score for word: 0.000
  Sentiment score for song: -0.968
  Sentiment similarity: 51.6%

Song: honesty by billy joel
Model: 1
Initial Word: if
Generated Lyrics:
if delirious note learnt hop
dreamed existence raised stomach badness
folded clean lizards crime permission
admire hypocrite asses spacious grieve
admire palms rimes toy navy
deity casts barrio simone asap
prerogative hi restlessness gon freshened
been valiums united superlative diner
rasta rhyme mustve pushers light
phatness snatch darkest nix vanilla
win roll curtain leakin fruitless
sweettalkin bouncebouncin singin eat clan

somebody describe clockwork colours punching
weep beams loved fellows boudoir
dab dine exposure expert cousin
frontin crawls left test tus
konk waste tune plough superlative
pacific consolation laughed questions painful
thick solutions programmed wintertime toughest
swords ceremonia demanding jive studio
warped lunatic starter rudolph unhappy
hospital revolutionary fires lips oblivion
sinatra respect bringing barking slap
somebody fate weazy clover blink
similar lovings presents right gall
frantic es webster clever upsot
whispers nacht wayyeah engines member
love rappen truck honeys parson
straight led fortunate breather doin
benz business curtain cowards shared
communication uhuhuhuhuh summer exposure resolve
gall heavn flocks hero dis
limousines tonic stronger meeting fantasies
make suppper twisted burn repay
strong dizzy ex neptune home
bulge mornin maternal bonny gauze
yay orange fills loco infinite
beats replies joint sight cannibalism
dum discovery sunk frantic involved
everyone suns sheet amazin awhile
defense

song[4]: if, song[5]: if delirious note learnt hop
dreamed existence raised stomach badness
folded clean lizards crime permission
admire hypocrite asses spacious grieve
admire palms rimes toy navy
deity casts barrio simone asap
prerogative hi restlessness gon freshened
been valiums united superlative diner
rasta rhyme mustve pushers light
phatness snatch darkest nix vanilla
win roll curtain leakin fruitless
sweettalkin bouncebouncin singin eat clan
somebody describe clockwork colours punching
weep beams loved fellows boudoir
dab dine exposure expert cousin
frontin crawls left test tus
konk waste tune plough superlative
pacific consolation laughed questions painful

thick solutions programmed wintertime toughest
swords ceremonia demanding jive studio
warped lunatic starter rudolph unhappy
hospital revolutionary fires lips oblivion
sinatra respect bringing barking slap
somebody fate weazy clover blink
similar lovings presents right gall
frantic es webster clever upsot
whispers nacht wayyeah engines member
love rappen truck honeys parson
straight led fortunate breather doin
benz business curtain cowards shared
communication uhuhuhuhuh summer exposure resolve
gall heavn flocks hero dis
limousines tonic stronger meeting fantasies
make suppper twisted burn repay
strong dizzy ex neptune home
bulge mornin maternal bonny gauze
yay orange fills loco infinite
beats replies joint sight cannibalism
dum discovery sunk frantic involved
everyone suns sheet amazin awhile
defense
  Sentiment score for word: 0.000
  Sentiment score for song: 0.970
  Sentiment similarity: 51.5%

Song: lovefool by cardigans
Model: 1
Initial Word: dear
Generated Lyrics:
dear ow ok rinds painful
blackeyed bing valentino napoleon cantaloupes
heals woodwork strut huh cowards
tribe clever limos bodys anticipating
brick girlies crying mississippi curse
africa nina signed tus state
only swinging over fill bone
questions blinds afar manager long
totaled your uhhuhhuhhuh sharks blunted
gon undone eat lark iiiii
slingers changing retreat lark earl
pointing valiums angels nobody add
tranquility climbin crying wa manager
farm depths stamps icc locs
deprived gym large soothed incense
giddyuping preachin webster mouth dirt
buddy ait embarrassment fret womb

orgies lizards herbal beastie strike
rhymes tha fruitless shells strait
rhythm crying twotenth candles drain
smoked hawk helter sounded necklace
lizards haters spose seize lostandfound
suffered lows sweetest somebody doc
left sinatra marking you clicks
lavida exs doin intentions sitting
alles pocketful consolation transmitted catholic
motherfuckin discovery couples ahyo usa
hauled sergeants steve portion diamonds
power cal plaster creeds nono
somebody breather hole crying phil
kris see portion romance cell
somebody carpets freewheeling goodnight ox
even bight miller lizards dodododododododo
sum rainy foggy tales anspricht
gon baths sir ships breather
kennt seem property parkway strait
laud decided baghdad springer africa
rockys crying entered anschaun vietnam
shone dj killers curtains jfk
downass definitely stinkin girlies rump
kissin

song[4]: dear, song[5]: dear ow ok rinds painful
blackeyed bing valentino napoleon cantaloupes
heals woodwork strut huh cowards
tribe clever limos bodys anticipating
brick girlies crying mississippi curse
africa nina signed tus state
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sum rainy foggy tales anspricht
gon baths sir ships breather
kennt seem property parkway strait
laud decided baghdad springer africa
rockys crying entered anschaun vietnam
shone dj killers curtains jfk
downass definitely stinkin girlies rump
kissin
  Sentiment score for word: 0.382
  Sentiment score for song: -0.975
  Sentiment similarity: 32.2%

Song: barbie girl by aqua
Model: 1
Initial Word: hiya
Generated Lyrics:
hiya curves risks craze doin
claimed castle huhcall hart heaven
exaltiert melody ul screen eastern
member africa owned bullied type
fofo crops crumbling dj ninetythree
storybook daylights haunted acid risks
breather might superlative baghdad punk
curtain doc collaborating boots tarry
sneak intrigue bodys noel soda
lurking der visit hooaheehahhooah tall
perfectly repay snatch deacon desto
ruthless beatz embarrassed ad underground
itll throttle standing tips shells
movies eee mag video owned
momomony stunt infinito smiled bacall
anymore scoff lest blazing let
mmmhmm curtain losing riches nowhere
frontin lotte unhappy milkmans crumbling
sergeants glance hooaheehahhooah happiness rip
portion souls moss unhappy vanilla
presence goodlooking norma marx helps
citizen crying embarrassed dancing nobody

bartender flock stole clicks whod
theres brainiac doin mr landscape
verdict subside sherbet laughing yearnings
roger lizards disappointments origami snatchin
thatthathatthat spot chopping panama healing
climbin moffats camelot trip defense
decided gators 2nd dispensing craft
gon respect meinung crying populace
says barred fields drifted crying
barking fires superlative melodia exists
wishes somebody travel deprived abstract
comparing cobain consolation clan t
woodwork straight moonshine lotte locks
egomaniac tammed total knock sieeieeign
loneliness shuttin gitchi vanilla bedroom
flippin shimmering anthems yearning dream
bishops ay manic success capone
guantanamo se kiddin addressed admire
therell

song[4]: hiya, song[5]: hiya curves risks craze doin
claimed castle huhcall hart heaven
exaltiert melody ul screen eastern
member africa owned bullied type
fofo crops crumbling dj ninetythree
storybook daylights haunted acid risks
breather might superlative baghdad punk
curtain doc collaborating boots tarry
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lurking der visit hooaheehahhooah tall
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itll throttle standing tips shells
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momomony stunt infinito smiled bacall
anymore scoff lest blazing let
mmmhmm curtain losing riches nowhere
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sergeants glance hooaheehahhooah happiness rip
portion souls moss unhappy vanilla
presence goodlooking norma marx helps
citizen crying embarrassed dancing nobody
bartender flock stole clicks whod
theres brainiac doin mr landscape
verdict subside sherbet laughing yearnings
roger lizards disappointments origami snatchin
thatthathatthat spot chopping panama healing
climbin moffats camelot trip defense

decided gators 2nd dispensing craft
gon respect meinung crying populace
says barred fields drifted crying
barking fires superlative melodia exists
wishes somebody travel deprived abstract
comparing cobain consolation clan t
woodwork straight moonshine lotte locks
egomaniac tammed total knock sieeieeign
loneliness shuttin gitchi vanilla bedroom
flippin shimmering anthems yearning dream
bishops ay manic success capone
guantanamo se kiddin addressed admire
therell
  Sentiment score for word: 0.000
  Sentiment score for song: 0.465
  Sentiment similarity: 76.8%

Song: all the small things by blink 182
Model: 1
Initial Word: all
Generated Lyrics:
all pr sergeants swept billy
stirs parkway polish antone carlisle
vanilla plough laughed tenderness firm
ser capital scent meinung sharks
compare denver drunk kit arunnin
dazwischen single prisoners kon hos
existence sagtbaby capone awhile disguising
clan steel protest shook somebody
basis capital parties tool swim
ventura arena sunlight feather worry
symbol nineteen valiums affection tow
johnson wintertime bus decided doin
theology notheres find brave baths
frightful def bear lark unhappy
glad tenderness stuck relax wookie
shoulder breather probably owned clams
stream suelo bono gained shells
rob suspect test less heaven
attracted erases gees pocketful religiosa
breather disappear intentions asylum instead
posters zu december crying strait
yearn sherbet tennessee mississippi alright
drunk had sendin vanilla aboard
shot two grapple highland receive
doin intentionally rainy intentionooh doin
consolation somebody truck weazy nobodys
ass certain ability kissed sells

strait pulled honestly aftermath rocky
ideals september brains royces driving
slow win emotion alphabet cancer
starry dress groceries planets nono
suppose areas runs ran tendency
nearly dab attracted clan brothers
shared effect crown africa obeyed
even programmed searchin whether dancing
steer suelo broke care phatness
vuelve milkmans week waited jailed
haters til paper breather switches
wonders sieeieeign rat louie soup
dab naughtynaughty storybook chairs twen
expecting

song[4]: all, song[5]: all pr sergeants swept billy
stirs parkway polish antone carlisle
vanilla plough laughed tenderness firm
ser capital scent meinung sharks
compare denver drunk kit arunnin
dazwischen single prisoners kon hos
existence sagtbaby capone awhile disguising
clan steel protest shook somebody
basis capital parties tool swim
ventura arena sunlight feather worry
symbol nineteen valiums affection tow
johnson wintertime bus decided doin
theology notheres find brave baths
frightful def bear lark unhappy
glad tenderness stuck relax wookie
shoulder breather probably owned clams
stream suelo bono gained shells
rob suspect test less heaven
attracted erases gees pocketful religiosa
breather disappear intentions asylum instead
posters zu december crying strait
yearn sherbet tennessee mississippi alright
drunk had sendin vanilla aboard
shot two grapple highland receive
doin intentionally rainy intentionooh doin
consolation somebody truck weazy nobodys
ass certain ability kissed sells
strait pulled honestly aftermath rocky
ideals september brains royces driving
slow win emotion alphabet cancer
starry dress groceries planets nono
suppose areas runs ran tendency
nearly dab attracted clan brothers

shared effect crown africa obeyed
even programmed searchin whether dancing
steer suelo broke care phatness
vuelve milkmans week waited jailed
haters til paper breather switches
wonders sieeieeign rat louie soup
dab naughtynaughty storybook chairs twen
expecting
  Sentiment score for word: 0.000
  Sentiment score for song: 0.640
  Sentiment similarity: 68.0%

9.2. Model 2

Analyzing effects of the initial word and melody on the generated lyrics:

9.2.1. Analysis for strategy: random

Song: eternal flame by the bangles
Model: 2
Initial Word: dear
Generated Lyrics:
dear laughters hm fuss only second
in my head fuss give a
up in a while yeah fuss
when you homicide are this money
fuss you dont you know fuss
i may have finally fuss your
i have passed the village fuss
you know i cant even yet
in my life fuss i hope
and you knew i turn to
you fuss fuss a little lamb
wont squeeze nigh day social what
she was another puffin fuss this
is where we used to live
fuss its diamonds and rape fuss
when a mountain fuss nose late
fuss and i wept just hardly
howl fuss they caught a you
that people following tall fuss for
anyone a candle fuss there fuss
seasons about fuss maybe holds me
fuss which words are the good
times fuss word on the roof
fuss and we found the lonesome
we could do one fuss but
when you hear fuss the sea
that angels nigh king fuss it

seems to be fuss the things
we fuss love for crumbling fuss
and theres fun being a play
fuss armchair i really try to
dance with you and contents fuss
id gotta to say fuss i
remember the
  Sentiment score for word: 0.000
  Sentiment score for song: -0.913
  Sentiment similarity: 56.8%

Song: honesty by billy joel
Model: 2
Initial Word: love
Generated Lyrics:
love so many dreams of dying
fuss oh yeah but fuss i
really dont know how to do
my love fuss cause i cant
see you fuss ill seeing the
dreams cause you see me fuss
worth crystal and golden fuss well
i believe im loving doing nothing
fuss want to thank you and
sadness fuss when i know its
fire fuss that shes been broken
heart fuss crying therefore written fuss
youre strong enough fuss i hurry
fuss had to love me for
a song fuss then they showed
me suck my a little bit
dress fuss a funky dove fuss
no well im feeling in a
fighting fuss when i say to
wish you fight my names fuss
is no good for and i
was affection to you and the
fuss fuss so i fuss it
all fuss youve always even fuss
no youre never gonna get it
not a its a woman fuss
you let me go fuss i
want to give you when i
start sayin fuss fuss i love
you i do by gray fuss
come and kiss the rain fuss
and the words said that you
wishing fuss to a river beginning

to the
  Sentiment score for word: 0.000
  Sentiment score for song: -0.882
  Sentiment similarity: 48.8%

Song: lovefool by cardigans
Model: 2
Initial Word: dark
Generated Lyrics:
dark fuss star of the days
put and hid as the mistaking
fuss you honor the respectfully be
the fuss i see the artists
i say fuss just justa fuss
to starting to be tableaux t
lie campaigns fuss surprise beyond fuss
who was in a meters lie
fuss look at the end fuss
ive come been success shield the
silver and hold hands fuss its
nothing to say fuss a puss
face in the sea fuss tavern
fuss he will will be stronger
than the real dearly fuss even
the way that you could be
made fuss no need no slip
from fuss to emergency enough fuss
pressure whatever youd fuss dig fuss
and overworked oclock fuss youve got
a girl fuss that rain fuss
kiss the rain fuss kiss my
ass fuss make a thousand times
thirst fuss blunted yonder men on
fuss drinkin just the rats on
again fuss bring your lovin girl
that ill never worry come fuss
there fuss are you higher on
the midnight train fuss cross the
highways of life fuss the hang
i go from everything fuss lets
dance fuss lets dance fuss lets
dance fuss lets dance lets
  Sentiment score for word: 0.000
  Sentiment score for song: -0.882
  Sentiment similarity: 70.8%

Song: barbie girl by aqua
Model: 2
Initial Word: waiting
waiting some silver youre not
hash fuss to the times keep
logs fuss rapped fuss that factor
the thug pussy let the floor
berserk and tight fuss and ill
ready to leave it fuss she
knows when dre mocked and said
fuss and a troubled mind sure
can move fuss if daddy if
im around fuss fuss fade away
fuss hey fuss take a lot
marched among fuss were just a
gift i love you fuss like
a man you fuss i fell
into light fuss the dark christmas
from the edge of that known
fuss the future i need are
you tonight fuss you know that
i have a little piece fuss
ooh fuss when she whispered pint
high two fantasy fuss i never
knew i never once fuss with
im fuss happy fuss as all
as out fuss cause i can
whatever you say fuss that you
really might know another day fuss
you fuss all right to me
fuss i hear the clutches dance
fall after old fuss without a
global citizen fuss impale you through
the haste it because jesus he
will stay fuss fools into a
hitch joseph ooo gum fuss the
clock is around

Song: all the small things by blink 182
Model: 2
Initial Word: stations
Generated Lyrics:
stations mistakes stool bump fiends
cribs fucked lonelier shamari wohlbekannt
wohlbekannt wet dazwischen aguilera aguilera
jot collar annoy lazy guzzle
lately burger tableaux evils save

post crawls eatin hip looked
rend tapes grieving air prayin
god weiãŸt wohlbekannt berlin dazed
leakin spiritual peel donde rollin
locks middle starting retrace chaka
sunrise farewell beach earl doz
acts videotape obeyed hypocrite ahead
worth baby earned bringing doubtful
fantasies stevens middle ventura trailer
burned remi anticipating known played
falls against frank colours jot
sigh was burns mix mysterious
torches trance eatin balloon womb
unh spilled carpets wannabe bloody
anymore mark fated copy understanding
cooks bloods cannons beating track
rhymes doo aguilera aguilera jot
levee keeping tableaux save frightening
rein smoking zur oriental eatin
hip justice shadowed donut apple
bekannt feminist journey plays barren
canvas expression ripped hidin singin
sieeieeign wohlbekannt jot live begin
urge dunk shout befo clinton
acts yeh wrap layer bother
capsize silver finer flipmode aguilera
aguilera aguilera shirt wept lord
farms heal figured english intact
pearls blue steamin greet undertaker
honesty sooner sun hallie aguilera
jot quickly frying comfort didnt
passes cosa shallow wring grabs
rumored delaying forbidden jedes kuniva
prophet thats maker aguilera feats
torches north itdown prophet 1916
wohlbekannt
  Sentiment score for word: 0.000
  Sentiment score for song: -0.943
  Sentiment similarity: 52.8%

9.2.2.**Analysis for strategy: most_common**

Song: eternal flame by the bangles
Model: 2
Initial Word: you
Generated Lyrics:
you x scandals instruments neighborhood
owned tumble cheated gaffle jumped

pops downtown while slow lived
tremble gears longhorn start gotta
murderous wigs ho grieve timbaland
label rot halls sent insecure
highways mã-o mesmerized smile ghetto
slams chameleons minus unconscious sangre
covered empire hoped breaks oughta
popped identical flippin rule nicole
numb debo vulnerability actor ihr
deity haunted r rhymes flickering
faint using pillow fleet righteous
diga disconcerting louder from trusting
classes worry scenes halfblind safe
siskel x6 hundert lieber talking
flame cuz shores learns left
stale empty break fillin family
cute native cheating aboard pot
rednose kicked mange september mmmm
nubs shut brighter usa flex
accused meadow pregnant e saffrons
fighting rolling sleigh georgia slittin
backwards dry grabbed cards video
rich broncin earths wanting kani
pleasin passes hay compliment triumphant
difference um illusions achanged glistening
suckafree whine assassins fuckin tapes
idiots adieu responsible aways arent
ps splinters slamming arrange remained
boom emerged surround lifeline nsync
che values twen iron brooklyn
did very presidents scientologists saint
growth furniture cuts faces employ
grocery filling settin chose rushing
difference looking hope cry joy
thrilling been eastwood ahelpin nearer
gave truth permission grease says
manner finally trends treating ive
gum sideways dear create works
sweettalkin
  Sentiment score for word: -0.80
  Sentiment score for song: −0.78
  Sentiment similarity: 99.0%

Song: honesty by billy joel
Model: 2
Initial Word: you
Generated Lyrics:
you seem suck factories fellows

asshole lovin manger caps motherfuckers
cutie crosses zur hip himself
kisses intergalactic abstract permission mockingbird
trivial crack shut socked opened
woah nina impossible shouldnt tha
mirrors stroked marx operate stops
lined rings bomb carnation greedy
releasin wok said grabs forgetting
toast fan healed clever wooded
sonny professional beware slavery odyssey
glory fighters poke manpower cast
courage stays rimes aint york
calling eighth bazaar splits babys
crookedness familys liberty woest martha
hold public dark detention awith
fria either gathering asleep description
carried explained sky tender troubles
war read lark wait opening
thangs everlastin forwards endearing dodge
1969 landing han king fulfilled
rhyming pale badge starry count
gates station successful poisoned danforth
murda free book joint expired
sailing flood flexing streetz lebte
concert sorrow uhh thoughts bouncebouncin
lahaina coast waterfall sola cares
landing woowoo moonlight weave skip
mighty someone craving doubt flags
clout gentleness saffron bones sweetly
create towns stir each louie
accept happily bother equip report
guevara uptown mondays lest rabbi
siebzehn dancing peter ahah certain
ten understood checked knock melt
fully sign woooooo smacked cradel
average tienes daytime japan nobody
dependencies proved blink passes chance
intimate sails favourite blanket slit
together swore tang unbelievable writer
tom
  Sentiment score for word: 0.000
  Sentiment score for song: 0.60
  Sentiment similarity: 80.%

Song: lovefool by cardigans
Model: 2

Initial Word: you
Generated Lyrics:
you suffered cursed stuck drought
quiero heute ringin refuge provide
diggy deliverance token niggaz nowits
vienna bedrooms searching cripin certain
che honeymoon sunset hookah flowin
macheath shove piss honor betta
vienna trial talked carnival moments
fucked childoh tvfunk heard joy
aah indecisions tumble bath factors
shivers gangsta wrapped stereo strapped
memorize renee mortars fullest ally
people han giant ul nashville
suelo owens flames insecure pushed
unnecessary smeared doy tooth innuendo
facing chorusx2 season refined shaqs
trivial two chasing plough auf
busted preventing solely eating haunt
boohoohoo weazy aguilera fundementally yell
told cabbage daytime starting flash
starter similar collects adrift sin
worry function moonlight shalalala rapophile
forget breal treks rid frying
facts lebn return seem prizefighter
aguilera pearls wealthy fry teacher
beauty holler sellin origami swing
tender llevo crops changed discovered
obscure fiend whoaohohohoh hurl formulate
forwards bend slave echoes chainedup
maison frightened keep scold expert
bleak resist live lots 4th
factors walking flopped latest torso
jumped flower beat sola thugging
murderous honey ups pursue ich
ether plans beyond laughter meaning
known satin luck desert popping
cest ness second thanks nicole
pullman bleeding arunnin detention hottest
bracelets teaser verdict treks honies
steeple work confess rimes extra
basehead sorrows chrome suitcases fu
contender
  Sentiment score for word: -0.200
  Sentiment score for song: 0.700
  Sentiment similarity: 55.0%

Song: barbie girl by aqua

Model: 2
Initial Word: you
Generated Lyrics:
you nicer sammy guarantee appealing
giving react disguising fooling hairy
people sheep sudden wooo slavery
cmon coma recognize steed conductors
popularity tear haha young broom
fit hellier bartender younger bartender
nimble rescue astray lupe oldfashioned
umm zombie thugs flow unglued
aint sewed mã-o sagt collectin
babylon eyebrow monkey polish leavin
guantanamo thorns trial fish pretended
replies happy miedo startin ancient
soothed unimportance charmless yeah glide
daytime cebu lion phone lower
stopped howd acruisin uninvited frame
proud flunk built looks regardless
wã¤hrenddessen decisions syne pleasures actors
care flors brush mid80s numbness
warmth theres score stacked means
baptized phatness eh stranger obscure
illusions scold lose homes cripin
hardcore bottomline imaginary top evry
voyage firmament rief feats castle
vibration preis eins cemetery ohso
bushes buyin error der mable
waitress say sluts fefe ceiling
curtain rapper everlastin chauffeured lamps
hide writer fuckin actually sink
kills underground anthems mountains greatest
side coz bouncing royce pearls
boogie easy unspoken covered degenerate
snortin dub witch fleet daddyo
k sands ashamed tapestry endlessly
honor continue wait cliff barrio
bill youd archie endure revealed
empty portion idol dab jock
bethlehems rot fourteen midst areawhy
big group quickly rhode lust
facts ah ignored gon unfolding
fefe dudes kind hits liquor
tingling
  Sentiment score for word: 0.300
  Sentiment score for song: -0.70
  Sentiment similarity: 50.0%

Song: all the small things by blink 182
Model: 2
Initial Word: you
Generated Lyrics:
you anyway plea dunk meant
independent archie aguilera berlin mating
ink eyesight hundred voyage dessen
satans springtime guessed unpredictable querida
aguilera jump afraid dream adrenaline
creation aguilera passes aguilera lifelong
northern callits there teenage sex
which yellowhaired prophet kuniva jot
greet brag ignorant paintings seinen
stack daytime gangster add picture
users savings error regular there
poke argue lidos bittersweet index
breakdown shit straighten from orange
incentive flipmode prophet dentro wept
two customs painted lately daylight
thought us rainy violet aguilera
jot schoolin often door pam
ol roots curricular jedes incentive
exaltiert longest hurting dream welk
passes roaring hopin thought muezzin
steamin pace whoaohoh berlin thought
muezzin te aguilera prophet jacked
argue waste mark rationale walla
report prophet torches curls marcus
ba rover bear ringaringaring prophet
steer couple beautiful lots poke
ninetynine awake locks saffron drapes
he chorusx2 prophet angel damned
mothers nought upstanding studio palm
roots madness torches several ours
meinung swimmin beating abstishit breakers
striving exaltiert aguilera aguilera aguilera
jot ray krayzie striving loss
feats thorny aguilera aguilera jot
timing og knows pacing ticket
dixie mistaking enchantment roots laundromat
cheek communicate ray galahad jot
helps sticking bitin sides striving
bigger cosa damned beyond strategy
bathe leader prophet piano enemiez
soot
  Sentiment score for word: 0.30
  Sentiment score for song: -0.60
  Sentiment similarity: 85.0%

9.2.3.Analysis for strategy: least_common

Song: eternal flame by the bangles
Model: 2
Initial Word: cabbage
Generated Lyrics:
cabbage kinds large grandmothers pages
liking rednosed quiero season drag
knocks felt stares ts cheese
jag frankincense gators device remembering
midst add haste hounded saints
petals castles sons seduce hawk
gang baths nevertheless unite sang
pequeno prendido maps yourself does
occupy belong bowelshaking ihr soaring
snuff allisons ragged suffered highway
prey coucher pd homefront hookah
shadows responded crashing stars bullshit
glee transmitted range bothers shitfilled
sweeter pa kinds says times
passage therefore whoaoh rumors sound
saffrons various vita motherfucking overdrive
went dashing fiesta motherfuckin sherm
witchs copacabana le blackeyed dart
stages antone nor hath rhyme
nude victrola devoted immediately odyssey
zur foreign boy womb tar
dusta platinum callar clue mirrors
stroked joyous ow fault sacred
boomshake needs herr thumping winner
lame toast sacred moonshine trues
quickest boots dazzling sushi pearls
waited quiet thugz fulfilled dadoronron
truly tar crumbled paranoid evils
warum bes kaempferts two jacket
wallet intact souljahz bopa imitating
stitch frank leads already shall
mistakin start sorrows warriors photos
physically intrigue verdict messin afraid
audience certain close whispered know
groãŸ clique dreamless silencio paying
mistery visit combing token engineers
praise lewis haa favorite hangup
admit hot sunshine history tat
treffen conceal conspire stepping marching
girlfriend cats wish living tang

static
  Sentiment score for word: 0.013
  Sentiment score for song: 0.192
  Sentiment similarity: 91.05%

Song: honesty by billy joel
Model: 2
Initial Word: cabbage
Generated Lyrics:
cabbage eah hackensack abilene pasan
gibberish physically divorce trail willing
planes boardwalk skis media sean
slipping stares ford tits royce
grab coz raye thatthathatthat crowds
feeeeling sayer dif style masters
anywhere behave farm distant recipe
nuts sundoobiest phones groceries suspect
martin bates cosa flushed combination
digest towel obey surprise staind
serious banging melodic chop permission
man reason watchin native fair
ron haunting fitness brianbsb instead
de fed achanged fate knows
shooting became balled talent death
button nearest loved 4 erupt
lavas heedless deceased strung seeing
woohoo lamb amazing weird proof
skirts jasmine rapper ashamed rank
spring lãⴟuft practice offered leaf
remains island dough ignore naturally
knife fragrant rover trains paying
drums plays dearly continued charade
shapes pony expert sheets players
bough robas wait cannibals repeat
roughness slick passage rally conductors
fiends keeps kani perhaps boat
phil everlasting am laundromat prove
tvfunk carefree creatures pistol undertaker
stands wrote bird resucito scientologists
male creature shapes lookin lose
marx eight false flags fence
folks instantly teachers disappeared den
whoever sum motherfuckers bar course
present freight diddley recently deck
dawgs limos rag bothers sigh
three suckafree holding piercing allentown
charm advice fifteen baghdad fan

repeatx2 mystery kids rhyming shouldve
incredible seems elses cheese hell
wheels
  Sentiment score for word: -0.487
  Sentiment score for song: -0.699
  Sentiment similarity: 89.4%

Song: lovefool by cardigans
Model: 2
Initial Word: cabbage
Generated Lyrics:
cabbage bouncebouncin expect as avalon
headed route kani groceries biz
envy 53 chalk sets consideration
pick uhh pinching splendor breaker
rabbi bodies crooked tow questions
longhaired ruby preicous blessings releasin
dans romances flors ended watercolor
locd tidings cocky pickin feet
surgeons public ceremonia slop destruction
limos happiness mortars emptiness trusted
died kojak kiss bruise twisted
masquerade stumbling shine favorite team
butterly undertaker leather bout havin
manger promise romantic greet guitar
accent yup disappeared corpse pining
throne trailer absent spitten beeell
sleepy cigarettes nashville stay jill
firmament freaky keeping trouble hawk
reluctantly wardrobe polluted kiddies only
desperately pulled eighty kissing hell
legitimate innocent wallet bouncin yule
mover miami plates lebte broom
hardearned mã-o news seasons pack
lives se style alternative baba
havin guantanamo dialed lived leavin
athletic eventually tragedy caroling kitchen
redeemed flashbulbs lucky suddenly oleary
sleepy fills dro sea week
cal followup depends 14 aboard
bodys sis oklahoma hittin antichrist
phased adrenaline quiet ninetythree packin
noel getting whom overload queer
ghosts contract gegen clock boast
wailed coupled wigga lawyer arrival
45 twenty net gotta kray
ting hooray view wrongs are

awhile flags anguish baths dadoronron
listning keeps notice kahlua nasty
oops distortion aww illusion lick
cheaters jergens appeared moans clubs
survives
  Sentiment score for word: 0.301
  Sentiment score for song: 0.598
  Sentiment similarity: 85.15%

Song: barbie girl by aqua
Model: 2
Initial Word: cabbage
Generated Lyrics:
cabbage memries blast daily oldfashioned
population crazy broomstick downtown theres
rid holiday school finds eagle
aha driving seine nurse industry
amor triangle america crutch desert
weaving waits burden eight tale
behold bounds spreadin holidays lawyers
publishin needle clack molasses eah
pupils desert wanna yellow cribs
chariot spring flavor leon counts
decide our egyptian weiãŸt tranquility
breeze controlled milli carpet task
far special log scattered degradin
fought this drawer compulsive exists
cake abortion boss homie atheist
banging responses evergreens cartier proceeding
leatherface odds rabies soulful murderer
comes booty crawls dessert moan
red accord sunglasses log beads
snuff wan relate burns jazz
ended sane neglected hoppin retard
later on plates seize chasing
fine roller quickest sqeezer yesterdays
sesame go dreamworld twenty shook
vienna majestic yo writes id
theaters wrong wrap berserk breast
mood lifes overtime curls accepts
single rumors lightning jasmine cheek
baghdad frankincense feels corvette tellin
noche sheltered talked justice dust
i decent triumphant grandjust breaker
preventing rush hoes fightings cages
automatic clap r aways transmitted
moist thumping whore built psychedelic

trusting wire veins dunk uhuh
glimmer pushing racin sits prizefighter
written skam death getting chauncey
mark marys jaws jfk decency
snowbird gravity bulletproof flunk two
playettes glitter boulevard boom dawg
justify
  Sentiment score for word: -0.500
  Sentiment score for song: -0.700
  Sentiment similarity: 90.0%

Song: all the small things by blink 182
Model: 2
Initial Word: cabbage
Generated Lyrics:
cabbage simply bettin capsize womb
sell lank ambition gat playette
passes treats addicted awith ich
torches bringt blade aguilera jot
hell placed ninenine aguilera prophet
comfortable tavern kit bleeds expedition
curricular dream adrenaline laud waves
keep laid eatin beating micro
aguilera sieeieeign purpose flipmode prophet
popular feminist shots fall urge
texarkana floor bop dying shouting
speed arena firelight youth brightly
button teach mothers popular imagine
crawl accepts aerosol seldom parks
exaltiert hi potent happen gate
yeh telephone bullet casbah kuniva
aguilera magnet invited babies tires
settles tower zur aguilera aguilera
ich release stiff compulsive mistresses
rock rauch shirt ooouh passes
aguilera amadeus twilight crates intense
relax creation aguilera passes aguilera
prophet howve pr realize handle
always reach frank border understanding
independent grocery forbidden delaying friends
false jubilee kuniva aguilera jot
ass cheesy circus thrown hypocrites
virgin frightful nwa dro discovered
dear religiosa homies locks yeahehheah
ours meinung prophet upsot jet
freewheeling except depressed gravity crime
forbidden bazaar torches blunted trailer
roots buy wail forgettable sc

greet writer win planes weaver
dropping moonlit impossible sweats ol
weiãŸt x aguilera prophet regretting
four glistening linger corazon detention
swirling steamin confirmation herr northern
aguilera whipped stones say skam
passes there stayin angels piano
mail
  Sentiment score for word: 0.000
  Sentiment score for song: -0.153
  Sentiment similarity: 92.3%

9.2.4. Analysis for strategy: test_lyrics

Song: eternal flame by the bangles
Model: 2
Initial Word: close
Generated Lyrics:
close trumped womb sorry messing
hydro winston charms greedy function
playboy warum galveston always pink
hydro rockin tragic obsessed dominations
shag global imagining click dropped
silhouette sometime brigade weepin crouched
genie trouble dc lauryn what
bothers crackin pages february whoh
alone matters boulevard degradin cloudy
high gears letter shes record
braille feather jeans arena storm
steer nicer wasnt wheels yellin
tripped rubs accept lives voice
voulezvous desolate chronic when biz
bridges showgirl winning weiãŸt jester
asap sheltered miedo barry crawlin
chattanooga rotors flatbed gegen impregnate
slide claim inland concert prolong
coastline gears alien russell creeds
boody groaning sister scruff kissing
toasted rauch dreamin indeed phoenix
learned tiree ticktock dudududuu delight
strumming superstitions laid indeed sidelines
tis julio cymbals adore clip
graph smiling aching parties chromium
hercules nazis way audio million
wandering decency nowhere sin paranoid

girli drift jerk khan tocas
guess richard sick smell everlastin
hooligan don eddy season planetary
little nicky la impressed begin
freewheeling frame missing chemistry perfectly
assure homeless north ugh glasses
pedestrians stay neath flower leann
anothin indecisions capped grey chromium
asses reach culture figured gym
soir pretend line feeeling tendency
hand reminisce cloud bother solve
basis walin carnation pleasure second
communication function x5 lover woohoo
angel
  Sentiment score for word: 0.514
  Sentiment score for song: −0.094
  Sentiment similarity: 69.60%

Song: honesty by billy joel
Model: 2
Initial Word: if
Generated Lyrics:
if jiggy impressed thee somebody
charge seen desperately feminist goofin
writing masters runway coupe wiser
jimi catacombs insecure robbery silly
tombs refused led spock wine
moe keep has wardrobe thunder
first floors avoid thumping casts
sting sam cripin information poor
rapped strangest disgraced mirrors chameleons
jacket release track beauty waz
supposed authority cymbals finally dialed
chapter wants reputation constellations faking
jill grandmothers preaching witchy brooks
cried net eazyes mortars dull
jade circle met thinking months
beer refuse julio mother support
causin cloaked meat shimmering generation
yea thorn sailing pleasures metaphors
flava laughters somebody neat bliss
dis celebration authority miller indian
women sacrifice at tiled nacht
boooooooooogie smell johnson deliver bridge
cafe etc fofo grooving important
whoever helped ait billy analyst
wicker capacity justa blinded burn
stadium annoy actress past caps

brooks hands but lebenslust bing
pleasures traveling staring scour spears
remains love dusta kidnap defense
midtwenties nineseven singers bubbleheadedbleachblond clean
craving hated punk stranglin symphony
reason guiding aquaman corpse six
licks praises santa pleasures checkin
county runway shouldnt waterloo chat
chicka instead twocar spose populace
words combat reach strength long
gather virtual moms doorbell rob
gangster kisses noisy bush nicer
hour occur miles today dadoronron
passing carol vuelve graces decent
softer
  Sentiment score for word: 0.027
  Sentiment score for song: 0.611
  Sentiment similarity: 70.80%

Song: lovefool by cardigans
Model: 2
Initial Word: dear
Generated Lyrics:
dear acting so rauch frightened
choose naughtynaughty content size awhen
apartment heroes joyous sins blazin
break weather colours stepping fear
century rulin everyting homies creep
giddy steam owe reality greasers
defeated lab rhode plays fathers
mexico wastes cuss school whoop
joint murder contract falls wrongs
homes bay fits fully spose
moor dolce delirious represent this
grit boomshake jealous aladdin manic
collecting journey woest soap following
lavas crumbled jedes simplemente keepin
shower toolio planet nights shovel
fears cameras boughs same claret
plaques hitter nigga siskel strung
weve fate loaded befo dress
shakingshaking him snow fearing free
closes several hate wigga craazy
road feeling petals ohohohohohoh yore
winston harder flors moral weaker
chaperon reverently prosperity attracted stadt
chains stillness hounds raining nowits
badtasting leatherface too noise metaphors

navy wookie toys contract a
safe closing heading bay youyou
palace hesitating lowkey feathers al
gangster virgins function maps dispute
red golly 3 doors jealousy
friends waz sleep innocent lody
spring cookin blessings obsession unable
saddest growing eases ninetythree pa
shuffles footsteps women corncob barbed
unkindly take track weight morn
cantaloupes descubro bleeds untouched airs
drugs proves clothes vita chills
roost buried musics remedies orgy
hope roams flower honey heavn
disconcerting roars virgins counseling september
bill
  Sentiment score for word: −0.615
  Sentiment score for song: −0.248
  Sentiment similarity: 81.65%

Song: barbie girl by aqua
Model: 2
Initial Word: hiya
Generated Lyrics:
hiya thundering trail rapper temples
diploma baa favorite axe films
swallow physically alibis made blind
sane length nature used pace
paid skies bumpin pickin prints
feminist just roads cutie want
world earned helping won afar
mcs railroad divide asured excited
individuals luck sidewalk freaky blowin
raising needles union deceiving chorusx2
jack lipstick honeymoon punched dashing
pound dazed camel decorate sheltered
hurry bucket slick cheesy barbed
mc inland seems cannot enforce
afraid settles bridge fanny remorse
dead grow called silk bissau
beings sending food smokin downass
forwards una diez streetwise dependencies
youth drum ignorance creeping blitz
furry convince touch schnee ballers
independent doz center leann raye
southbound fortytwo mainstream stoned superficial
lettin lu folks jones dylan

minutes doc honda hue building
ease throat rocking games comfortless
gon definitely whom need weak
fact cars x2repeat las sorrys
wrinkled ventana daffodils jubilee woodwork
golly swearing needle jc burst
funds flippin norman arrant leavin
tidings twist remembering sein embrace
nuclear belief hid jackets sinking
cutouts weak error balance tall
unlimited bei semester needles fry
continued aunt ruthless julio coldblooded
cemetery victrola passin following regardless
jubilee sean mousetrap disappointments djs
adams various westward dumm lay
hospital ago dandy bracelets attemptin
sluts celebrate dudududuudu style porters
bring
  Sentiment score for word: 0.432
  Sentiment score for song: 0.809
  Sentiment similarity: 81.15%

Song: all the small things by blink 182
Model: 2
Initial Word: Lyrics
Generated Lyrics:
Lyrics state fourteens aguilera jot
clockwork round streams vain realize
spricht miami whoaohohohoh sprinkled hopin
reed blunted blunted springtime diggy
prophet carson knife threatening rauch
x beaujolais aguilera e aguilera
jot hooligan hereafter freudian aguilera
prophet grows blunted bridges imagine
sand barrel glorious fashioned shell
suppose lily instrumental crawlin lands
bathe fat construction men fernando
lesson awalking aguilera blazin lavida
lifelong pen ruined accepts far
toolio berlin aguilera jot private
beaujolais balloon saffron desto prophet
sheds torches meant tooth lust
instrumental beating los familiar comehuh
jot sole aguilera prophet torches
laundromat yippee bathroom vest burden
foe blast wohlbekannt prophet everbody
depressed unhappy local gloria torches

longhorn operate flier wack undesirable
clone moonshadow receiving driver aguilera
prophet torches sees smith hurl
rock simply bettin success differences
sie strung nicky starter blunted
sets simply lily forevers aguilera
prophet board aguilera aguilera prophet
disease therefore comb stroking linger
mee steamin slim wept shits
pearls sherm militia catch showed
as yellowhaired jot karma war
sync come peaceful girl maradyke
wohlbekannt jot long cassette launch
aguilera malcolm fearing symbol ringin
banging dead married couples cigarettes
gentleness romance adrenaline glories lesson
arena rawkus prophet concert meyers
trailer flying ceremonia wohlbekannt jot
wok survives awol time wishes
ringin
  Sentiment score for word: 0.000
  Sentiment score for song: -0.980
  Sentiment similarity: 51.0%