Tamil lyrics corpus: Analysis and Experiments

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Abstract

In this paper, we present a new Tamil lyrics corpus extracted from Tamil movies captured across a range of 65 years (1954 to 2019). We present a detailed corpus analysis showing the nature of Tamil lyrics with respect to lyricists and the year which it was written. We also present similarity score across different lyricists based on their song lyrics. We present experimental results based on the SOTA BERT Tamil models to identify the lyricists of a song. Finally, we present future research directions encouraging researchers to pursue Tamil NLP research.

1 Introduction

Tamil is a classical Dravidian language spoken in the states Tamil Nadu and Pondicherry, India. It is also widely spoken in Sri Lanka and is one of the official languages of the country. There are considerable Tamil speaking people in countries like Singapore, Malaysia, Canada, and Mauritius.

Historians note that Tamil is as old as 2600 years. The earliest identified Tamil literature known as the Sangam literature dates back to 600 B.C. (Abraham, 2003). Tamilians as an ethnic group appreciate literary works and refer to literary excerpts in their daily lives. For example, Thirukkural¹, one of the popular literary works, also called the Uлага Pothu Marai (translation: Universal book of principles) includes short literary phrases emphasizing on principles for a prosperous life. Schools teach Thirukkural to their students as early as kindergarten. Thirukkural excerpts are often found in public transportations and government buildings in Tamil Nadu, India. Political leaders, orators and even common people quote Thirukkural excerpts in their daily lives.

Since the inception of the Tamil movie industry in the early 1930s, Tamil literary works have taken a different form. From the very beginning, Tamil movies used the platform to showcase the language’s rich literature through movie dialogues and song lyrics. Tamil literary works as old as Sangam literature have been depicted in early movies, and the recent movies showcase a mix of old and contemporary literary works. Thus, Tamil movies have become an inseparable part of most Tamilians’ lives. While independent literary works (poems, lykooos, novels, etc.) exist, Tamil movies consistently act as important medium in showcasing rich Tamil literary works.

The ideologies portrayed in Tamil movies closely reflect Tamilians’ lifestyles. Tamil movies and Tamil politics go hand in hand (Kalorth, 2021). There are several people in the Tamil movie industry with strong political opinions, and it is not uncommon for Tamil movie dialogues and Tamil songs to reflect their political ideologies.

The Tamil movie industry releases a movie every four days (Krishnan and Sakkthivel, 2010). That is, on average there are 90 movies released every year. Similar to other Indian language movies, Tamil movies include several songs. Each song in a Tamil movie is written by a lyricist coordinating with the movie director and the music director. The movie director usually describes the situation and the emotion where the song is supposed to fit in. Depending on the given situation by the movie director, the lyricist writes the song lyrics, and the music director composes the music for the

¹https://thirukkural133.wordpress.com/contents/
song. Though the lyrics of a Tamil movie song can stand alone, they are usually an integral part of the movie enhancing an emotion.

In this paper, we introduce a new Tamil lyrics corpus. Specifically, we focus only on Tamil movie lyrics and not Tamil lyrics by independent lyricists. The main contributions of this paper are (a) a corpus including Tamil song lyrics, lyricists, and other details; (b) a detailed corpus analysis focusing on Tamil lyrics; (c) experimental results to identify the lyricist of a given song lyric; and (d) future research directions about how to utilize the Tamil lyrics dataset.

2 Background

Songs are an integral part of Tamil movies. They represent, enhance, and complement an emotion in the movie. We explain the role of these songs and exemplify with some recent Tamil movie songs.

One of the most common emotion expressed in Tamil songs is romance. This includes falling in love, breakup, marriage, etc. For example, the song *Nenjukul peithidum* from the movie *Vaaranam Aayiram* describes a situation when a man meets a woman for the first time. This song emphasizes the emotion of love at first sight. The visualization and the lyrics are dramatic, and do not depict the actual story of the movie. While the flow of the movie is not affected by the song, it plays a vital role in emphasizing a man’s emotion towards a woman the first time he sees her.

Some Tamil movie songs are created to complement the scenes in the movie. The movie would not be complete without the song. These songs include sequential scenes from the movie. For instance, the song *Kadhaipoma* from the movie *Oh my kadauralae* describes the emotion of taking someone for granted while aptly fitting in the movie scenes.

There are several Tamil movie songs written with political and social intentions. Tamil actors with political ideologies often hint their political intentions in their songs. Recently, there are several songs released emphasizing on social equity. The song *Aalaporan Thamizhan* from the movie *Mersal* describes the beauty of the language Tamil and glorifies Tamilians life styles.

Recently with the advent of youtube, there are several songs that get popular even before the movie release. While releasing songs before releasing a movie has been a practice in the Tamil movie industry for a while, youtube has taken these songs sooner to the audience than ever before. Until recently, all movie songs were released together in a Compact Disk, cassette tape or an online streaming site. However, in the past few years Tamil movies have started releasing singles from movies. These songs typically include a catchy lyric, music or dance moves. They act as a promotion for the movie and usually have millions of views before the movie release. *Kutty story* from the movie *Master* and *Bujji* from the movie *Jagamae thanthiram* fall under this category. Interestingly, the song *Kutty story* has large amount of English songs, which is a phenomena observed in many recent Tamil songs.

We present youtube links in the footnote to each song exemplified in this section. The English translation of the song lyrics can be viewed by turning on the subtitles in the youtube video.

How are Tamil song lyrics written? In most cases, the movie director comes up with a situation in the movie. The music director composes a tune capturing the emotion of this situation. The lyricist writes the lyrics, given the tune. However, there are few music directors who compose tune to a given lyric.

3 Related work

There exists a Tamil lyrics dataset (Subramanian, 2020) in Kaggle for Tamil lyrics. The dataset includes the lyrics of Tamil songs, alongside song name and movie name. However, we could not track any further experiments or research related to this dataset. It does not include the name of the lyricist or other details. Unlike this dataset, our corpus includes the name of the lyricist, the name of the music director, and the year the song was released. We also include the English translit-
erated song lyrics. We believe these information would be useful to researchers.

There are some prominent Tamil NLP works associated with Tamil lyrics. Sundara Kanchana and Ganapathy (2017) work with 1,000 Tamil songs to identify three aspects for a given Tamil song lyric. The three aspects are base, mood, and style. The base aspect includes the types character, festival, nature, relationship, romance, occasion, spiritual, patriotic and misc. The emotion aspect includes the types happy, sad, excited, tender, scared and angry. The styles aspect includes traditional, folk, contemporary and mixed. Their work is word based, and they use TF-IDF as a feature in their classifier to predict these aspects.

Ramakrishnan A et al. (2009) work on automatically generating Tamil lyrics for melodies. They approach the problem as a sequence labeling problem targeting to guess the syllabic pattern. Then they forward this pattern to a sentence generation module, where they use Dijkstra’s algorithm to choose a meaningful phrase. In their latter work Ramakrishnan A and Lalitha Devi (2010), follow a mapping scheme for matching melody with words. They also use a knowledge-based text generation algorithm on an existing Ontology and Tamil Morphology Generator.

E. et al. (2011) design a pleasantness scoring model based not only based on phonetic aspects. Ranganathan et al. (2011) present analysis over a given set of lyrics. In their later work, they (Ranganathan et al., 2013) present a visualization tool for lyrics based on the characteristics of the lyrics.

Sridhar et al. (2013) have extensively worked in automatic Tamil lyrics generation. In their first work, (Sridhar et al., 2013) they follow a trigram approach using the emotion of a given scene. The use this emotion as a seed word and follow Tamil grammatical rules to generate lyrics. In their next work, Sridhar et al. (2014) they follow a similar approach getting 77% accuracy. Following that, they (Sridhar et al., 2015) intend to generate Tamil lyrics given a sequence of images and a derived tune. They generate a tune automatically based on carnatic music. Their system generates two sets of Tamil lyrics based on (i) context text and tune; and (ii) context text and images. In their next work (Sridhar et al., 2016) they follow a neuro-linguistic approach for lyric generation intending to add dialect, image, and author specific features. In their recent work (Sridhar et al., 2018) they generate lyrics, combining their two previous works. They make use of visual images, derived tune, and other specification such as the dialect of the speaker.

Unlike the works described, our work tries to capture the characteristics of the lyric and the lyricist. In an analysis perspective, our work is analogous to (Ranganathan et al., 2011). We go beyond, and present analysis with respect to the year the lyrics were written, and similarity between pairs of lyricists.

4 Corpus creation

We create a corpus of Tamil lyrics from www.allnewlyrics.com. The corpus consists of 5,449 Tamil songs lyrics and their English transliteration. Apart from the lyrics of a song, the corpus includes the name of the lyricist, music director, movie, and the year the song was released. We also present a link to the web page where the data was extracted. The statistics of the corpus are presented in Table 1. The corpus includes songs written by 324 lyricists across 1,147 movies for which the music was composed by 151 music directors.

|                              | Statistics          |
|------------------------------|---------------------|
| Songs                        | 5,449               |
| Lyricists                    | 324                 |
| Music directors              | 151                 |
| Movies                       | 1,147               |
| Words                        | 1,309,425           |
| Unique words                 | 129,614             |
| Years range                  | 1954-2019           |
| Maximum words/song           | 653                 |
| Minimum words/song           | 17                  |
| Average words/song           | 188                 |

Table 1: Statistics of the Tamil lyrics dataset
maximum 653 words. The total number of Tamil words for all songs combined in the corpus is more than a million. The total number of unique Tamil words in the corpus is close to 130,000. Table 2 presents examples from the corpus.

### 5 Corpus Analysis

We present detailed corpus analysis focusing on the Tamil lyrics our corpus. All statistics presented in this paper represent the distribution of the data in our corpus and may not reflect the contribution of a lyricist to the Tamil movie or music industry⁸.

Figure 1 depicts the number of songs written by a lyricist across different years. Evidently, Vaali has written songs across a wide range of years starting from the mod 1960s to the late 2010s. Vairamuthu has reached the peak of his lyric writing in the early 2000s. Interest-

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**Table 2:** Examples from the Tamil lyrics corpus. Each instance includes the name of the lyricist, music director, movie, and the year the movie was released. Additionally, the Tamil lyrics and the equivalent English transliterated lyrics is also available.

| Lyricist     | Music director | Movie                | Year |
|--------------|----------------|----------------------|------|
| Vaali        | M.S. Viswanathan | Kasethan Kadavulada | 1972 |
| Tamil        | வால் வசனாநாதன் புத்தோ காசேதன் கடவுளடார் என்றும் பாடல் என்றும் [...]| | |
| English      | Mella pesungal pirar ketkka koodadhu solli thaarungal yaarum paarkka koodadhu [..]| | |
| Lyricist     | Music director | Movie                | Year |
| Vairamuthu   | A. R. Rahman    | Love Birds           | 1996 |
| Tamil        | வைரமுது அருண் ராமன் கூடாது மலாகேள மலாகேள என்று ஸ்டாரும் தாரும் [...]| | |
| English      | Malargalae malargalae idhu enna kanavaa malaigalae malaigalae idhu enna ninaivaa aa... [...]| | |
| Lyricist     | Music director | Movie                | Year |
| Na. Muthu    | Yuvan Shankar Raja | Kaadhal kondein     | 2003 |
| Tamil        | நா. முது ராஜா காட்டேல் கூடும் என்று ஸ்டாரும் தாரும் மலாகேள மலாகேள என்று ஸ்டாரும் [...]| | |
| English      | Nenjodu kalanthish uravaalae kaalangai maranthidhu anbae nilavodu thendralum varum velai kaayangal maranthidhu anbae [...]| | |
| Lyricist     | Music director | Movie                | Year |
| Gangai Ama- | Ilayaraja       | Paneer Pushpangal    | 1981 |
| Tamil        | காண்டேல் கோயில் ஆராய்ச்சி பாடல் பாடல் மலாகேள மலாகேள என்றும் டாரும் [...]| | |
| English      | Kodai kaala kaatrae kulir thendral paadum paattae manam thedum suvaiyodu dhinandhorum isai paadu [...]| | |
| Lyricist     | Music director | Movie                | Year |
| Thamarai     | Darbuka Siva    | Enai Noki Paayum Thota | 2019 |
| Tamil        | தம்ராய் பாயும் தோடா என்றும் நோகி பாயும் தோடா என்றும் மலாகேள மலாகேள [...]| | |
| English      | Ethuvarai pogalaam endru nee sollavendum endruthaan... vidamal ketkiren... [...]| | |

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⁸All statistics correspond to the corpus, and may not reflect the contribution of a lyricist in real time.
We treat each word in the corpus as the simplest unit for our analysis. That is, we do not conduct analysis based on lemmas or stems of words. The top 10 lyricists with the highest number of songs and their most frequent 10 words are presented in Table 3. Vaali ranks first with 873 songs followed by Kannadasan (797 songs), and Vairamuthu (390 songs).

We noticed that the top 10 most frequent words across the entire corpus (Table 3) are extracted after removing the stop words. Interestingly, the word காதல் (love) always is present in the top 10 words despite not being a traditional stop word. We attribute this to the nature of Tamil movie songs which usually circles around the emotion, romance or love (காதல்).

Table 3: Number of songs written by a lyricist and the most frequent 10 words by them are presented. The most frequent 10 words are obtained after removing the stop words. The most frequent 100 words from the entire corpus are treated as stop words.

| Lyricist       | No. songs | Top 10 words                                                                 |
|---------------|-----------|-------------------------------------------------------------------------------|
| All (with stopwords) | 5449      | நீ, என், நான், உன், ஒரு, என்ன, காதல், வா, தான், என்றுைன |
| All (No stopwords) | 5449      | தா, ேபாது, ேமேல, பார்த்து, ெபாண்ணு, இவன், உலகம், பிள்ைள, கண்ணா |
| Vaali         | 873       | தா, வந்தது, நாளும், பிள்ைள, வாழும், அவன் |
| Kannadasan    | 797       | கண்ணேடன், உள்ளம், கண்ணார், வந்தது, அவள், ஆட, கண்ணா, பிள்ைள, கண்டு, ஒேர |
| Vairamuthu    | 390       | உன், என், காதல், வா, தான், என்றுைன |
| Na. Muthukumar| 340       | என்ன, என்றுைன, எனும், என்று, என்று, என்று, என்று, என்று, என்று, என்று |
| Gangai        | 279       | பார்த்து, வந்தது, உலகம், கண்ணேண, சுகம் |
| Pa. Vijay     | 263       | ஊரு, குயிேல, குயிேல, குயிேல, குயிேல, குயிேல |
| Yogabharathi  | 179       | இவன், புள்ள, அவ, புள்ள, கண்ணு, ஆச, வாழ, அப்பா |
| Madhan        | 163       | பிள்ைள, வாழும், அவள், பறக்குது, எங்கும், இவன், பறக்குது, எங்கும், இவன், பறக்குது, எங்கும், இவன் |
| Karky         | 163       | பிள்ைள, வாழும், அவள், பறக்குது, எங்கும், இவன், பறக்குது, எங்கும், இவன், பறக்குது, எங்கும், இவன் |
| Thamarai      | 107       | அப்பா, பர்பைன், அவள், பர்பைன், அவள், பர்பைன், அவள், பர்பைன் |
| Viveka        | 105       | அப்பா, பர்பைன், அவள், பர்பைன், அப்பா, பர்பைன், அப்பா, பர்பைன் |

In Table 4, we present similarity scores between pairs of lyrics among the top 5 artists. The Jaccard similarity computes similarity between two sets by calculating the intersection over union. First, we combine all songs by
Table 4: Number of songs written in a decade and the most frequent 10 words per decade is given. The most frequent 10 words are obtained after removing the stop words. The most frequent 100 words from the entire corpus are treated as stop words.

| Year | No. songs | Top 10 words |
|------|-----------|--------------|
| 1960 | 71        | கண்டன், கனவு, எங்கள், சிவகங்க், சீம, வாழும், அப்பா, மெமாழி, சுகம் |
| 1970 | 312       | உள்ளம், அவள், பார்த்து, நிலா, ஆட, அவன், பார், கண்டு, கண்டன் |
| 1980 | 296       | சுகம், பிளைள, வந்தது, ஆடும், இரு, கண்ணன், உள்ளம், ராகம், பா |
| 1990 | 820       | ராகம், கைத, மாேன, மாமா, இதன், இதகம், நாளும், பாட, வந்தது, சுகம் |
| 2000 | 1071      | இவன், பூேவ, தா, பாண்ணு, நிலா, கிளி, கண்ேண, இதன், மாமா, ஒன்னு |
| 2010 | 1087      | இவன், பூேவ, தா, பாண்ணு, நிலா, கிளி, கண்ேண, இதன், மாமா, ஒன்னு |
| 2020 | 1593      | இவன், பூேவ, தா, பாண்ணு, நிலா, கிளி, கண்ேண, இதன், மாமா, ஒன்னு |

Table 5: Words based similarity between pairs of the top 5 lyricists from the corpus. Both Jaccard similarity and cosine similarity on the TF-IDF vectors indicate that the lyrics of Vaali and Vairamuthu are the most similar.

| Lyricists | Jacc. sim. | TF-IDF cos sim |
|-----------|------------|----------------|
| Vaali     | 0.76       | 0.956          |
| Kannadasan| 0.94       | 0.972          |
| Vairamuthu| 0.89       | 0.956          |
| Na. Muthu | 0.77       | 0.910          |
| Kumar     | 0.85       | 0.922          |

Figure 1: The number of songs written by a lyricist across 65 years (1954 to 2019) is presented. Vaali has written Tamil song lyrics covering the widest range of years. Na. Muthukumar has written the most number of songs in the shortest span of years.

We also present the cosine similarity between the TF-IDF representations of the lyrics by the top 5 lyricists. We process the lyrics similar to the processing for calculating Jaccard similarity, but do not form a unique set of words for each lyricist. First, we combine all songs by each lyricist into a large text. Next, we represent these texts using their TF-IDF vector. We calculate the cosine similarity between these vectors to measure their similarity. Based on this TF-IDF cosine similarity measure, the lyrics Vaali and Vairamuthu (TF-IDF cos. sim: 0.972) are very similar which is observed in the Jaccard similarity score (Jacc. sim.: 0.94) as well. Similarly Vaali and Gangai Amaran (TF-IDF cos. sim: 0.969), and
Table 6: Results of binary classifiers to classify between Vaali and Kannadasan given a song Tamil lyric is presented. All models are fine tuned to obtain the results.

|               | Multilingual BERT uncased | Indic-NLP | Tamillion BERT |
|---------------|---------------------------|-----------|----------------|
|               | P  | R  | F1 | P  | R  | F1 | P  | R  | F1 |
| Vaali         | 0.62 | 0.57 | 0.59 | 0.65 | 0.75 | 0.69 | 0.68 | 0.74 | 0.70 |
| Kannadasan    | 0.56 | 0.62 | 0.59 | 0.67 | 0.55 | 0.60 | 0.68 | 0.61 | 0.64 |
| W.Avg         | 0.59 | 0.59 | 0.59 | 0.66 | 0.66 | 0.65 | 0.68 | 0.68 | 0.68 |

Vairamuthu and Na. Muthu Kumar (TFIDF cos. sim: 0.964). also have high TFIDF cosine similarity scores.

6 Experiments and Results

We conduct experiments to identify the lyricist of a given lyric. We formulate a binary classification problem by generating a dataset including only the top two lyricists with the most number of songs, Vaali and Kannadasan. This dataset consists of 1,670 instances from the Tamil lyrics corpus, where 873 instances correspond to Vaali and 797 instances correspond to Kannadasan. We used 80% of this dataset for training and withheld the remaining 20% for testing. We ensured the lyricists distribution is stratified across the train and test sets.

6.1 Experiments

In an era where BERT (Devlin et al., 2019) models are used as a baseline, we present results using three BERT models supporting Tamil. We conducted all our experiments using the simpletransformers (Rajapakse, 2019) python package. First, we fine tuned the multilingual uncased BERT (Reimers and Gurevych, 2020) model. We obtained the best results at a learning rate of $10^{-5}$ with 3 epochs. Next, we fine tuned the indic-bert model from AI4Bharat (Kunchukuttan et al., 2020). Here we obtained the best results at a learning rate of $10^{-5}$ with 2 epochs. Finally, we fine tuned the Tamillion BERT (Doiron, 2020) model. We reached the best results in this model at learning rate of $10^{-5}$ with 7 epochs.

6.2 Results

We present results in Table 6. The results obtained using multilingual BERT is lower than Indic-NLP and Tamillion BERT (F1: .59 vs. .65 vs. .68). The results obtained using Indic-NLP and Tamillion BERT are comparable (F1: .65 vs. .68).

Regarding the results for Vaali, Tamillion BERT obtains the highest precision (.68), and Indic-NLP obtains the highest recall (.75). Overall, the performance for Vaali is better when using the Tamillion BERT (F1: .70).

In case of the results for Kannadasan, the highest performance is obtained both for precision and recall by fine tuning the Tamillion BERT model (P: .68, R: .61). We note that there is still room for improvement in this binary lyricist identification task. The task becomes even more challenging when the number of lyricists are increased changing the binary classification task into a multi class classification task.

7 Future research

We use the Tamil lyrics corpus to identify lyricists formulating a binary classification task. The same corpus could be used for several other tasks. We discuss the previous works relating to Tamil lyrics in Section 3. In this section, we describe a few possible research that could conducted using the Tamil lyrics corpus.

7.1 Language trend analysis

Language trend analysis intends to capture the change in a language over years. As Tamil song lyrics are closely tied to the political and personal lives of Tamilians, we expect the change of language style in the lyrics to reflect the lives of Tamilians. We hypothesize that the songs released after the year 2000 would include more English words (code-switching) than the songs from the 1960s. For instance, the song Why this kolaveri? has more than 50% English words. Additionally, as Tamilians have moved across the world, Tamil songs...
have gained international attention, enabling changes in Tamil music.

We also hypothesize that the songs released after the year 2000 would include several meaningless words, whereas the songs released around the 1960s followed strict literary style. For example, phrases like jimjikka, rangu rakkara, tasaku tasaku, etc. have no meaning (also called Rettai Kilavi in Tamil grammar) are often used in Tamil songs, as they are fun and catchy.

7.2 Emotion detection

As Tamil song lyrics are usually written for an emotion in the movie, it is possible to use the Tamil lyrics dataset to identify the emotion in them. This task would require an additional layer of annotations for emotions. We also believe a distant supervision mechanism to annotate for the labels should be possible. The possible emotions would include, but not limit to love, breakup, hero introduction, happy, and sorrow. While the work by (Sundara Kananchana and Ganapathy, 2017) closely relates to the emotion detection space, we believe there is so much to be explored in this area.

7.3 Evaluating transliteration models

There are many works relating to English transliteration of Tamil (Chinnakotla and Damani, 2009; Vijayanand, 2009). As our corpus includes the English transliterated text of the Tamil lyrics, it could be used as a validation set to evaluate a transliteration model.

We hypothesize that Tamil lyrics are rich in linguistic phenomena such as cliches, metaphors, etc. A model identifying such phenomena in the Tamil corpus would be interesting.

8 Conclusion

In this paper, we introduce a new Tamil lyrics dataset. We collect Tamil movie lyrics along with the names of the lyricist, the movie, and the music director over a range of 65 years. We also present the English transliteration of the Tamil lyrics. We present an elaborate literature review on studies relating to Tamil lyrics. We conduct detailed corpus analysis revealing the top 10 frequent words per decade, and top 10 frequent words per lyricist. We also study the similarity of the lyrics between different lyricists using standard similarity approaches. Next, we formulate a binary classification task to identify the lyricist, given a song lyric. We fine tuned the state-of-the-art BERT models to predict the lyricists. Our experimental results show that identifying lyricists is a challenging task, and there is scope for improvement. We go beyond the experiments, and elaborate on the possible future research directions with the Tamil lyrics corpus. We intend to add more instances to our corpus to encourage research on Tamil lyrics.

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