Analyzing Tagore’s Emotion With the Passage of Time in Song-Offerings: 
A Philosophical Study Based on Computational Intelligence

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ABSTRACT

The emotions of humans can be observed through tears, smiles, etc. The emotion of poets is reflected through poetry/songs. The works of a poet give philosophical insights about the beauty and mystery of nature, socio-economic conditions of that era, besides his personal state of mind. In the proposed work ‘Song- Offerings’: A collection of poems and songs composed by Rabindranath Tagore, for which, Tagore received the Nobel Prize for literature in 1913, has been analyzed. Earlier, most of the research work on Song-Offerings was based on Zipf’s law or bibliometric laws. This article analyzes the changes in Tagore’s emotion in Song-Offerings with the passage of time (1895-1912). Emotions are analyzed based on the Arousal-Valence Model. To analyze the arousal state, ‘Plutchik’s’ emotion model has been employed and to find the valence, a Fuzzy-based model has been engaged. The work reveals that the emotions of the poet gradually mellows with the passage of time barring some transitional time, nevertheless, poet submission towards almighty remains unchanged during this period.

KEYWORDS

Arousal, Emotions, Fuzzy, MATLAB, R, Song-Offerings, Tagore, Valence

INTRODUCTION

Psychologically emotions are the subjective and affective state of the human mind that is relatively dominant and that occur in response to something we experience. It has been witnessed that human beings may have diverse emotions at different levels and we comprise various multifaceted emotions. Psychological studies show that human emotions are based on socio-economic conditions, personal state of mind, ambiance and some other factors (Plutchik, 2002). Psychologically emotions are two types:

- **Arousal**: Indicates the amount of energy in emotions. Typically these energies are joy, happiness, sadness, fear, anticipation and so on;
- **Valence**: Shows the pleasure level, whether emotions are negative or positive.

It has been reported that in the domain of literature poetry, songs, story, articles, etc. have been used by the poets, authors, and story writers to record their emotions. The word or phrases have been used as media by the creators of such works to articulate their emotions. It is assumed that such works...
are the reflection of the creator’s own state of mind which is largely influenced by the ambiance and its ever-changing surrounding society. The philosophical study is all about the source of origin, the universe, and the presence of Oneness. It has been found that philosophical study (logic building) increases the power of critical thinking.

In the field of poetry, several researchers tried to estimate emotion from the works of legendary personalities. V. N. Sudheer et al. (2015) have tried to analyze the emotion of famous American poet Robert Frost in two of his poems, ‘Home Burial’ and ‘Acquainted with the Night.’ The effect of mystery and beauty of the nature in Frost’s poem ‘Fire and ice’ (Spacey, 2019) and ‘Spring Pools’ (Reviews Rants and Rambles n.d.) was critically analyzed by respective authors to record the poet’s emotion. In English literature, W.B.Yeats is known for his mystical composition. The emotion of Yeast’s can be observed through the works of Levine (1996). In the field of Art romanticism and the modernistic approach have greatly influenced the mindstate of William Wordsworth and T. S. Eliot as perceived by Pokrivcak (2016). Andrew Spacey (2017) methodically addresses the romantic emotion of P.B. Shellye in his poem ‘Analysis of the Poem Love’s Philosophy’. In the domain of novel writing, William Shakespeare is a towering figure. Nalissnick et al. (2013) tried to estimate the sentiment of character from the different famous plays of Shakespeare. Cundiff (2017) tried to assess Shakespeare’s emotion through his two tragedy stories Othello and King Lear. In their work authors show the classical tussle between antagonists and protagonists and shows that antagonists prevail over protagonists. In Fairy tales, Alm et al. (2005) developed emotion-based trajectories to show that as the story progresses emotion level also increases.

Tagore has a major influence on modern Indian and English literature. He was a versatile genius who had synthesized deepest thoughts of the East and West in him. Tagore composed as many as twenty-five volumes of poetry and involved in writing about 2,230 songs (Tagore, 1885; Tagore, 1893; Tagore, 1896; Tagore, 1909). ‘Song Offerings’ the English edition of ‘Gitanjali’, comprises 103 English poems, published in the year 1912. It has been considered as one of the finest works of Tagore (Tagore, 1913). Tagore himself did the translation work. Table (1a and 1b) shows the sources of poems, the publication year, number of poems included, the time of composition, and a number of poems compose per year.

Researchers working in the domain of art and humanities tried to analyze Tagore’s Song-offerings from different perspectives. The impact of mysticism (praise or acknowledged the presence of the All-mighty) or mystic has been clearly observed in the Song-Offerings. Several researchers have made an in-depth analysis of phrases or words of Song-Offerings to unearth its aesthetic aspects (Matta & Morve, 2017; Nair, 2015; Vandan, 2014; Kupfer, 2016). Mukhopadhyaya (2015) suggested that reflection of Tagore’s philosophical, spiritual and sensible mind is very much present in the Song-Offering. J. Augustine (2016) recorded that Song-Offerings has a huge impact on famous personalities like Haldor Laxness, Ezra Pound and S. Radhakrishnan. According to R. Mukherjee (2015), Song-Offerings is a source of peace and harmony. Earlier most of the researchers tried to categorize Song-Offerings based on literary development (Jose, 2002; Thompson, 1979; Majumder, 1968; Mukhopadhyaya, 1975; Krishna, 1980; Ray, 1941). In the current study, the authors proposed a philosophical analysis of Song-Offerings based on Computational Intelligence.

Data mining is a process of finding some association between data of our interest and it has been applied to find a solution of different real-life problems (Varlamis et al., 2017; Kamal et al., 2017; Dey et al., 2015; Karaa & Dey, 2017; Lan et al., 2018; Fong et al., 2018). Emotion mining is a subdomain of data mining. It helps researchers to estimate or analyze information in a methodical way (Hore & Bhattacharyya, 2019; Mohammad & Turney, 2013; Mohammad & Turney, 2010; Bing et al., 2005; Hu & Bing, 2004; Nielsen, 2011). Natural Language Processing (NLP) successfully intersect both art and science. It effectively blends linguistics with computer science and artificial intelligence. NLP helps us to extract information from text, process natural language to be used in computations and algorithms. It has been observed that researchers are using the Stanford Core-NLP software toolkit extensively to find solution related NLP problems. Core-NLP (Manning et al., 2014) used java based modules to deal with problem-related to text processing, human behavior analysis,
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