Semantic Songket Image Search with Impression based Feature Extraction

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Abstract

Songket was derived from the term of "sungkit" in Malay and Indonesian language, which means "hook" or "gouged". Name and variation songket motifs was appointed from various types plant and animal, then be made philosophy in form of poem that refers to properties the source of the motifs songket variation, which a reflect the values of the beliefs and culture of Malay[7]. Today, many young people, craftsman, and society did not understand very well about the values and philosophy contained in the songket, so that the younger generation is less interested in preserving the culture of songket. In this paper, we propose a new system for to contribute in preserving the culture of Songket, with utilizing science of image processing. We propose a system that is able to gather information from each image of songket using feature extraction method. To obtain a series of impressions of songket, we made research based on references from customary figures about the meaning of the colors in the Malay culture and philosophy songket in the form of poem contained on the respective of variation songket motifs. We use a method of feature extraction 3D-Color Vector Quantization (3D-CVQ) for color feature extraction, and HU Moments invariant to shape feature extraction of images songket. To facilitate information searching images and impressions, we provide a search facility based on images or impressions songket

Keywords: Impression, Feature Extraction, Image Retrieval, Songket..

1. Introduction

Songket relating to how to make it ie, to hook and take a pinch of woven fabrics, and then slipped the gold thread. The history of various types of variation name motif was derived various types of plant or animal, so that created various pattern and variation, by culture experts include philosophy of poem form that reflects the values and principles of trust Malay culture [7]. Songket

typically worn during the festivity (thanksgiving), a celebration or party, and worn such as sheath, draping in the shoulder, or as a headband or tanjak, ornament headbands and etc. Riau Malay Songket have 142 variations from some motifs, and each variation has different philosophy.

Development of information technology without limit has given easiness, but information about songket very limited, causing the younger generation and the general public lacking interested to preserve it, especially prospective buyers are less interested in buying and using songket due to lack of information values cultural contained in songket, and then the impact on songket craftsmen so that a reduction in industrial production because of the low songket market. Information technology has given easiness entry of foreign culture without a good selection by the younger generation so that if not accompanied information about songket gradually the younger generation will be left the own cultural heritage, and the future historians will lose track of the history of songket culture that have cultural links with some of the state especially in Asia area.

Content Based Image Retrieval (CBIR)[1][4], also known as query by image content (QBIC)[4] and content-based visual information retrieval (CBVIR)[4] is the application of computer vision techniques to the image retrieval problem, that is, the problem of searching for digital images in large databases[4]. The term "content" in this context might refer to colors, shapes, textures, or other information that can be derived from the image itself. Ali Ridho and Yasushi Kiyoki[1] present a new approach for extracting color feature using histogram of Three Dimensional (3D)-Color Vector Quantization of RGB color space for image retrieval system. Ayuninda et al[3], proposes a new system for Batik search with providing and analytical function for feature extraction by involving color and shape features.

Development science of image processing and android mobile system, we proposed a new system, semantic songket image search system based feature extraction with impressions. This system will be implemented on a smartphone with android operating

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Figure1.Design System of Semantic Songket Image Retrieval

system. For taking a feature based on impressions, colors, and shapes of songket, we will extraction songket image using the 3D-Color Vector Quantization[1] and Hu Moments[6] method. The system will be display the results in the form is impression and songket image. If the songket image as query the obtained results is a impressions, and if the impression as query the obtained results is an image of songket

2. Proposed System

This study proposed a system with a new approach for semantic search songket image feature extraction based impressions. Feature extraction is used to extract impressions, colors and shapes that contained in each image songket. Feature extraction produces 3 metrics metadata, further multiplication metric and generate metadata impressions-color metric and metadata impressions-shape metric. The process feature extraction of color and shape is also conducted to the query image. Similarity measurement process for performed to measure the similarity or search proximity between the query with dataset from proceeds feature extraction, and the results display in the form impressions or image songket.

3. Design System

The main topic in this study using the feature extraction method for extracting symbolic meaning, color feature and shape feature of songket images. The results of the images feature extraction that produces impressions feature metric, Color feature metric, and Shape feature metrics. Then, it performed multiplication metrics that produce color-impressions metric and impressions-shape metric. For search engine using two queries, the first use of songket images extracted based on color and shape, and the second based of impression. Similarity measurement method for distance measurement process is do with using a proximity or similarity between the query image and impressions with metadata in impressionscolor metric and impressions-shape metric. If using the query image the results obtained is impressions, on the contrary if using the query is impression the results obtained is image songket. Figure 1 show the design system of semantic songket image retrieval.

3.1. Image Collection

Image Collection is a group of songket images that used in this study; each image has a different pattern. Songket Images that used is songket motifs from Riau,

there are 142 variations and each picture has a philosophy in the form of poem. In this study, the philosophy in the form of poem is extracted into impressions.

3.2. Feature Extraction

Feature extraction is an extracting features from images collection, this feature extraction produce the metadata impression, color and shape feature metric. Metadata feature metric saved into the database. Figure 2 shows the feature extraction process of image collection.



Figure 2. Feature Extraction process, a. Impressions Feature Extraction, b. Feature Extraction Image Collection and saved into the Database.

3.2.1. Symbolic meaning extraction

Symbolic meaning extraction is the process feature extraction image collections that have a philosophy in the form of poem in each songket image into a set of impressions for public understanding. To get an impression of songket we do research based on references from customary figures about the meaning of the colors in the Malay culture and philosophy songket in the form of poem contained on the respective of variation songket motifs. This symbolic meaning extraction process produces the metadata impression feature metric. The results of the study produced 27 impressions, every image songket have more than one impression. Table 1 show the list of impression.

Table 1. The list of Impression

Code	Meaning	Cod e	Meaning
S1	Fidelity	S15	Harmony
S2	Courage	S16	Mutual_Cooperation
S3	Heroism	S17	Tolerance
S4	Fertility	S18	Affection
S5	Prosperity	S19	Mutual_Respect
S6	Purity	S20	Sincerity
S7	High-minded	S21	Self Awareness
S8	Authority	S22	Mandate
S9	Nobleman	S23	Piety
S10	Fraternity	S24	Discreet
S11	Happiness	S25	Politeness
S12	Peacefulness	S26	Humble
S13	Full_Of_Luck	S27	Intellectual
S14	Welfare		-

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3.2.2. Color Feature Extraction

We use of Histogram 3D-Color Vector Quantization method for extraction color feature from image collection and some image query given by the user. 3D-CVQ histogram [1] is a method for feature extraction of color in the RGB color space, and then from the RGB color space becomes the quantization size 64x64x64 to 125th position space of RGB [1]. The results of the color feature extraction produce metadata color feature metric. Eq. 1 shows the formula of image quantization.

$$H_{i} = \sum_{j=1}^{j=n} H_{j} \qquad \begin{cases} H_{j=1} \leftarrow \min(D(RGB_{j}, RGB_{i}) \\ H_{j=0} \leftarrow \text{otherwise} \end{cases}$$
(1)

Description:

- *Hi* = Histogram of 125 positions in the RGB color space
- Hj = Pixel image

n =Number of pixels

D(RGBj, RGBi) = Distance between the RGB

Color pixel jand RGB color position 125.

RGB color space to the 3D-CVQ can be seen in Figure 3 :



Figure 3. 3D-Color Vector Quantization form RGB Color Space [1]

A total of 142 images collection conducted color feature extraction using 3D-CVQ produce metadata of 142 x 125 color feature metric.

3.2.3. Shape Feature Extraction

Shape feature extraction is an process of shape extraction the image songket using the Hu Moments invariant method based on the calculation of moments in the middle of area and produce metadata shape feature metric. Hu Moment invariant was found by Hu in 1962 which resulted in seven equations which do not influence the rotation, translation, and scale[6]. The basic equation of the moment an object is defined as follows :

$$m_{ij} = \sum_{x} \sum_{y} x^{i} y^{j} a_{xy}$$
⁽²⁾

Order of the moment is (i + j), x and y stated the coordinates of points, while a_{xy} stated intensity point. Moment level 0 and 1 (zero and first-order moments) defined as follows.

$$m_{00} = \sum_{x} \sum_{y} a_{xy}$$
(3)

$$m_{10} = \sum_{x} \sum_{y} x.a_{xy}$$
(4)

$$m_{01} = \sum_{x} \sum_{y} y.a_{xy}$$
(5)

In the binary image \mathbf{a}_{xy} is worth 0 atau 1, moment m_{00} same the object area. Center or centroid of the area is a parameter to express the location of the object. Central area of the object is defined as follows.

$$x' = \frac{m_{10}}{m_{00}} and y' = \frac{m_{01}}{m_{00}}$$
 (6)

Center coordinates of the object is (x',y') central moment μ is the moment that corresponds to the central area, is defined as follows.

$$\mu_{ij} = \sum_{x} \sum_{y} (x - x^{'})^{j} (y - y^{'})^{j} a_{xy}$$
(7)

Normalized central moment is expressed by the following equation.

$$\eta_{ij} = \frac{\mu_{ij}}{\left(\mu_{00}\right)^{\lambda}} \tag{8}$$

With $\lambda = \frac{(i+j)}{2} + 1$, and $(i + j) \ge 2$ (moment the level to 1 is chosen in particular)

to-1 is always in variant).

From the moment normalized above, a set of Invariant Moment can be defined. These moments are very useful in making a feature vector for object recognition. Below is the equation of Invariant Moment :

$$\phi_1 = \eta_{20} + \eta_{02} \tag{9}$$

$$\phi_2 = (\eta_{20} + \eta_{02})^2 + 4\eta_{11}^2 \tag{10}$$

$$\phi_3 = (\eta_{30} - 3\eta_{12})^2 + (3\eta_{21} - \eta_{03})^2 \tag{11}$$

$$\phi_4 = (\eta_{30} + \eta_{12})^2 + (\eta_{21} + \eta_{03})^2 \tag{12}$$

$$\phi_{5} = (\eta_{30} - 3\eta_{12}) (\eta_{30} + \eta_{12}) \{ (\eta_{30} + \eta_{12})^{2} - 3(\eta_{21} + \eta_{03})^{2} \} + (13) (3\eta_{21} - \eta_{03})(\eta_{21} + \eta_{03}) \{ 3(\eta_{30} + \eta_{12})^{2} - (\eta_{21} + \eta_{03})^{2} \}$$

$$\phi_{6} = (\eta_{20} - \eta_{02}) (\eta_{30} + \eta_{12})^{2} - (\eta_{21} + \eta_{03})^{2} + 4\eta_{11} (\eta_{30} + \eta_{12}) (\eta_{21} + \eta_{03})$$
(14)

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$$\phi_{7} = (3\eta_{21} - \eta_{30})(\eta_{30} + \eta_{12})\{(\eta_{30} + \eta_{12})^{2} - 3(\eta_{21} + \eta_{03})^{2}\} + (3\eta_{21} - \eta_{03})(\eta_{21} + \eta_{03})\{3(\eta_{30} + \eta_{12})^{2} - (\eta_{21} + \eta_{03})^{2}\}$$
(15)

The total of 142 images collection produced from shape feature extraction using Hu Moment Invariants resulting of metadata shape feature metric 142 x 7.

3.3. Metric Impression-Color-Shape Processing

Metric Color Processing is a process of innerproduct multiplication metric between metadata feature of impressions, colors and shape. Multiplication impression feature metric with Color feature metric produce Impression-Color metric, while the impressions feature metric with shape feature metric produce Impression-Shape Metric.



Figure 4. Multiplication Metrics a. Multiplication Impression-Color feature metric, b. Multiplication Impression-Shape feature metric

3.4. Impression/ Image Query

Query in the form of images or impressions that entered by the user is used to perform a search and get the same or similar information from the database. Query image is obtained from an existing image in the smartphone or taken using a smartphone camera. Query image will be feature extraction using histogram 3D-CVQ and Hu Moment to get the metadata that will be used to measure the similarity with songket dataset, and displays the results in the form of impressions. Impression Query is a word that is selected by the user from list impression and then performed correlation measurement process, the results of the correlation measurement process will be used for similarity measurement process with datasets, so as to obtain results the form is images.

3.5. Similarity Measurement

Similarity measurement method is used to measure the similarity between the impression or image queries that inputted by the user with metadata impression-color metric and impression-shape metric in datasets. Cosine method used for measure the similarity between the query

image with the impression-color metric, while the measurement of the query image with the impressionshape metric using distance metric method [10]. We using two methods of similarity measurements is caused metadata impression-color metrics is an normal data and can use Cosine method.

$$\text{Cosine} = \frac{\sum_{i=1}^{n} A_i x B_i}{\sqrt{\sum_{i=1}^{n} (A_i)^2} x \sqrt{\sum_{i=1}^{n} (B_i)^2}}$$
(16)

Metadata impression-shape metric is the data that not normal, because it process of similarity measurement between query image with impression-shape metric in datasets using formula semantic distance metric[10] that can directly normalize query data and dataset in similarity measurement process. Semantic distance metric [10] defined as follows :

$$D_{x,y} = \frac{\sum_{y}^{m} \frac{X_i - Y_i}{X_i + Y_i}}{n}$$
(17)

Dx,y = Distance metric x and metric y dataset image and query image.

4. Experimental Study

To examine our proposed system, it used 142 images songket which produce metadata of color feature metric and shape feature metric, from the study by the 142 images songket we get 27 impressions and produce metadata of impressions feature metric. Then at three metrics above our conducted metric multiplication and produce the metadata impression-color metric and impression-shape metric. To analyze the performance of each image features and impression, we conduct of experiments :

- 1. Experiments using Color feature as Query
- 2. Experiments using Shape feature as Query
- 3. Experiments using Multi Impression as Query with Metadata Color feature Metric
- 4. Experiments using Multi Impression as Query with Metadata Shape feature Metric

Experiments using color or shape feature as query retrieved 10 impressions that have closest similarity to the query, and experiments using impression as query retrieved 10 images songket that have closest similarity to the query. Each retrieved images calculated by the ranking position closest similarity to get the precisions value, quation 18[3] show the formula for calculate the score of ranked between image or impression retrieved with impression or image query.

$$Score = \sum_{i=1}^{10} scr_i \begin{cases} scr_i = 10 \cdot i + 1 \in cr_i = cq \\ scr_i = 0 \in otherwise \end{cases}$$
(18)

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Where, cr denote category of retrieved images, cq denote category of image query, and scr denote score for each image retrieve i.

4.1. Experiment using Color Feature as Query

In this experiment we using the image color feature as query and display the search results in the form of 10 impressions. Our experiments use 10 different image queries. For performance analysis, we calculate the precision accuracy of the impression on the query image with the retrieved impression. Table 2 shows the rate of similarity on the impression from query image with impression retrieved, accompanied with precision.

Table 2. Results Experiment with the Color Feature

No	Image as Query	Impression Result	Prec.%
1	Impression by Image : • Happiness • Politeness • Humble	Happiness Politeness Pidelity Piety Courage Self Awareness Humble s. sincerity discreet Io. mutual_Respect	100
2	Impression by Image : • Heroism, • Authorit • Discreet	heroism discreet discreet fertility Authority Politeness Self Awareness fratemity intellectual happiness l0. piety	100
3	Impression by Image : • Prosperity, • Affection, • Self_Awareness	for sperify fertility fertility affection Mandate harmony Self Awareness Politeness sincerity mutual_Respect lo. peacefulness	100
4	Impression by Image : • Authority • Harmony • Tolerance	Authority . nobleman Self Awareness Full_Of_Luck welfare d. affection harmony prosperity happiness lo. peacefulness	66.6
5	Impression by Image : • Nobleman • Discreet	fraternity discreet discreet Mandate happiness mutual_Respect welfare recectfulness sincerity piety lo. courage	50

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Impression by Image : 6. mutual_Respect 50 • Fraternity 7. high_minded 8. intellectual • Harmony 9. discreet 10. piety 9 1. Authority 2. tolerance 3. welfare 4. harmony 5. Politeness 10mression by 6. discreet 100 Image : 7. sincerity 100 • Authority 8. Self Awareness 100 • Tolerance 10. Mandate 10 10 1. heroism 2. piety 3. Self Awareness 4. harmony 5. fidelity 10 2. piety 3. Self Awareness 11 6. courage 100 • Fertility 5. fidelity 100 • Full Of Luck 9. welfare 100 • Feity 8. Full_Of_Luck 9. welfare 10. mutual_Respect 100		000000000	humble	
Image : 7. high_minded • Fraternity 8. intellectual 9 Impression by 10. piety 9 Impression by 2. tolerance 1. Authority 2. tolerance 3. welfare 4. harmony 100 5. Politeness 100 Image : 7. sincerity 100 Image : 7. sincerity 100 10 Impression by 5. Self Awareness 10 Intellectual 1. heroism 2. piety 3. Self Awareness 10 Impression by 5. fidelity 100 Impression by Self Awareness 4. harmony 2. piety 3. Self Awareness 100 Image : 6. courage 100 5. Fidelity 7. fidelity 100 100 Fidelity 8. Full Of Luck 9. welfare 9. welf		Impression by	6. mutual Respect	50
 Fraternity Harmony discreet piety 9 Intellectual piety piety Authority tolerance welfare harmony Self Awareness Giscreet Mareness Tolerance Mandate 100 Tolerance Mareness Tolerance Mareness Tolerance Mandate 10 Tolerance Mandate Anthority Self Awareness Anarnony Self Awareness Harmony Self Awareness Self Awareness Harmony Self Awareness Harmony		Image :	7. high minded	
• Harmony 9. discreet 10. piety 9. discreet 11. Authority 2. tolerance 3. welfare 4. harmony 4. harmony 5. Politeness 100 7. sincerity • Authority 8. Self Awareness • Tolerance 10. Mandate 10 1. heroism 2. piety 3. Self Awareness 4. harmony 5. Fidelity • Tolerance 10. Mandate 10 1. heroism 2. piety 3. Self Awareness 4. harmony 5. fidelity 10. Self Awareness 4. harmony 10. Mandate 100 11. Beroism 2. piety 3. Self Awareness 4. harmony 4. harmony 5. fidelity 10. Self Awareness 4. harmony 4. harmony 8. Full Of Luck 9. welfare 100 10. mutual_Respect 86.6		 Fraternity 	8 intellectual	
9 10. piety 9 1. Authority 2. tolerance 3. welfare 4. harmony 5. Politeness 6. discreet 7. sincerity 8. Self Awareness 9 10 10 10 10 10 10 11 12 13 14 15 16 10 10 10 11 12 13 14 15 16 16 17 18 19 10 10 10 10 10 11 12 13 14 15 15 16 10 11 12 13 14 14 15 16 16 17 18 19 10 10 10 <tr< td=""><td></td><td>Harmony</td><td>9. discreet</td><td></td></tr<>		Harmony	9. discreet	
9 9 1. Authority 2. tolerance 3. welfare 4. harmony 5. Politeness 100 1. Authority 2. tolerance 3. welfare 4. harmony 5. Politeness 100 100 100 100 100 100 100 1			10 piety	
1 Authority 2 tolerance 3 welfare 4 harmony 5 Politeness 10 6 4 harmony 5 Politeness 6 discret 7 sincerity 8 Self Awareness 9 intellectual 10 1 10 2 10 2 11 heroism 2 piety 3 Self Awareness 4 harmony 9 ifdelity 10 6 10 6 10 100 10 100 11 heroism 2 piety 3 Self Awareness 4 harmony 5 fidelity 10 6 10 100 100 100 100 100	0		1 Authority	
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Impression by Image : 4. harmony 5. Politeness 100 S. Politeness 6. discreet 7. sincerity 100 Marge : 7. sincerity 8. Self Awareness 100 Impression by Image : 10. Mandate 10 11. heroism 10 11. heroism 2. piety 3. Self Awareness 10 13. Self Awareness 100 10 14. harmony 100 10 15. fidelity 100 10 16. courage 100 10 17. fidelity 100 10 18. Self Awareness 100 10 19. Self Awareness 100 10 10. matual_Respect 100		Constant or other	3. wenare	
Impression by Image : 3. Politeness 6. discreet 100 • Authority • Authority • Harmony • Tolerance 8. Self Awareness • Harmony • Tolerance 10 10 1. heroism 2. piety 3. Self Awareness 4. harmony Image : 10 10 2. piety 3. Self Awareness 4. harmony 5. fidelity • Fertility • Full Of Luck • Piety 100 10 1. heroism 2. piety 3. Self Awareness 4. harmony 5. fidelity • Full Of Luck • Piety 100 100 1. heroism 2. piety 5. fidelity 100 100 1. heroism 2. piety 5. fidelity 100		AA.	4. harmony	
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• Authority 7. sincerity • Harmony 8. Self Awareness • Tolerance 10. Mandate 10 1. heroism 2. piety 3. Self Awareness 11. heroism 2. piety 12. Self Awareness 4. harmony 13. Self Awareness 5. fidelity 14. harmony 5. fidelity 15. Fidelity 7. fertility • Fertility 7. fertility • Full Of Luck 9. welfare 10. mutual_Respect 86.6		Image :	o. discreet	
• Harmony 8. Self Awareness • Harmony 9. intellectual • Tolerance 10. Mandate 10 1. heroism 2. piety 3. Self Awareness 4. harmony 5. fidelity 1mage : 6. courage • Fertility 7. fertility • Full Of Luck 9. welfare 10. mutual_Respect 86.6		Authority	7. sincerity	
Initiation I		Harmony	8. Self Awareness	
• Forefance 10. Mandate 10 1. heroism 2. piety 3. Self Awareness 4. harmony 5. fidelity 6. courage • Fertility • Full Of Luck • Piety 9. welfare 10. mutual_Respect		Talaranaa	9. intellectual	
10 1. heroism 2. piety 3. Self Awareness 4. harmony Image : 6. courage 9. Fertility Full Of Luck 9. welfare 10. mutual_Respect		• Tolerance	10. Mandate	
2. piety 3. Self Awareness 4. harmony Impression by 5. fidelity 100 Fertility 6. courage 7. fertility 7. fertility 9. welfare 10. mutual_Respect	10		1. heroism	
Impression by Image: 3. Self Awareness 4. harmony 5. fidelity 100 6. courage 7. fertility • Full Of Luck • Piety 9. welfare 10. mutual_Respect			2. piety	
Impression by Image : 4. harmony Image : 5. fidelity 100 • Fertility 7. fertility • Full Of Luck 8. Full_Of_Luck • Piety 9. welfare 10. mutual_Respect 86.6		300	Self Awareness	
Impression by Image : 5. fidelity 100 • Fertility 6. courage 100 • Full Of Luck 8. Full_Of_Luck 100 • Piety 9. welfare 10. 10. mutual_Respect 86.6		Impression by	harmony	
Fertility Full Of Luck Piety Piety Substantial Substa		Imaga	fidelity	100
Full of Luck Full of Luck Piety 10		Fartility	courage	100
Full Of Luck Piety Piety Second State 10. mutual_Respect 86.6		• remity	fertility	
Piety 9. welfare 10. mutual_Respect 86.6		 Full Of Luck 	8. Full Of Luck	
10. mutual_Respect 86.6		Piety	9. welfare	
86.6			10. mutual Respect	
				86.6

For the experiment in table 2, we obtained the average similarity precision rate 86.6%.

4.2. Experiment using Shape Feature as Query

In this experiment we using the image shape feature as query and display the search results in the form of 10 impressions. Our experiments use10 different image queries. For performance analysis, we calculate the precision accuracy of the impression on the query image with the retrieved impression. Table 3 shows the rate of similarity on the impression from query image with impression retrieved, accompanied with precision.

No	Ouerv		Impression Result	Prec. %
1		1.	happiness	
		2.	welfare	
		3.	piety	
		4.	Self Awareness	
		5.	Politeness	66.6
	Impression by	6.	peacefulness	00.0
	Image :	7.	fraternity	
	Palitanass	8.	tolerance	
	Humble	9.	Tertility	
2	• Humble	10.	happipess	
1	VALSE	2	welfare	
	Scand	3.	Self Awareness	
	A (3 A 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2	4.	piety	
	Impression by	5.	Politeness	
	Image :	6.	peacefulness	
	 Heroism, 	7.	fraternity	
	 Authority 	8.	fertility	
	 Discreet 	9.	Full_Of_Luck	
-		10.	fidelity	
3	1		nappiness Salf Awaranass	
1	2 DIL	1 2	welfare	
	123	4	nietv	
	-V*	5.	fraternity	
	Impression by	6.	Authority	66.6
	Image :	7.	harmony	
	Prosperity	8.	peacefulness	
	Affection	9.	prosperity	
	Sell_Awareness	10.	Politeness	
4	0.00.00.00	1.	happiness	
	2000	2.	Self Awareness	
	1000 C	3.	wenare	
	10000000	5	fraternity	
	Impression by	6.	harmony	66.6
	Authority	7.	peacefulness	
	Harmony	8.	Politeness	
	Tolerance	9.	Authority	
		10.	prosperity	
5		1.	happiness	
	CONTRACT OF	2.	Self Awareness	
		3.	wenare	
		5	fraternity	
	Impression by	6.	harmony	0
1	Image :	7.	peacefulness	
	 Nobleman 	8.	Politeness	
1	Discreet	9.	Authority	
		10.	tolerance	
6		1.	happiness	
1	81818181	2.	welfare	
1	-4-1-4-1-4-1	3.	Sell Awareness	
1	Impression by	5	Politeness	
1	Image :	6.	peacefulness	100
	 Happiness 	7.	fraternity	
	Welfare Distant	8.	tolerance	
	 Piety 	9.	fertility	
		10.	Full_Of_Luck	
7		1.	happiness	
	A & B.	2.	welfare	
1	(***)	3.	sen Awareness	
	1	5.	Politeness	
1	Impression by	6.	peacefulness	100
1	Image :	7.	tolerance	
	 Happiness Dalitar 	8.	fraternity	
	Politeness	9.	fertility	
		10.	Full_Of_Luck	

Table 3. Experiment result with the Shape Feature



For the experiment in Table 3, we obtained the average similarity precision rate 54.98%. For the experiment in Table 4, we obtained the average similarity a precision rate 48.3%, and to table 5 we obtained the average similarity a precision rate 34.98%.

4.3. Experiments using Impression as Query

In this experiment using the impressions as the query and displays the search results in the form of images songket. We use impressions as queries, and every query has more than one impression. The results of experiments between Impression as Query with Impression-Color Metric be shown in Table 4, and the results of experiments between Impressions as Query with Impression-Shape Metric be shown in Table 5.

5. Conclusion

Riau Malay Songket have 142 variations from some motifs, and each motif has different philosophy. This study our proposed a system with a new approach for semantic songket image search based feature extraction with impression. Each variations of songket image extracted using 3D-Color Vector Quantization method to get metadata color features metric and Hu Moments Invariant method to get metadata shape features metric, and extraction philosophy of the poem and color meaning that contained in each variation songket to get metadata impression feature metric, and then performed the metric color-shape processing are used for metric multiplication to aggregate the metadata impression, color and shape feature metric, that generate metadata impression-color feature metric and impression-shape feature metric. Similarity measurement process we use Cosine method for measure the similarity between the query image with the impression-color metric, while the measurement of the query image with the impressionshape metric using distance metric method. To analyze the performance, we conduct of experiments using image feature as query that display the results in the form of impressions, and multi impression as Query that display the results in the form of images that have closest similarity impression with the query. Experiments using image color features as the query shows the performance with the a precision of 86.6%, while using the shape features an image as the query shows the performance with the a precision of 54.98%. Similarity measurement experiments using multi-impression as queries shows the performance with the a precision 48.3% for the comparison with the the color metric, and 34.98% for the comparison with the the form of the metric.

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No	Impression Query	Results		
110	Impression Query	Image Retrieved	Impression by Image Retrieved	70
1	 Fidelity Purity Nobleman 	1 2 3 4 5 6 7 8 9 10	Fidelity-Affection Nobleman-Full Of Luck-Welfare Nobleman-Full Of Luck Fidelity-Self Awareness Courage-Discreet Happiness-Politeness Courage-Self Awareness Happiness-Politeness-Humble Courage-Self Awareness Happiness-Picty-Politeness	66.6
2	 Heroism Fertility Purity Happiness 		Fratemity-Mutual_Respect-Piety Happiness-Politeness-Humble Courage-Self Awareness-Discreet Fratemity-Peacefulness Happiness-Welfare Happiness-Full Of Luck-Harmony Happiness-Self Awareness-Intellectual Happiness-Tolerance Courage-Discreet Happiness-Politeness	25
3	 Heroism Welfare Tolerance Self Awareness 		1. Fraternity-Mutual_Respect-Piety 2. Fraternity-Peacefulness 3. Courage-Self Awareness-Discreet 4. Happiness-Politeness-Humble 5. Happiness-Humble 6. Fraternity-Welfare-Sincerity 7. FidelityAffection-Self Awareness 8. Happiness-Self Awareness-Intellectual 9. Happiness-Welfare 10. High-Minded-Self Awareness-Politeness	50
4	 Purity Peacefulness Harmony 		High-Minded-Mutual_Respect-Self Awareness Fraternity-Mutual_Respec-Piety Fidelity-Piety-Intellectual Fidelity-Politeness-Humble Fraternity-Harmony-Piety Fraternity-Peacefulness Heroism-Sincerity Fraternity-Peacefulness Heroism-Sincerity Authority-Full Of Luck	33.3
5	 Prosperity High_Minded Mutual_Cooperation 	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	 Hathony-Hir Or Dack High-Minded-Self Awareness-Humble High-Minded-Harmony-Tolerance Prosperity-Politeness Prosperity-Affection-Self Awareness Fertility-Harmony Fraternity-Mutual_Respect-Piety-High Minded-Affection-Self Awareness High-Minded-Self Awareness-Politeness Prosperity-Peacefulness-Harmony Prosperity-Peacefulness-Tolerance-Humble 	66.6

Table 4. Experiments similarity measurement between Impression as Query with Impression-Color Metric

N		Results		Precision
NO	Impression Query	Image Retrieved	Impression by Image Retrieved	% 0
1	1 Fidelity	innage Kett leveu	1 Authority-Mandate-Discreet-Intellectual	33.3
1	2 Purity		2 Prosperity-Affection-Self Awareness	55.5
	3 Nobleman		3 Prosperity-Peacefulness-Tolerance-	
	5. Wooleman		Humble	
			4 High-Minded-Self Awareness-Politeness	
		1 2 3 4 5	5. Fertility-Harmony	
			6. Fertility-Welfare-Mandate	
			Authority-Politeness	
			High-Minded-Piety	
			 Fraternity - Mutual Respect 	
		6 7 8 9 10	10. Nobleman-Discreet	
2	1. Heroism		1. Authority-Mandate-Discreet-Intellectual	25
	2. Fertility		Prosperity-Affection-Self Awareness	
	3. Purity		Prosperity-Peacefulness-Tolerance-	
	Happiness		Humble	
		1 2 3 4 5	High-Minded-Self Awareness-Politeness	
			Fertility-Harmony	
			High-Minded-Piety	
			Authority-Politeness	
			 Fertility-Welfare-Mandate 	
		6 7 8 9 10	Nobleman-Discreet	
			Fertility-Harmony-Tolerance	
3	1. Heroism		 Authority-Mandate-Discreet-Intellectual 	50
	Welfare		Prosperity-Affection-Self Awareness	
	Tolerance		Prosperity-Peacefulness-Tolerance-	
	Self Awareness		Humble	
		1 2 3 4 5	4. High-Minded-Self Awareness-Politeness	
			5. Fertility-Harmony	
			6. High-Minded-Piety	
			7. Authority-Politeness	
			8. Fertility-Welfare-Mandate	
		6 7 8 9 10	9. Nobleman-Discreet	
4			10. Fraternity -Mutual_Respect	<u>^</u>
4	1. Purity		Authority-Mandate-Discreet-Intellectual	0
	2. Peacefulness		2. Prosperity-Affection-Self Awareness	
	3. Harmony		A Dream prizzy Departule and Teleromae	
		1 2 3 4 5	4. Prosperity-reacerumess-roterance-	
			5 Fertility Harmony	
			6 High-Minded-Piety	
			7 Authority-Politeness	
			8 Nobleman Discreet	
			9 Fertility-Welfare-Mandate	
		6 7 8 9 10	10 Prosperity-Welfare	
5	1 Prosperity		1 Authority-Mandate-Discreet-Intellectual	66.6
5	2 High Minded		2 Prosperity-Affection-Self Awareness	00.0
	3 Mutual Cooperation		3 Prosperity-Peacefulness-Tolerance-	
	2. matan_cooperation		Humble	
		1 2 3 4 5	4 High-Minded-Self Awareness-Politeness	
			5 Fertility-Harmony	
			6 Fertility-Welfare-Mandate	
			7. Authority-Politeness	
			8. High-Minded-Piety	
		6 7 8 9 10	9. Fidelity-Politeness-Humble	
			10. Fertility-Self Awareness-Intellectual	
		1		34.98

Table 5. Experiments similarity measurement between Impressions as Query with Impression-Shape Metric