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Semantic Madurese Batik Search with Cultural Computing of Symbolic Impression Extraction and Analytical Aggregation of Color, Shape and Area Features

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Abstract
Lack of information media about Madurese batik causes low awareness of younger generation to maintain the production of Madurese batik. Actually, Madurese Batik also has a high philosophy, which the motif and colour reflect the character of the Madurese. Madurese Batik has useful motif as a mean of traditional communication in the form of certain cultural symbols. We collected images of Madurese Batik by identifying the impression of Madurese Batik motif taken from several literature books of Madurese Batik and also the results of observation of experts or craftsmen who understand about Madurese Batik. This research proposed a new approach to create on application which can identify Madurese Batik impression by using 3D-CVQ feature extraction methods to extract color features, and used Hu Moment Invariant for feature feature extraction. Application searching of Madurese Batik image has two ways of searching, those are based on the image input Madurese Batik and based on the input of impression Madurese batik. We use 202 madurese batik motifs and use search techniques based on colors, shapes and aggregations (color and shape combinations). Performance results using based on image queries used:(1) based on color, the average precision 90%, (2) based on shape, the average precision 85%, (3) based on aggregation, the average precision 80%, the conclusion is the color as the best feature in image query. While the performance results using based on the impression query are: (1) based on color, the average value of true 6.7, total score 40.3, (2) based on shape, the average value of true 4.1, total score 24.1, and (3) based on the aggregation, the average value of true 2.5, the total score is 13.8, the conclusion is the color as the best feature in impression query.

Keywords: Madurese Batik, Impression, Feature Extraction.

1. INTRODUCTION

Madurese Batik is one of the unique cultural creations, free, natural, and usually has exotic colors, bold and dynamic. Madurese Batik also has a high philosophy. Motifs and colors of batik Madura reflects the character of the

Madurese themselves. Madurese Batik is one of the largest batik in Indonesia in East Java. Madurese Batik produced by four districts, namely Bangkalan, Sampang, Pamekasan, and Sumenep.

Lack of media information about Madurese Batik Cause low awareness of younger generation to maintain the production of Madura batik.Even due to the lack of understanding of Madurese to the philosophy contained in Madurese Batik itself, many Madurese are interested and want to buy cheap batik from other region than the original Madurese Batik.This problem is a threat to the original batik madura craftsmen. Madurese often use Madurese Batik only on the side of its beauty, without knowing the impression of Madura batik motif used.Therefore, they are wrong costumes while attending an event. However, Madurese batik has many values that can be expressed as in aspects of daily life, history, philosophy, and culture. On the other hand, Madurese Batik hasuseful motif as traditional way of communication in the form of a symbol of a particular culture.Every person who wears Madurese Batik can know the impression Batik madura that they wear based on the motive and color.

We proposed a new approach to create an application based on a semantic image search of the impression of the Madurese Batik motif by the information retrieval system (image retrieval) based on color, shape, and combination between color and shape. The feature extraction used to get the color feature on each batik using 3D-CVQ method, while the feature extraction form using Hu Moment Invariants method. The research process was conducted to know the impression contained in each color and shape of the Madurese batik motif. So that, the Madurese and the society can know and understand about the message or the impression contained in Madurese batik culture. This research approach is done to find out the message or meaning contained in every color and shape of motif from Madurese Batik. So especially the batik craftsmen, the younger generation of Madura and the wider community will be more familiar with and understanding about the message or meaning contained in a work of Madurese Batik culture easily quickly through an application system created so that later will also grow the love of Madurese Batik itself.

2. RELATED WORKS

Rangga Paramayoga [2] focused on the history of Madurese Batik, and how its making process and explain the philosophy of Madurese Batik. This research explaining the relation betweenculture of Madurese society and theimpression of Madurese Batik motif. Sri Endah Nurhidayati [3] research about Madurese batik derived from Bangkalan district namely Tanjung Bumi Batik. Tanjung Bumi Batik has a unique character and form that reflect on life and culture in Madurese society. This research described Tanjung Bumi Batik using bright colors such as red, blue, orange, green, and also with a pattern that impressed by the unique pattern. Annisaa Nurfitriyana [5] research about the definition of cultural Madurese products, namely Madurese Batik

from four districts in the Madurese from Bangkalan, Sampang, Pamekasan, and Sumenep, and the use of batik in daily activities by the Madurese society.

3. ORIGINALITY

This research proposes a new approach to the technique of searching motifs and images of Madurese Batik. The search system is done by extracting colors, shapes, and combinations of colors and features. Batik used is traditional batik madura which has philosophy. Color feature extraction using 3D-CVQ Histogram and feature feature extraction using Hu Moments Invariant, while for extraction of impression and area, we conducted research in the field and supported by several reference books that explain the meaning of Madurese Batik. The feature extraction process generates 4 feature metrics, impressions feature metric, colors feature metric, shapes feature metric, and are feature metric. Next from four metrics, we apply metrics multiplication. Between impression metrics with color metrics and resulting in impression-color metrics, impression metrics with shape metrics and resulting in impression-shape metrics, metrics of impression with metrics and resulting in impression-area metrics. This multiplication metric is performed for search process based on the impression that displays the image, and the search based on the image showing the results of the impression. The extraction process of color and shape features is also done in the Image query. This research will produce an application as a medium for delivering information about the motives and meaning of the work of Madurese Batik culture, where can be used as the basis of knowledge, especially to the generation of Batik Madurese craftsmen in doing development on the next batik process. In addition, consumers of Madurese Batik can know and understand the various motives of Madurese Batik in accordance with the philosophy in determining the choice of motives based on their needs. This application system can also provide knowledge to the young generation of Madura to understand the values of Madurese Batik culture work so that the younger generation of Madura is expected to contribute in maintaining and bringing the cultural value of the message in the Madurese Batik. This system will be operated by smart phone user android. Target users of this system are Madura Batik craftsmen, the general public, young generation of Madura.

4. SYSTEM DESIGN

The proposed system consists of 7 phases: (1) Image collection, (2) Feature extraction, (3) Multiplication metric, (4) Save Database, (5) Query proces (based on image or based impression), (6) Similarity Measurement. (7) Query Result. The system designs overview is shown in Figure 1, which each phase on its design will be explained in part 4.1-4.7.

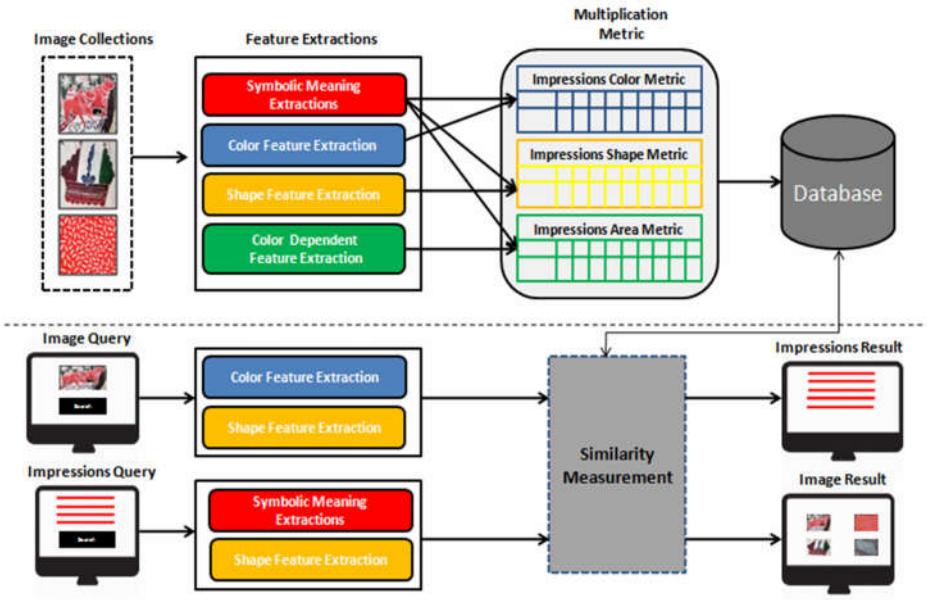


Figure 1. The system design overview of our proposed research for semantic Madurese Batik

4.1. Image Collection

Theimage collection ofMadurese Batik in this research was generated from four districts in Madura, is begun from Bangkalan, Sampang, Pamekasan, and Sumenep. We also make observation to craftsmen, Madurese Batik researchers, and some literature books that can explain about Madurese batik. Each image of Madurese Batik that has been obtained, it hasa different pattern based on batik motif, because its Batik unique characteristic such as on the color using bright color (e.g. Boldness), and the motif using flora and fauna (e.g. cow, bird, and boat).

Here are some books that explain of the philosophy of MadureseBatik:

- "Batik Madura Warna Terang Dari Warisan Madura" was written by Rangga Parama Yoga and published byDepartment of Industry and Commerce, East Java.
- "Ragam Hias Batik Madura" was written by Hj. Zulfah from Tanjung Bumi Batik, Madura.
- "Batik Filosofi, Motif dan Kegunaan" was written by Adi Kusriyanto and published by Andi.
- "Batik Nusantara (Batik dari Archipalago)" was written by Kina magazine(Karya Indonesia), 2013.
- "Batik Jawa Timur Legenda & Kemegahan" was written and published by Province Library Administrative Agency, East Java.

The number of Madurese Batik images obtained in this data collection is 202 drawings and has the impression, and the origin of the area in Madura. Figure 2 below is an example of Madurese Batik motif obtained from the process of collecting images.

Figure 2. The example of Madurese Batik Motif

4.2. Feature Extraction

Feature Extraction is an extraction process from the Madurese Batik image collection. This process generates the metric of impression, color, shape, and culture dependent (area) of Madurese Batik. After that, the feature extraction results in the form of stored metrics into the database. The feature extraction process is illustrated in Figure 3 below.

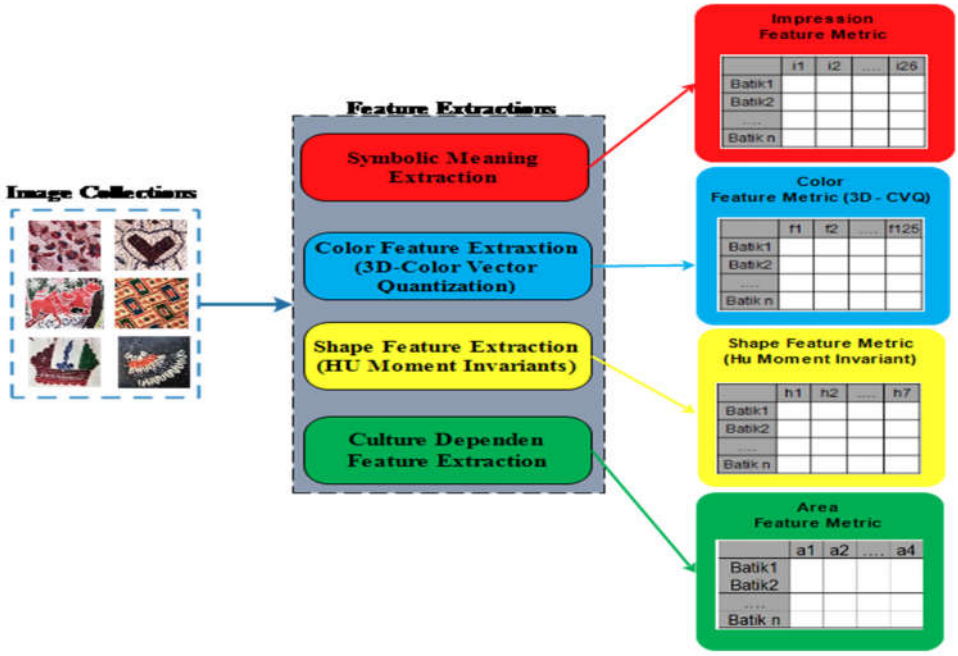


Figure 3. The image extraction feature process to obtain the feature matric of impression, color, shape, and area

4.2.1Symbolic Impression Extraction

The symbolic impression extraction is the process to obtain the impression of each Madurese Batik image motif. The impression of each Madurese Batik is obtained through observation and based on book literature. Symbolic feature extraction results are shown in Table 1 below:

Table 1. List of Impressions Madurese Batik Motif

Code	Impression	Code	Impression
i1	Love	i16	Preservation
i2	Affection	i17	Happiness
i3	Prosperity	i18	Honesty
i4	Life sparingly	i19	Endurance
i5	Enjoyment	i20	Cheerfulness
i6	Riches	i21	Brotherhood
i7	Optimism	i22	Separation
i8	Equipoise	i23	Responsible
i9	Softness	i24	Culture
i10	Faithfulness	i25	Homesickness
i11	Holiness	i26	Beauty
i12	Sincere		
i13	Harmony		
i14	Spirit		
i15	Strength		

Each Madurese Batik has more than one impression as follow in Figure 4 below:

Figure 4. The Symbolic image extraction process

The Figure 4 above illustrates the feature metric which is assigned a value of 1 or 0. If the Madurese Batik image contains an impression that is given 1 value, while if the Madurese Batik image does not contain the impression will be given 0 value. The all extraction process will produce the feature metric impression. Table 2 shows the impression feature extraction which consists of Batik 1 to Batik 202 as samples, and i1 to i26 as impression features.

Table 2. Table of impression feature extraction

	i1	i2	i...	i26
Batik1	....	....	....	....
Batik2	....	....	....	....
...	....	....	....	....
Batik 202	....	....	....	....

4.2.2 Color Feature Extraction

Colorfeature extraction is the process of obtaining color features from Madurese Batik.Color featureextraction from our collection of Madurese Batik using Histogram 3D-Color Vector Quantization. The 3D-CVQ Histogram [6] is a method for extraction of color features in the RGB color space, and then from the RGB color space to a quantization size of 64x64x64 to 125 RGB positions.

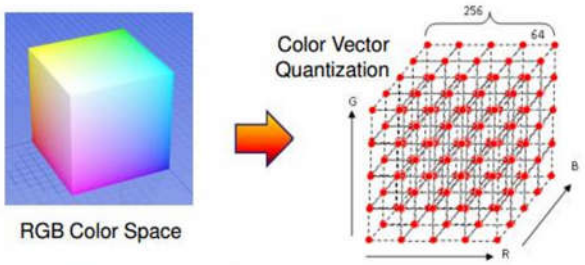
The formula of image quantization is following equation (1) below.

$$H_i = \sum_{j=1}^{j=n} H_j \begin{cases} H_j = 1 \leftarrow \min(D(RGBj, RGBi)) \\ H_j = 0 \leftarrow otherwise \end{cases} \quad (1)$$

H_i = Histogram of the 125 positions in the RGB color space

H_j = the image pixel, n is the number of pixels, D (RGBj, RGBi is the distance between the color pixel RGB and RGB color j position 125. That given the size of the image request can be variation. The calculation of the local average is required to normalize the feature[6].

Histogram Figure 3D-Color Vector quantization as follows Figure 5:



Source: A.R.Barakbah, Y.Kivoki, 2008, 3D-Color Vector Quantization for Image retrievalSistem, international database Sistem (IDB) 2008,Izaka, Japan[6]

Figure 5. The process color feature extraction [6] using 3D-Color Vector Quantization

The color feature extraction results in metadata color metadata feature metrics is illustrated in Figure 6.

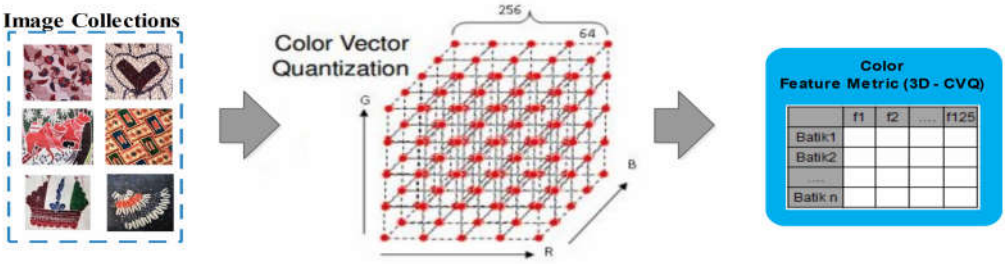


Figure 6. Color feature extraction of metadata

Table 3. Table of color feature extraction using Hu Moments

	f1	f2	....	f125
i1	....	....	....	....
i2	....	....	....	....
....	....	....	....	....
i26	....	....	....	....

4.2.3Shape Feature Extraction

The form of Shape feature extraction is the extraction process of image form of Madurese Batik using Hu Moments invariant method. Hu Moment invariant is one method to transform vector spaces which is introduced by Hu in 1962 [9] [10].

The invariant moment is a nonlinear function of invariant to rotation, translation, scale, and defined in the moment of image geometry [8].Moments can be described an object in terms of direction, position, orientation and other defined parameters. The basic equation of an object's moment is defined as follows the equation (2).

$$M_{ij} = \sum_{X}\sum_{Y} x^i y^j f(x,y) \text{ i, j = 0,1,2,...} \quad (2)$$

M_{ij} = moment digital image
i, j = ordemomen
x,y = coordinate pixel
f = color intensity value of the image

Next is determined the coordinates of the image center based on the calculated image moment using the following equation (3) and (4):

$$\bar{x} = \frac{M_{10}}{M_{00}} \quad (3)$$

$$\bar{y} = \frac{M_{01}}{M_{00}} \quad (4)$$

$\bar{x}\,\bar{y}$ = center point of the image

Furthermore, to obtain a moment that is invariant to rotation, then the central moment is obtained by the equation (5):

$$\mu_{ij} = \sum_{X}\sum_{Y}(x-\bar{x})^{i}(y-\bar{y})^{j} \tag{5}$$

μ = central moment
i, j = orde moment

The moments are further normalised for the effects of change of scale using the following formula (6):

$$\eta_{ij} = \frac{\mu_{ij}}{\mu_{00}^{\ \gamma}} \tag{6}$$

Where the normalization factor: γ = (i+j / 2) +1. The normalization of central moments a set of seven values can be calculated and are defined by:

$$\phi_1 = \eta_{20} + \eta_{02} \tag{7}$$

$$\phi_2 = (\eta_{20} - \eta_{02})^2 + 4\eta^2_{11} \tag{8}$$

$$\phi_3 = (\eta_{30} - 3\eta_{12})^2 + (\eta_{03} - 3\eta_{21})^2 \tag{9}$$

$$\phi_4 = (\eta_{30} + \eta_{12})^2 + (\eta_{03} + \eta_{21})^2 \tag{10}$$

$$\phi_5 = (3\eta_{30} - 3\eta_{12})(\eta_{30} + \eta_{12})\left[(\eta_{30} + \eta_{12})^2 - 3(\eta_{21} + \eta_{03})^2\right] + (3\eta_{21} - \eta_{03})(\eta_{21} + \eta_{03})x\left[3(\eta_{30} + \eta_{12})^2 - (\eta_{21} + \eta_{03})^2\right] \tag{11}$$

$$\phi_6 = (\eta_{20} - \eta_{02})^2\left[(\eta_{30} + \eta_{12})^2 - (\eta_{21} + \eta_{03})^2\right] + 4\eta_{11}(\eta_{30} + \eta_{12})((\eta_{21} + \eta_{03}) \tag{12}$$

$$\phi_7 = (3\eta_{21} - \eta_{03})(\eta_{30} + \eta_{12})\left[(\eta_{30} + \eta_{12})^2 - 3(\eta_{21} + \eta_{03})^2\right] + (3\eta_{12} - \eta_{30})(\eta_{21} + \eta_{03})x\left[3(\eta_{30} + \eta_{12})^2 - (\eta_{21} + \eta_{03})^2\right] \tag{13}$$

The formula (7) to (13) above, Seven Moment Invariant is invariant to image transformation, scaling, translation and rotation. The following of Table 3 is the result of shape feature extraction using Hu Moments, which consist of Batik 1 to Batik 202 as sample, and h1 to h7 as shape features.

Table 4. Table of shape feature extraction using Hu Moments

	h1	h2	h....	h7
Batik1	....	....	....	....
Batik2	....	....	....	....
...	....	....	....	....
Batik 202	....	....	....	....

4.2.4 Area Feature Extraction (The origin place of Madurese Batik)

Area feature extraction is the process to get the feature of the origin region of each Madurese Batik motif, because Madura has four districts and each district has different motif. Thus, the data collection of Madurese Batik will be adjusted with the origin place.

This feature metric is given a value of 1 or 0. If the image of Madurese Batik come from the Madura district, then, given the value of 1, if the image of Madura Batik does not comes from the Madura district will be given a value of 0. All extraction process will produce the area feature metric, which consist of Batik 1 to Batik 202 as samples, and a1 to a4 as area feature (the four Madura districts) as follow Table 4.

Table 5. Table of area feature by the feature extraction

	a1	a2	a3	a4
Batik1	....	....	....	....
Batik2	....	....	....	....
....	....	....	....	....
Batik202	....	....	....	....

4.3. Multiplication Metric

Multiplication Metric or Metric Processing is an inner-productmultiplication metric in the process of feature of impressions, color, shape, and area. The multiplication metric of this process will be generated (1) the multiplication between impression feature metric and color feature metric as result of **Impression-Color metric**, (2) the multiplication between impression feature metric and shape feature metric as result of **Impression-Shape metric**, and (3)) the multiplication between impression feature metric and area feature metric as result of **Impression-area metric**. Figure 7 is illustrated the all Multiplication Metrics.

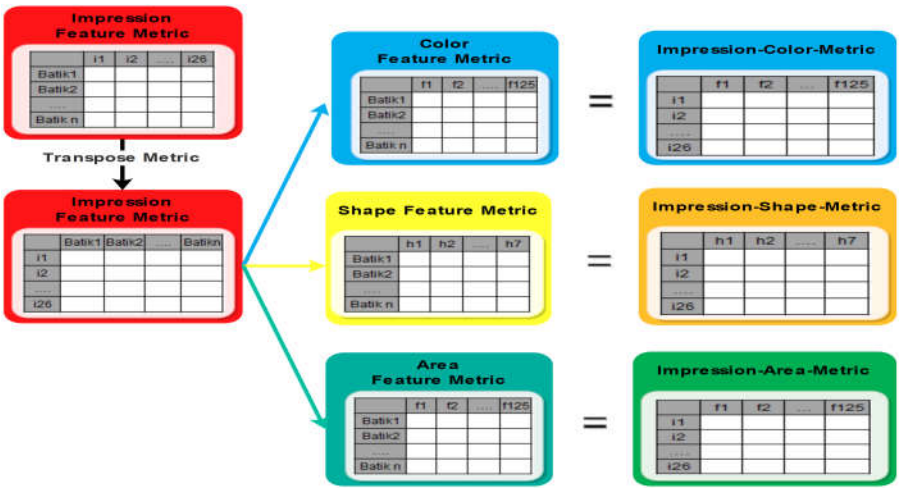


Figure 7. Multiplication Metrics in the process of impressions, color, shape, and area

4.4. Impression / Image Query

There are two processes made in the query based on the image and impression. Query in the form of images and impression is inputed by the user which is used to search and get the matching information from the database. Image queryis obtained from Madurese Batik. The image queryof feature extraction using 3D histogram-CVQ and Hu moment to get the metadata that would be used to measure the similarity of Madurese Batik dataset, and show the result in the form of impression. The impression query is a meaning of word chosen by the user from the available list of impression, and the system will process the measurement, the correlation ofthe measurement process result will be used for similarity measurement to dataset. Therefore, output of the system is image, and it is given to the user.

4.4. Similarity Measurement

Similarity measurement method is used to measure the similarity between the impression and image query that inputed by the user. The one of the similarity measurement is *Co*-sin-*e* formula which is used to measure the similarity between image query and impression query with the metadata on dataset, and measure based on color and shape feature. The formula of *Co*-sin-*e* is shown in equation (14).

$$\text{Cosine} = \frac{\sum_{i=1}^{n} AixBi}{\sqrt{\sum_{i=1}^{n} (Ai)^2 x \sum_{i=1}^{n} (Bi)^2}} \quad (14)$$

Where:

n = the number of metadata on dataset
A = metadata on image and impression query
B =metadata on dataset

In addition to the similarity of color and shape-based measurement, we apply the aggregation of color and shape. **The first scenario**, our system will process the image query which is inputed by user, and then the system will calcalutemeasurement process based on color, shape, and combination between color and shape using *cosine* formula, and output will display the result of 10 impressions.**The secend scenario**, if the user wants to find based on impression, the system will measure between measurements based on color, shape, and aggregation color and shape using *score* formula, and output will display the result of 10 images.

5. EXPERIMENT AND ANALYSIS

We analyzedthe performance based on color, shape, and aggregation of color and shape. **First experiment**, we used multiimpression as input query, and then we applied the measurement of similarity between impression value as query with color, shape, and area metric in database. The system would display the image of variations Madurese Batik motif result. **Second experiment**, we used Madurese Batik image collection as query which its image was extracted using 3D-CVQ and HU Moments, and then we measure the similarity between the extraction results from the query image with impression-color and impression-shape metric that stored in database, and display the impression result. All this experiment was applied on the 5 experiments using 5 different querie's, each experiment would show 10 images or impressionsresult.

5.1. Impression Query

5.1.1. Measurement rules for Impression Query

The measurement of similarity based onimpression query usingthe formula as follow in equation (15).

$$Score = \sum_{i=1}^{10} scr_i \begin{cases} scr_i = 10 - i + 1 \leftarrow cr_i = cq \\ scr_i = 0 \leftarrow otherwise \end{cases} \quad (15)$$

Where:

cr	=category of retrieved images
cq	=category of image query
scr_i	=Score for each image retrieve i

The equation (15) above described *cr* denote the category of retrieved images, *cq*denote the category of image query, and *scr* denote the score for each image retrieve *i.*Each experiment displayed 10 images.Each image had an impression, if the impression of the image that obtained similar to the impression query correctly was be given 1, but if the impression of the image that obtained was different with the impression query will be given 0.Next, in the first sequence the image was given a score 10, then the sequence of the

second image was score 9 and so on in the tenth image was given a score of 1, the overall total score is 55. Then, the True or False value of the displayed image Multiplied by the order of the image, and calculated total score true. For full explanation is shown in Table (5) as follows.

Table 6. The example of calculation the degree of similarity between the Impression Query with impression displayed image

Impressi Query											
Love, Riches, Culture											
Image Retrieved											
Based on color				**based on shape**				**Aggregasi (color&shape)**			
ID Batik Image	**T/F**	**Score**	**Score (T)**	**ID Batik Image**	**T/F**	**Score**	**Score (T)**	**ID Batik Image**	**T/F**	**Score**	**Score (T)**
Batik67	0	10	0	Batik118	1	10	10	Batik15	1	10	10
Batik69	0	9	0	Batik119	1	9	9	Batik30	0	9	0
Batik1	0	8	0	Batik120	1	8	8	Batik85	0	8	0
Batik2	0	7	0	Batik165	0	7	0	Batik96	0	7	0
Batik3	0	6	0	Batik121	1	6	6	Batik97	1	6	6
Batik4	0	5	0	Batik163	0	5	0	Batik105	1	5	5
Batik7	1	4	4	Batik166	0	4	0	Batik106	0	4	0
Batik8	1	3	3	Batik117	1	3	3	Batik107	1	3	3
Batik9	0	2	0	Batik37	0	2	0	Batik110	1	2	2
Batik10	0	1	0	Batik184	0	1	0	Batik112	1	1	1
Total True : 2			**TSC = 7**	**Total True : 5**			**TSC = 36**	**Total True : 6**			**TSC = 27**

Where: T: True, F: False, TSC = Total Score True

5.1.2. Experiments with Impression Query

In this experiment used multi-impression query or more than one impression. this experiment displayed 10 image based color and display 10 images based shape, that had the similarity impression with the multi-query impression. Experiment conducted to determine the performance between query impression with displayed image results that contained of impressions. In Table 5, we can see the results of the experiment as follows.

Table 7. Experiment using impressions query

No.	Query Impression	Based on color		Based on Shape		Aggregasi (color& shape)	
		Total True	Total Score True	Total True	Total Score True	Total True	Total Score True
1.	Love Culture Riches	10	55	5	36	5	27
2.	Beauty Spirit	6	36	5	27	2	16
3.	Equipoise Sincere Separation	8	37	4	17	2	9
4.	Harmony Beauty	6	39	2	7	4	14
5.	Honesty Cheerfulness Softness	7	44	1	9	1	7
6.	Culture	8	44	7	44	2	8
7.	Prosperity Enjoyment Equipoise	8	48	7	44	3	12
8.	Separation Culture Homesickness Beauty	6	39	8	44	3	22
9.	Spirit	4	31	1	7	1	8
10.	Softness Harmony	4	30	1	6	2	15
Average		**6.7**	**40.3**	**4.1**	**24.1**	**2.5**	**13.8**

Experiment of image search by the using impressions as queries and based color features could be known by the true value average is 6.7 of the 10 image displayed on each experiment, and the average calculation of the total score true was 40.3 by 55 total scores on each experiments. While based shape features could be known by the true value average is 4.1 of the 10 imagedisplayed on each experiments, and the average calculation of the total score true was 24.1 of the 55 total scores on each experiments. Furthermore, based aggregation color and shape features could be known by the true value average was 2.5 of the 10 image displayed on each experiments, and the average calculation of the total score true was 13.8 of the 55 total scores on each experiments.

5.2. Image Query

5.2.1. Rules of Calculation for Image Query

The rules of calculation precision to analyze the precision between image query with the generated impression. Comparison with comparing Impression retrieved with impression that contained on query image. The way to present precision defined in equation (17).

$$Precision = \frac{\text{Total Number similar impressions retrieved with impression on query image}}{\text{Total Number of Impression contained in image query}} x100\% \quad (17)$$

This experiment used Image Query and displayed an impression of 10 impressions. Impression based on color features, shape features and aggregation of color-form features. This experiment was conducted to measure the performance of batik query with the results shown from the impression. We can see the results of the experiment in Table 7 below:

Table 8. Experiment using image query

No	Image Query & his Impressions	Impression retrieved		
		Based on Color	**Based on shape**	**Aggregation (Color and shape)**
1.	 Love Affection	Holiness Preservation Brotherhood Prosperity Responsible Culture Riches Affection Endurance Strength	Cheerfulness Holiness Responsible Optimism Strength Love Homesickness Separation Life sparingly Affection	Holiness Brotherhood Preservation Responsible Prosperity Culture Riches Affection Homesickness Separation
Precision (%):		**50**	**100**	**50**
2.	 Love Affection	Responsible Brotherhood Affection Love Homesickness Enjoyment Happiness Holiness Optimism Riches	Cheerfulness Holiness Responsible Optimism Strength Love Homesickness Separation Life sparingly Affection	Responsible Brotherhood Affection Love Homesickness Enjoyment Happiness Holiness Optimism Riches
Precision (%):		**100**	**100**	**100**
3.	 Strength	Separation Brotherhood Enjoyment Happiness Homesickness Prosperity Affection Love Strength Optimism	Cheerfulness Holiness Responsible Optimism Strength Love Homesickness Separation Life sparingly Affection	Separation Homesickness Brotherhood Enjoyment Happiness Prosperity Affection Love Strength Optimism
Precision (%):		**100**	**100**	**100**
4.		Homesickness Brotherhood Enjoyment Happiness Love Optimism Riches Strength	Cheerfulness Holiness Responsible Optimism Strength Love Homesickness Separation	Cheerfulness Holiness Responsible Optimism Strength Love Homesickness Separation

	Love Homesickness	Affection Prosperity	Life sparingly Affection	Life sparingly Affection
	Precision (%):	**100**	**100**	**100**
5.	 Beauty Affection	Holiness Responsible Preservation Prosperity Brotherhood Affection Culture Riches Endurance Strength	Holiness Cheerfulness Optimism Responsible Strength Love Life sparingly Homesickness Separation Affection	Holiness Responsible Preservation Brotherhood Prosperity Affection Riches Culture Optimism Endurance
	Precision (%):	**50**	**50**	**50**
6.	 Culture	Holiness Brotherhood Prosperity Homesickness Affection Responsible Riches Preservation Culture Love	Honesty Spirit Preservation Life sparingly Harmony Enjoyment Happiness Affection Love Culture	Holiness Brotherhood Homesickness Responsible Affection Love Prosperity Riches Preservation Culture
	Precision (%):	100	100	100
7.	 Riches Endurance	Brotherhood Preservation Prosperity Riches Affection Optimism Responsible Separation Homesickness Endurance	Holiness Cheerfulness Responsible Optimism Endurance Strength Homesickness Separation Life sparingly Affection	Brotherhood Preservation Prosperity Riches Homesickness Affection Responsible Optimism Separation Love
	Precision (%):	**100**	**50**	**50**
8.	 Strength	Separation Brotherhood Enjoyment Happiness Homesickness Prosperity Affection Love Strength Optimism	Cheerfulness Holiness Responsible Optimism Strength Love Homesickness Separation Life sparingly Affection	Separation Homesickness Brotherhood Enjoyment Happiness Prosperity Affection Love Strength Optimism
	Precision (%):	**100**	**100**	**100**
9.	 Prosperity Life sparingly	Holiness Culture Prosperity Preservation Riches Brotherhood Endurance Separation Homesickness Life sparingly	Cheerfulness Holiness Responsible Optimism Strength Love Homesickness Separation Life sparingly Affection	Holiness Culture Prosperity Preservation Riches Brotherhood Homesickness Endurance Separation Honesty
	Precision (%):	**100**	**50**	**50**

10.	 Prosperity Riches Endurance	Holiness Culture Prosperity Preservation Riches Endurance Separation Honesty Brotherhood Life sparingly	Riches Prosperity Endurance Beauty Brotherhood Honesty Enjoyment Happiness Preservation Separation	Holiness Riches Prosperity Preservation Beauty Honesty Separation Endurance Homesickness Brotherhood
Precision (%):		**100**	**100**	**100**
Average Total (%):		**90**	**85**	**80**

The impressions search experiment used Image as query, experiment based on the color feature could be known the average of 90% precision, the experiment based on the shape feature can be known 85% accuracy, and experiment based on the color aggregation and the shape of the feature can be known the average of 80% precision.

6. CONCLUSION

Madurese batik has 202 variations of several motif and 26 impression, and each motif has different impression. This research, we proposed a system with a new approach that searches Madurese Batik image based on the concept of semantics based on impression, color, shape and area of originity.Each variation of Madurese Batik image is extracted using a 3D-Color Vector quantization method to obtain the features metadata color metric and using Hu-Moment invariant methods to get features meta data shape metric.We collected the Madurese Batik image through identifying the impressionof Madurese batik motif which was taken from some literature books on Madurese Batik and also observed them to the experts or craftsman that understand well on Madurese Batik. To knowthe similarity measurement process we used the Cosine method for measuring the similarity between the query image metrics color impression, while measurements of the query image with the shape-impression metrics used the method of metric distances. To analyze the performance, we conducted an experiment using image features like query that displayed the results in

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