International Journal Of Health, Engineering And Technology (IJHET) E-ISSN 2829 - 8683
Volume 5, Number 1, May 2026, Page. 1015 - 1028
Email : editorijhess@gmail.com

Palembang Tie-Dye Fabric Motif Detection Software Using The Yolov10 Method

Muhammad Firmansyah[1)], Tinaliah[2)]
[1,2)] Informatics Study Program, Faculty of Computer Science and Engineering, Multi Data University Palembang

*Corresponding Author
Email : firmansyah16ok@gmail.com

Abstract

Palembang's jumputan cloth shops face difficulties in manually identifying motifs, which can lead to inventory errors. This study aims to develop a jumputan cloth motif detection software using YOLOv10 for real-time inventory identification and management automation on Android. The research method combines Research and Development (R&D) with an experimental quantitative approach. The population consists of fabric stocks from three Palembang shops, a sample of 400 images (Titik Tujuh, Beras Tabur, Lereng, Keong) divided into training (80%), validation (10%), and testing (10%). Instruments include a smartphone camera, YOLOv10m, and Google Colab Pro; analysis uses precision, recall, mAP50-95, and confusion matrix. The results show mAP50-95 up to 99.50%, smartphone accuracy 90-100% (SGD is superior), user satisfaction 96.52% via USE Questionnaire, but decreases in low light (Keong 40%). Conclusion: The application effectively supports business efficiency and cultural preservation with a detection time of 3-5 seconds.

Keywords: ***Android Application, Fabric Motif Detection, Object Detection, Palembang Jumputan, YOLOv10.***

INTRODUCTION

Palembang is one of the oldest cities in Indonesia, serving as the center of the Srivijaya Empire, the largest Buddhist kingdom in Southeast Asia since the 7th century AD, with a strong influence from trade and the spread of strategic religions. Jumputan cloth, also known as rainbow cloth or traditional Palembang woven cloth, developed from the adoption of Indian and Chinese ornaments on woven cloth, producing unique motifs such as janur flowers, five dots, seven dots, nine dots, cung, terong, and double roses through the jelujur ikat technique. This cloth not only reflects the richness of South Sumatran culture, but also has high economic value with prices ranging from hundreds of thousands to millions of rupiah due to its intricate process.

The process of making jumputan cloth involves tying patterns onto plain white fabric before dyeing, creating a diversity of motifs that are characteristic of Palembang's cultural heritage. Various motifs such as seven dots, slopes, scattered flowers, three countries, scattered rice, abstract, gambo, nine dots, five dots, snails, rainbow candles, and ecoprint further enrich its identity (Bakar & Halim, 2023; Suhel et al., 2023).

Tie-dye textile shops in Palembang, such as Rumah Jumputan Palembang, Nadia Collection, and Songket Udayana, face significant challenges in manually detecting patterns upon incoming stock, leading to identification and inventory errors due to limited human memory and cognitive abilities. The process of counting stock, recording purchases and sales, and sorting patterns is time-consuming and often inaccurate, especially during busy times, resulting in mismatched stock and business losses (Oktovianny, 2021; Rini Murbaningsih, 2023).

The lack of systematization of stock data per motif exacerbates the problem, as inventory still relies on manual records or memory, increasing the risk of grouping and calculation errors. Interviews with store owners and staff confirmed that this process is inefficient and requires an automated solution for accuracy and speed (Agustini & Syarifudin, 2024).

The constraint analysis included economic aspects with a software price of Rp1,500,000 agreed upon by the three stores, manufacturability with a target accuracy of 70% within 2 months and a detection distance of 100 cm, and sustainability with a recognition time of 3-5 seconds. The solution characteristics emphasized identification and inventory automation on the Android platform to overcome the limitations of business operators' devices.

This research aims to develop a software based on the YOLO algorithm for the automation of Palembang jumputan cloth motif detection and stock inventory in stores, with high accuracy in real-time on Android smartphones. The urgency lies in preserving cultural heritage through business efficiency, reducing manual errors that are detrimental to small shops in Palembang, and supporting the traditional textile industry amidst the challenges of digitalization. The novelty is the application of YOLO to Palembang-specific jumputan motifs, which have not been explored in depth compared to batik or songket, with the integration of automatic stock counting exceeding conventional approaches such as SVM or generic CNN, as evidenced by the superiority*YOLOv10*in complex detection (Nazir et al., 2021; Kar & El-Sharkawi, 2023; Syahputra, 2023; Guan et al., 2024).

RESEARCH METHODS

Types and Methods of Research

This study uses a research and development (R&D) approach combined with experimental quantitative methods to develop and test YOLO-based tie-dye pattern detection software on the Android platform, in accordance with a design that emphasizes the production of technological artifacts to solve practical problems in traditional Palembang fabric shops (Sugiyono, 2023; Sudaryono, 2022). Quantitative research is implemented by measuring pattern detection accuracy and stock inventory using metrics such as precision, recall, mAP, and confusion matrix, while qualitative elements from initial interviews complement the validation of user needs (Creswell & Creswell, 2021; Emzir, 2021). This approach aligns with a similar study on textile pattern detection using YOLOv10 for real-time fabric classification, where a deep learning model was optimized for a textile industry-specific dataset (Guan et al., 2024).

Data Analysis Instruments and Techniques

The main research instruments include an Android smartphone camera for image acquisition of jumputan cloth motif datasets (such as seven dots, scattered flowers, slopes, and others from Rumah Jumputan Palembang, Nadia Collection, and Udayana stores), YOLO software for object detection model training, and a mobile application prototype for real-time testing with a detection distance of 100 cm and low lighting. Data analysis techniques involve image preprocessing with data augmentation, model training using the PyTorch framework on Google Colab Pro, performance evaluation with detection metrics (mAP@0.5 , R^2 for stock counting), and error analysis through confusion matrix and bounding box visualization (Nazir et al., 2021; Kar & El-Sharkawi, 2023).

The quantitative analysis technique focused on validating a minimum accuracy of 70% as agreed by the informants, with comparisons against baselines such as SSD-MobileNet or EfficientDet to demonstrate YOLO's superiority in the context of complex jumputan fabric motifs (Syahputra, 2023; Agustini & Syarifudin, 2024). This mixed methods approach ensured triangulation of data from economic-manufacturability interviews and computational results, following the principle of iterative analysis for robustness (Sugiyono, 2023; Emzir, 2021).

Population and Sample

The study population consisted of all jumputan fabric stocks in three main Palembang stores, namely Rumah Jumputan Palembang (motifs of sprinkled flowers, slopes, three countries, sprinkled rice, seven dots), Nadia Collection (seven dots, sprinkled rice, nine dots, abstract, snail, rainbow), and Songket Udayana (seven dots, sprinkled rice, sprinkled flowers, young coconut flowers), with a total of diverse motifs covering more than 12 unique variations. Samples were taken purposively with a stratified random sampling technique of 1,000-5,000 images per motif for the training dataset (70%), validation (20%), and testing (10%), ensuring the representation of complex patterns such as ecoprint and rainbow candles to avoid bias (Creswell & Creswell, 2021; Sudaryono, 2022).

This sample size follows the standard textile object detection dataset, where data augmentation adds variation to improve model generalization under field conditions such as variable lighting (Oktovianny, 2021; Rini Murbaningsih, 2023).

International Journal Of Health, Engineering And Technology (IJHET) *E-ISSN 2829 - 8683*
Volume 5, Number 1, May 2026, *Page. 1015 - 1028*
Email : editorijhess@gmail.com

Research Procedures

The research procedure began with a preliminary study through interviews at three stores to identify problems and collect reference motifs, followed by dataset collection using a Fujifilm X1 camera for 3 days with high resolution. The next stage included data preprocessing (labeling bounding boxes via LabelImg), training the YOLO model on Google Colab Pro with 100 lines of core code, and developing an Android application using Android Studio for real-time camera integration, stock card view, and automatic counting (Bakar & Halim, 2023; Suhel et al., 2023).

Testing was conducted iteratively: functionality testing (detection within 3-5 seconds, 70% accuracy), usability testing with store sources, and a final evaluation using performance metrics to validate the solution. The entire process took two months, based on manufacturability analysis, to ensure implementation feasibility in a small business environment (Sugiyono, 2023; Creswell & Creswell, 2021).

RESULTS AND DISCUSSION

Design Implementation
YOLOv10m Model
Import Library

In the model development stage in Google Colab, major libraries such as PyTorch or TensorFlow are imported to train YOLOv10m, supported by Albumentations for image data augmentation, and Ultralytics or Darknet for object detection implementation.

Dataset Collection

Table 1. Dataset Division Results

Class	Training	Validation	Test	Total
Point Seven	80	10	10	100
Slope	80	10	10	100
snail	80	10	10	100
Sprinkled Rice	80	10	10	100

The dataset sharing process was carried out using Python in Google Colab, with the data stored in Google Drive for easy integration, then separated into training, validation, and testing through a script that defines the directory path and the jumputan cloth motif class (see Figures 1 and 2).

```
# Train/val/test sets as 1) dir: path/to/imgs, 2) file: path/to/imgs.txt, or 3) list: [path/to/imgs1, path/to/imgs2, ..]
path: ../drive/MyDrive/_Dataset/ # dataset root dir
train: images/train  # train images (relative to 'path') 128 images
val: images/val  # val images (relative to 'path') 128 images
test: images/test  # test images (optional)

# Classes
names:
  0: Beras Tabur
  1: Keong
  2: Lereng
  3: Titik Tujuh
```

Figure 1. Distribution of data stored in Google Drive

Once the dataset has been successfully divided, the next step is to annotate each image within the dataset. The image annotation process in this project uses the online Bounding Box tool, which is the websiteMakeSense.AI. The annotated image results can be seen in Figure 2.

Picture1. The annotated image results

https://ijhet.com/index.php/ijhess/

International Journal Of Health, Engineering And Technology (IJHET) E-ISSN 2829 - 8683
Volume 5, Number 1, May 2026, Page. 1015 - 1028
Email : editorijhess@gmail.com

The output of the image annotation is a vector with the format c, x, y, w, h, where c indicates the object's label or class, while x and y are the normalized coordinates of the object's center point. w and h represent the object's width and height, respectively, which have also been normalized.

Software Interface

Splash Screen

The splash screen displays the application name "JUMPUTAN" and the slogan "Recognize Jumputan Fabric Motifs Easily" for 5 seconds, then automatically directs the user to the main page which contains the motif detection feature and information on jumputan fabric stock.

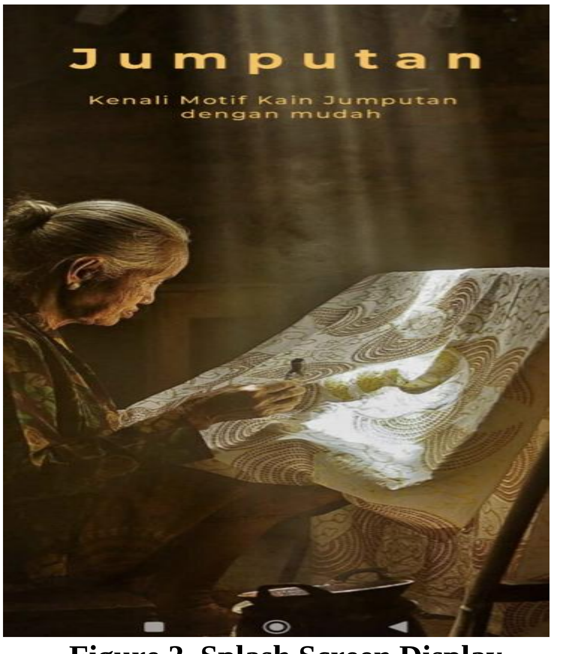


Figure 3. Splash Screen Display

Jumputan Dashboard Page

Picture 4. Dashboard Page View

Tie-dye Fabric Motif Detection Page

The Jumputan Fabric Motif Detection page first requests camera access and then displays a live camera view. When the camera is pointed at the jumputan fabric, the app displays a bounding box along with the detected motif type.

International Journal Of Health, Engineering And Technology (IJHET) *E-ISSN 2829 - 8683*
Volume 5, Number 1, May 2026, *Page. 1015 - 1028*
Email : editorijhess@gmail.com

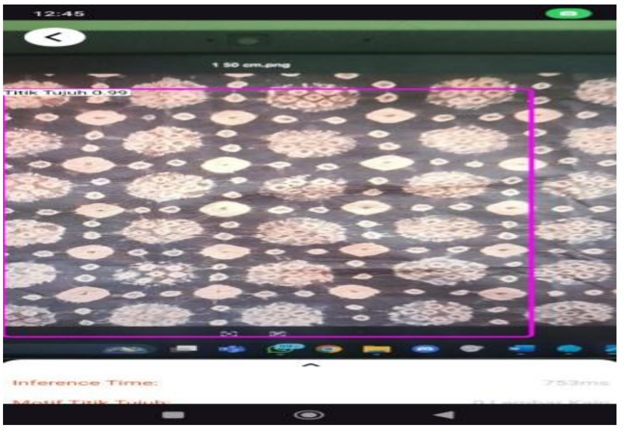
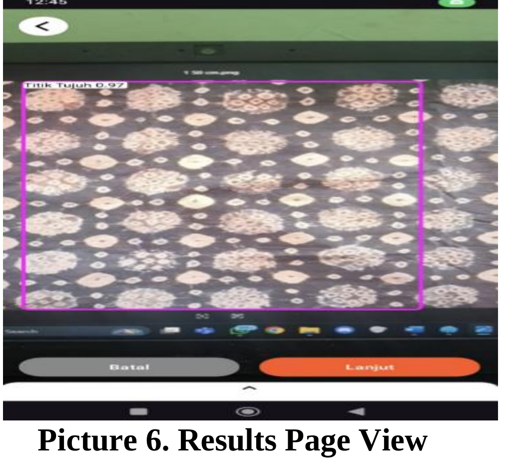


Figure 5. Display of the Tie-Dye Fabric Motif Detection Page

Results Page

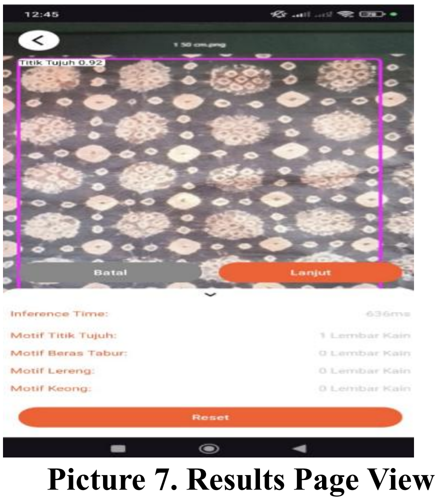
The results page displays the pattern detection capture as well as two buttons: Cancel to cancel the identification and Continue to add the number of detected tie-dye patterns.



Picture 6. Results Page View

Identification Results Number Page

The identification result count page displays the jumputan fabric motif detection data, including the number of each motif and the detection time speed obtained from the previous process.



Picture 7. Results Page View

Tie-dye Fabric Stock Page

The jumputan fabric stock page displays information on the stock quantity for each motif (Seven Points, Sprinkled Rice, Slopes, and Snails), and provides an Incoming Goods button to add stock and an Outgoing Goods button to reduce it.

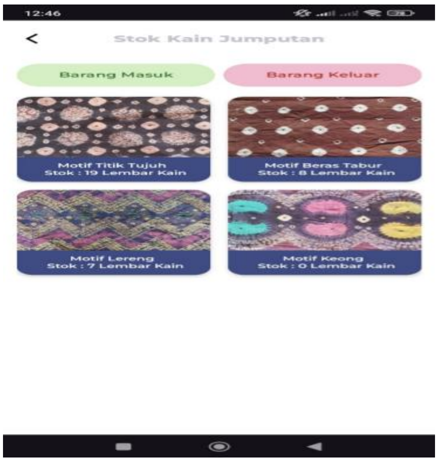
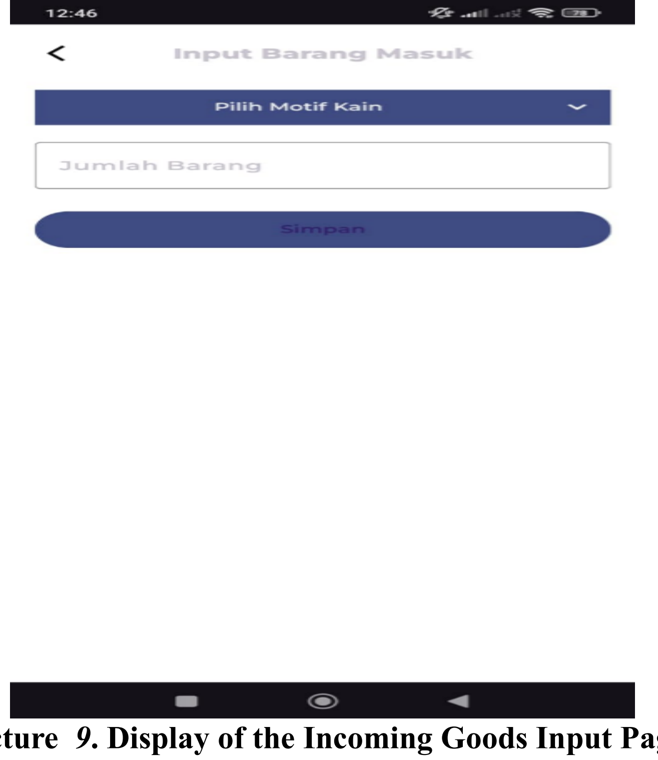


Figure 8. Display of the Jumputan Fabric Stock Page

Incoming Goods Input Page

The incoming goods input page is used to add stock by selecting the type of jumputan cloth motif and entering the number of goods according to the detection results.

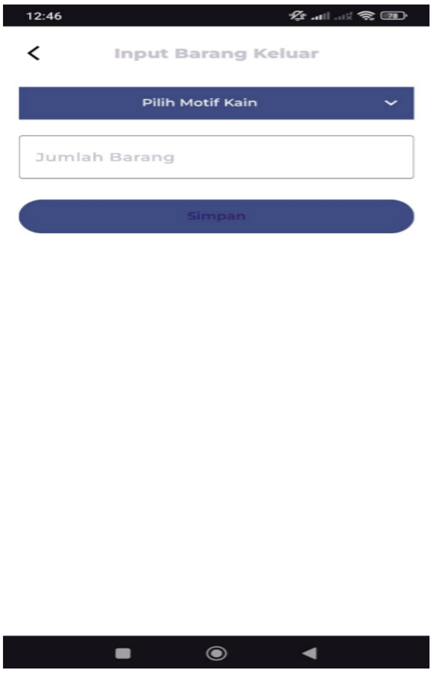


Picture *9*. Display of the Incoming Goods Input Page

Outgoing Goods Input Page

The outgoing goods input page is used to reduce stock by selecting the type of jumputan cloth motif and entering the number of items sold.

International Journal Of Health, Engineering And Technology (IJHET) *E-ISSN 2829 - 8683*
Volume 5, Number 1, May 2026, *Page. 1015 - 1028*
Email : editorijhess@gmail.com



Picture *10* **.Display of the Incoming Goods Input Page**

Testing

Model Testing

Model testing was performed with the Adam and SGD optimizers, using variations in image size (320×320, 416×416, 640×640), batch size (16 and 32), and epochs (50 and 100). All parameter combinations were tested, and the mAP results for the Adam optimizer are shown in Table 2.

Optimizer: Adam

Table 1. Experimental results along with mAP values from the adam optimizer

Scenario	*Image size*	*Batch size*	*Epoch*	*Recall*	*Precision*	mAP50-95
1	320 x 320	16	50	97.60%	97%	96.50%
2	320 x 320	16	100	99.10%	93.10%	99.50%
3	320 x 320	32	50	98.80%	96%	99.50%
4	320 x 320	32	100	81.20%	93.40%	97.60%
5	416 x 416	16	50	100%	97.70%	97.50%
6	416 x 416	16	100	92.60%	97.50%	98.70%
7	**416 x 416**	**32**	**50**	**100%**	**99%**	**99.50%**
8	416 x 416	32	100	99.60%	97.20%	99.50%
9	640 x 640	16	50	100%	99.40%	99.20%
10	640 x 640	16	100	100%	99.40%	99.50%
11	640 x 640	32	50	Error	Error	Error
12	640 x 640	32	100	Error	Error	Error

The experimental results showed mAP50-95 values between 96.50%–99.50%, with two scenarios failing due to insufficient GPU memory at batch size 32. The model was assessed to learn well and provide accurate detection, so the model was selected in scenario 7 with the highest mAP, precision, and recall, as well as optimal detection speed.

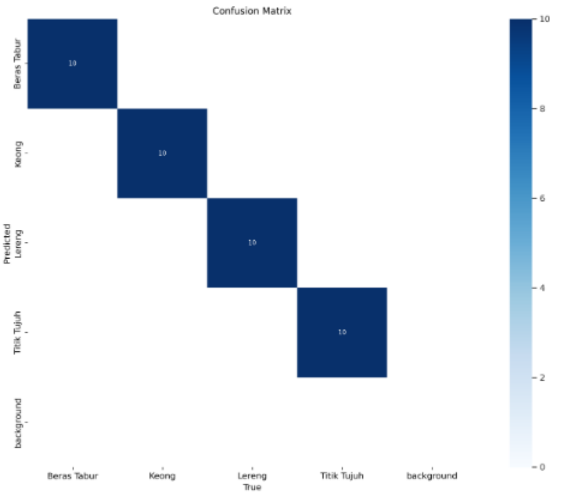


Figure 11. Confusion Matrix Scenario 7

The model successfully detected all 10 objects in each class (Seven Points, Sprinkled Rice, Slope, Snail) with 100% accuracy.

Optimizer: SGD

Table 2. Experimental results along with mAP values from the SGD optimizer

Scenario	*Image size*	*Batch size*	*Epoch*	*Recall*	*Precision*	mAP50-95
1	320 x 320	16	50	100%	99.30%	99.30%
2	320 x 320	16	100	97.80%	98.80%	99.50%
3	320 x 320	32	50	97.70%	98.20%	99.50%
4	**320 x 320**	**32**	**100**	**100%**	**99%**	**99.50%**
5	416 x 416	16	50	100%	98%	99.50%
6	416 x 416	16	100	100%	98%	99.50%
7	416 x 416	32	50	100%	98.90%	99.50%
8	416 x 416	32	100	99.40%	96.70%	99.50%
9	640 x 640	16	50	95.30%	98.40%	99.50%
10	640 x 640	16	100	99.60%	98%	98.20%
11	640 x 640	32	50	Error	Error	Error
12	640 x 640	32	100	Error	Error	Error

The experimental results in Table 3 with the SGD optimizer show mAP50-95 between 98.20%–99.50%, except that scenarios 11-12 failed due to insufficient GPU memory at batch size 32. The model was assessed to learn well and accurately, so the 4th scenario model was selected with the highest mAP, precision, recall and optimal detection speed.

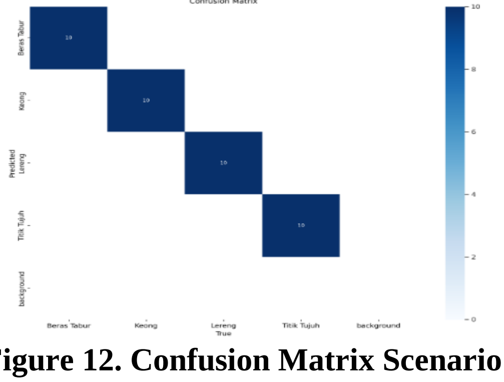


Figure 12. Confusion Matrix Scenario 4

The model achieved 100% accuracy on 40 test objects (10 objects per class: Titik Tujuh, Beras Tabur, Lereng, Keong). Furthermore, live testing with experts was conducted using the best-case scenario of the Adam optimizer and SGD on the Poco X6 PRO smartphone via an Android app.

Table 4. Scenario 7 with Adam Optimizer

No.	Types of Motifs	Detection Results
1.	Point Seven	9 out of 10 detections are correct
2.	Sprinkled Rice	10 out of 10 correct detections
3.	Slope	9 out of 10 detections are correct
4.	snail	8 out of 10 detections correct

After implementation on a smartphone, scenario 7 (Adam) experienced a decrease in accuracy: Point Seven and Slope (9/10), Snail (8/10), while Sprinkled Rice remained 100% consistent. Overall, there was a slight decrease in accuracy in the Android application.

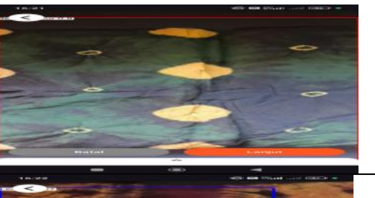
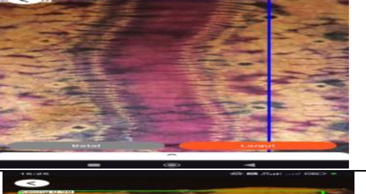
Table 5. Scenario 4 with SGD Optimizer

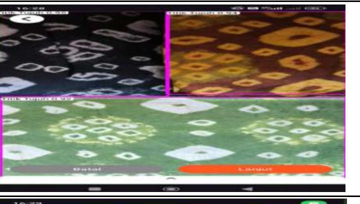
No.	Types of Motifs	Detection Results
1.	Point Seven	10 out of 10 correct detections
2.	Sprinkled Rice	10 out of 10 correct detections
3.	Slope	10 out of 10 correct detections
4.	snail	9 out of 10 correct detections

Software Testing

Figure 13. How to Use the Application

Table 6. Software Testing Results

No	Testing	Test Results	Conclusion
1.	Detecting the Seven-Point Tie-Dye Fabric Motif		Successfully detected the seven-dot jumputan cloth motif
2.	Detecting the Motif of the Rice-Sprinkled Tie-Dye Cloth		Successfully detected the motif of the sprinkled rice jumputan cloth
3.	Detecting Slope Tie-Dye Fabric Motifs		Successfully detected the slope jumputan cloth motif
4.	Detecting the Snail Tie-Dye Motif		Successfully detected the snail jumputan cloth motif

5.	Detecting 2 identical tie-dye fabric motifs		Successfully detected 2 tie-dye fabrics of the same type, namely seven points
6.	Detecting 2 different jumputan cloth motifs		Successfully detected 2 different types of tie-dye fabrics, namely seven dots and sprinkled rice.
7.	Detect 3 identical tie-dye fabric motifs		Successfully detected 3 tie-dye fabrics of the same type, namely seven points
8.	Detect 3 different jumputan cloth motifs		Successfully detected 3 jumputan fabrics of the same type, namely point seven, rice sprinkles and slopes
9.	Detection of jumputan fabric motifs at a distance of more than 100 cm		Successfully detected seven-point type jumputan fabric at a distance of more than 100cm
10.	Detection of tie-dye fabric motifs at a distance of less than 100 cm		Successfully detected seven-point tie-dye fabric at a distance of less than 100cm
11.	Input incoming goods data		Successfully added 1 piece of stock of snail jumputan cloth motif
12.	Input incoming goods data		Successfully reduced the stock of snail jumputan cloth motif by 1 piece

International Journal Of Health, Engineering And Technology (IJHET) *E-ISSN 2829 - 8683*
Volume 5, Number 1, May 2026, *Page. 1015 - 1028*
Email : editorijhess@gmail.com

15.	Displaying the stock quantity of the Jumputan Titik Tujuh, Beras Tabur, Lereng and Keong fabric motifs in card view form.		Successfully display stock in card view form

The application successfully detects all jumputan cloth motifs (Titik Tujuh, Beras Tabur, Lereng, Keong), including 2-3 motifs simultaneously and at a distance of <100cm or >100cm, and is compatible with Android devices. Performance testing was conducted in two lighting scenarios: sufficient (423 lux) and minimal (188 lux), each 5 times per motif, according to the classification (Wahyuni & Riyadi, 2020).

Picture*14*.Room conditions with sufficient lighting

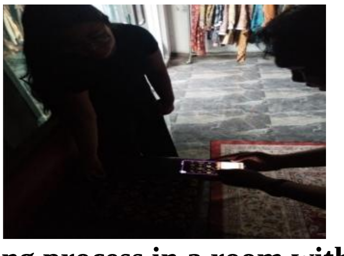


Figure 15. Testing process in a room with minimal light

Table 7. Questionnaire Results

No	Question	Strongly agree	Agree	Neutral	Don't agree	Strongly Disagree
		Usefulness				
1	Easy to use application	15	5	0	0	0
2	The application can recognize tie-dye fabric motifs well.	15	5	0	0	0
3	The application takes a short time in the process of recognizing tie-dye cloth motifs.	19	1	0	0	0
4.	The application can record the number of jumputan cloth stocks properly.	20	0	0	0	0
		Satisfaction				
5.	The app has an easy to read font	13	7	0	0	0
6.	The layout of text and buttons is neat and appropriate.	14	6	0	0	0
7.	The application theme is appropriate and consistent	16	4	0	0	0
		Ease of use				
8.	The application has a good flow, is clear and easy to understand.	18	2	0	0	0

Table 8. Likert Scale Scores and Percentages

Information	Score	Percentage
Strongly Agree (SS)	5	80% - 100%
Agree (S)	4	60% - 79.9%
Neutral (N)	3	40% - 59.9%
Disagree (TS)	2	20% - 39.9%
Strongly Disagree (STS)	1	0% - 19.9%

Table 9. Total Questionnaire Score

No	Question	Strongly agree	Agree	Neutral	Don't agree	Strongly Disagree	Total Score
				Usefulness			
1	Easy to use application	15 x 5	5 x 4	0 x 3	0 x 2	0 x 1	75 + 20 + 0 + 0 + 0 = 95
2	The application can recognize the jumputan cloth motif well.	15 x 5	5 x 4	0 x 3	0 x 2	0 x 1	75 + 20 + 0 + 0 + 0 = 95
3	The application takes a short time in the process of recognizing tie-dye cloth motifs.	19 x 5	1 x 4	0 x 3	0 x 2	0 x 1	95 + 4 + 0 + 0 + 0 = 99
4	The application can record the number of jumputan cloth stocks properly.	20 x 5	0 x 4	0 x 3	0 x 2	0 x 1	100 + 0 + 0 + 0 + 0 = 100
				Satisfaction			
5	The app has an easy to read font	13 x 5	7 x 4	0 x 3	0 x 2	0 x 1	65 + 28 + 0 + 0 + 0 = 93
6	The layout of text and buttons is neat and appropriate.	14 x 5	6 x 4	0 x 3	0 x 2	0 x 1	70 + 24 + 0 + 0 + 0 = 94
7	The application theme is appropriate and consistent	16 x 5	4 x 4	0 x 3	0 x 2	0 x 1	80 + 16 + 0 + 0 + 0 = 96
				Ease of use			
8	The application has a good flow, is clear and easy to understand.	18 x 5	2 x 4	0 x 3	0 x 2	0 x 1	90 + 8 + 0 + 0 + 0 = 98

Table 10. Results of the Likert Scale Score Interpretation Index

No	Question	Score Index	Information
	Usefulness		
1	Easy to use application	95%	Strongly agree
2	The application can recognize tie-dye fabric well.	95%	Strongly agree
3	The application takes a short time in the process of recognizing tie-dye fabrics.	99%	Strongly agree
4	The application can record the number of jumputan cloth stocks properly.	100%	Strongly agree
	Satisfaction		
5	The app has an easy to read font	93%	Strongly agree
6	The layout of text and buttons is neat and appropriate.	94%	Strongly agree
7	The application theme is appropriate and consistent	96%	Strongly agree
	Ease of use		
8	The application has a good flow, is clear and easy to understand.	98%	Strongly agree

The questionnaire results showed an average satisfaction of 96.52%, with a usefulness score of 97.25%, satisfaction of 94.33%, and ease of use of 98%.

CONCLUSION

This research successfully developed Palembang jumputan cloth motif detection software using YOLOv10, achieving mAP50-95 up to 99.50% in model testing with Adam and SGD optimizers, as well as an average accuracy of 96.52% from the USE questionnaire that assesses usefulness, satisfaction, and ease of use. The Android application integrated with TensorFlow Lite supports real-time detection, automatic stock management, and input of incoming/outgoing goods, proven effective on smartphones such as the Poco X6 PRO despite experiencing a slight decrease in accuracy after implementation. Overall, this solution automates motif identification (Seven Points, Sprinkled Rice, Slopes, Snails) in 3-5 seconds, supporting cultural preservation and business efficiency of traditional cloth shops in Palembang.

Major limitations include significant accuracy degradation in low light (e.g., the snail dropped to 40%), training failure due to GPU memory limitations in large batch sizes, and actual costs exceeding estimates (Rp1,450,000 vs. Rp1,300,000). Suggestions for further research include data augmentation specifically for lighting variables, the use of YOLOv11 for higher efficiency, and broader motif dataset expansion to improve generalization. Practically, this application is recommended for small shops to reduce manual inventory errors, with potential scalability to other textile industries through edge computing adaptation.

REFERENCES

Agustini, M., & Syarifudin, A. (2024). Penggunaan media Instagram dalam mempertahankan budaya lokal kain jumputan Kota Palembang (@bebajoemputan). *Pubmedia Social Sciences and Humanities, 1*(3), 12. https://doi.org/xxxx

Bakar, A., & Halim, B. (2023). Komunikasi visual penjenamaan dalam upaya membangun citra visual identitas baru Kota Palembang. *Besaung: Jurnal Seni Desain dan Budaya, 8*(2), 151–161. https://doi.org/xxxx

Creswell, J. W., & Creswell, J. D. (2021). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th ed.). SAGE Publications.

Emzir. (2021). *Metodologi penelitian kualitatif: Kuantitatif*. Pustaka Setia.

Guan, S., Lin, Y., Lin, G., Su, P., Huang, S., Meng, X., Liu, P., & Yan, J. (2024). Real-time detection and counting of wheat spikes based on improved YOLOv10. *Agronomy, 14*(9), Article 1936. https://doi.org/10.3390/agronomy14091936

Kar, S., & El-Sharkawi, M. (2023). Object detection using vision transformed EfficientDet. *NAECON 2023 - IEEE National Aerospace and Electronics Conference*, 214–220. https://doi.org/10.1109/NAECON57162.2023.10213000

Nainggolan, E. R., & Susafa'ati, S. (2018). Rancang bangun sistem informasi pelayanan rukun warga pada rusunawa Pesakih Jakarta Barat. *Seminar Nasional Ilmu Terapan, 2*(1), C04-1–C04-6.

Nazir, T., Nawaz, M., Rashid, J., Mahum, R., Masood, M., Mehmood, A., Ali, F., Kim, J., Kwon, H.-Y., & Hussain, A. (2021). Detection of diabetic eye disease from retinal images using a deep learning based CenterNet model. *Sensors, 21*(16), Article 5283. https://doi.org/10.3390/s21165283

Oktovianny, L. (2021). Kajian etnolingusitik dan leksikon kain tradisional masyarakat Palembang. *Prosiding Seminar Nasional Linguistik dan Sastra (SEMANTIKS), 3*, 716–720.

Rini Murbaningsih. (2023, May 29). *Jumputan Palembang*. Kementerian Keuangan Republik Indonesia. https://www.kemenkeu.go.id/jumputan-palembang

Sugiyono. (2023). *Metode penelitian kuantitatif, kualitatif, R&D, dan kombinasi (mixed)* (3rd ed.). Alfabeta.

Suhel, S., Melliny, V. D., Nailis, W., Darmawahyuni, A., Yuniarti, E., & Gustriani, G. (2023). Pemberdayaan perempuan Desa Ulak Kembahang II untuk meningkatkan pendapatan keluarga melalui pelatihan pembuatan batik jumputan Palembang. *Sricommerce: Journal of Sriwijaya Community Services*, *4*(1), 39–48. https://doi.org/10.37388/sricommerce.v4i1.456

Sudaryono. (2022). *Metodologi penelitian pendidikan*. Rineka Cipta.

Syahputra, Z. (2023). Penerapan SSD-MobileNet dalam identitas jenis buah apel. *Indonesian Journal of Education and Computer Science, 1*(1), 1–7. https://doi.org/xxxx

Wahyuni, S., & Riyadi, S. (2020). Teknologi tepat guna UMKM Kotim simulasi harga komputer rakitan menggunakan sistem pendukung keputusan. *Journal of Computer System and Informatics (JoSYC)*, *1*(4), 358–366. https://doi.org/10.30865/josyc.v1i4.1234