

PROPOSAL

METODE TRANSFER LEARNING UNTUK KLASIFIKASI CITRA HURUF TULIS TANGAN AKSARA JAWA

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205314159



01.

PENDAHULUAN

*latar belakang, rumusan, batasan,
tujuan, dan manfaat*

02.

METODOLOGI PENELITIAN

data dan alur

03.

TABEL SKENARIO PENGUJIAN

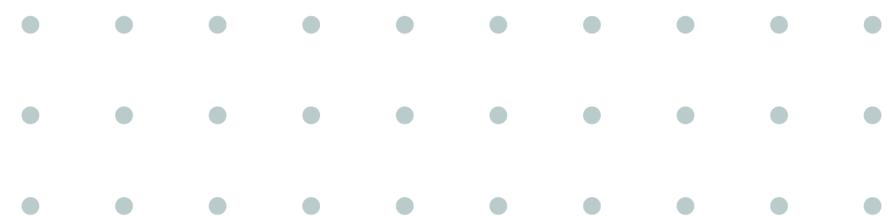
visualisasi opsi penelitian

04.

JADWAL

timeline pelaksanaan skripsi

OUTLINE.





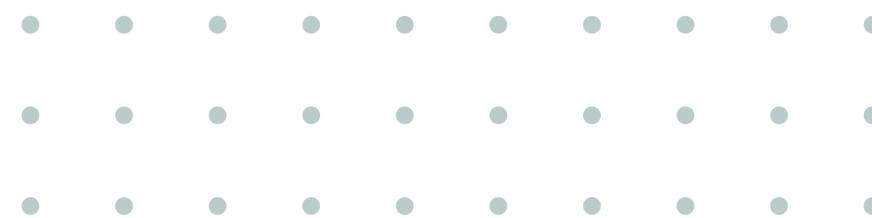
pendahuluan.

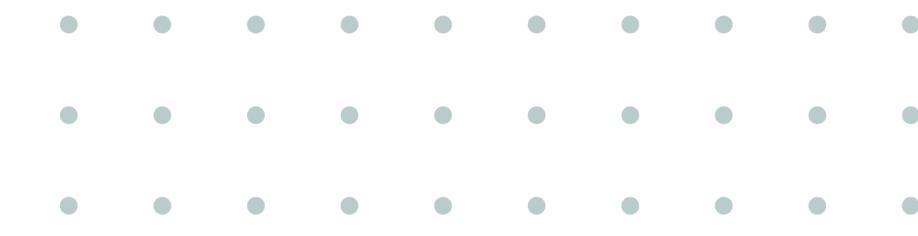
LATAR BELAKANG.

Aksara Jawa, Deep Learning, Transfer Learning.

RUMUSAN MASALAH

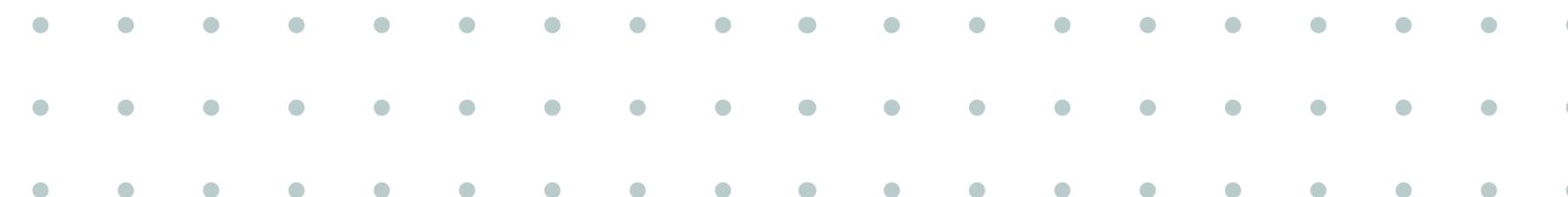
- Bagaimana cara melakukan implementasi transfer learning pada kasus citra huruf tulis tangan aksara jawa?
- Berapa akurasi yang diperoleh dari metode transfer learning?
- Dari ketiga pre-trained model yang peneliti ambil, manakah yang terbaik?





BATASAN MASALAH

1. Fokus terhadap **citra huruf tulis tangan aksara Jawa**
2. *Transfer learning* dengan VGG, Inception, Xception
3. Data penelitian adalah aksara Jawa **tanpa pasangan (carakan)**
4. Mencari *pre-trained* model terbaik yang diajukan



AKSARA JAWA

AKSARA CARAKAN (nglegena)

ହା ନା କା ରା କା

ha na ca ra ka

ଦା ତା ସା ଓା ଲା

da ta sa wa la

ପା ଧା ଜା ଯା ନ୍ୟା

pa dha ja ya nya

ମା ଗା ବା ତା ନା

ma ga ba tha nga

AKSARA PASANGAN (mati)

ଏ ଓ କି ଚି ରି କି

h n c r k

ଏ ତି ଶି ଵି ଇ

d t s w i

ଏ ଧି ଜି ଯି ନ୍ୟି

p dh j y ny

ଏ ମି ବି ଥି ନି

m g b th ng

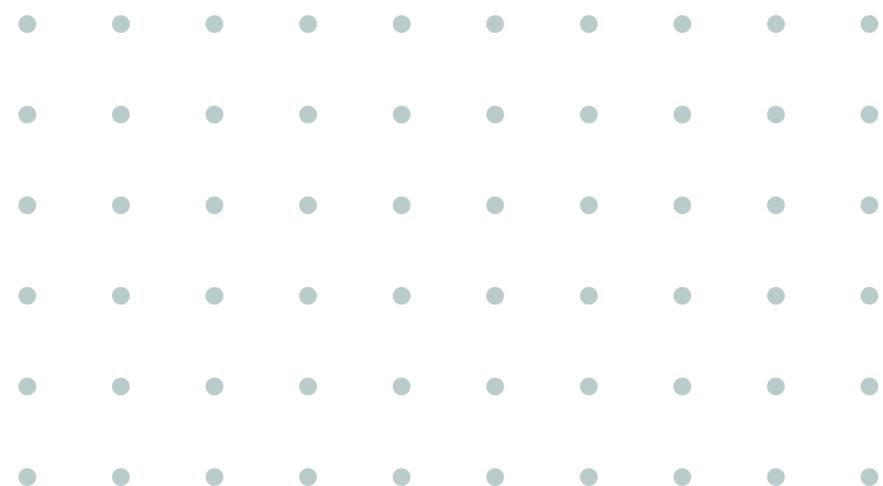


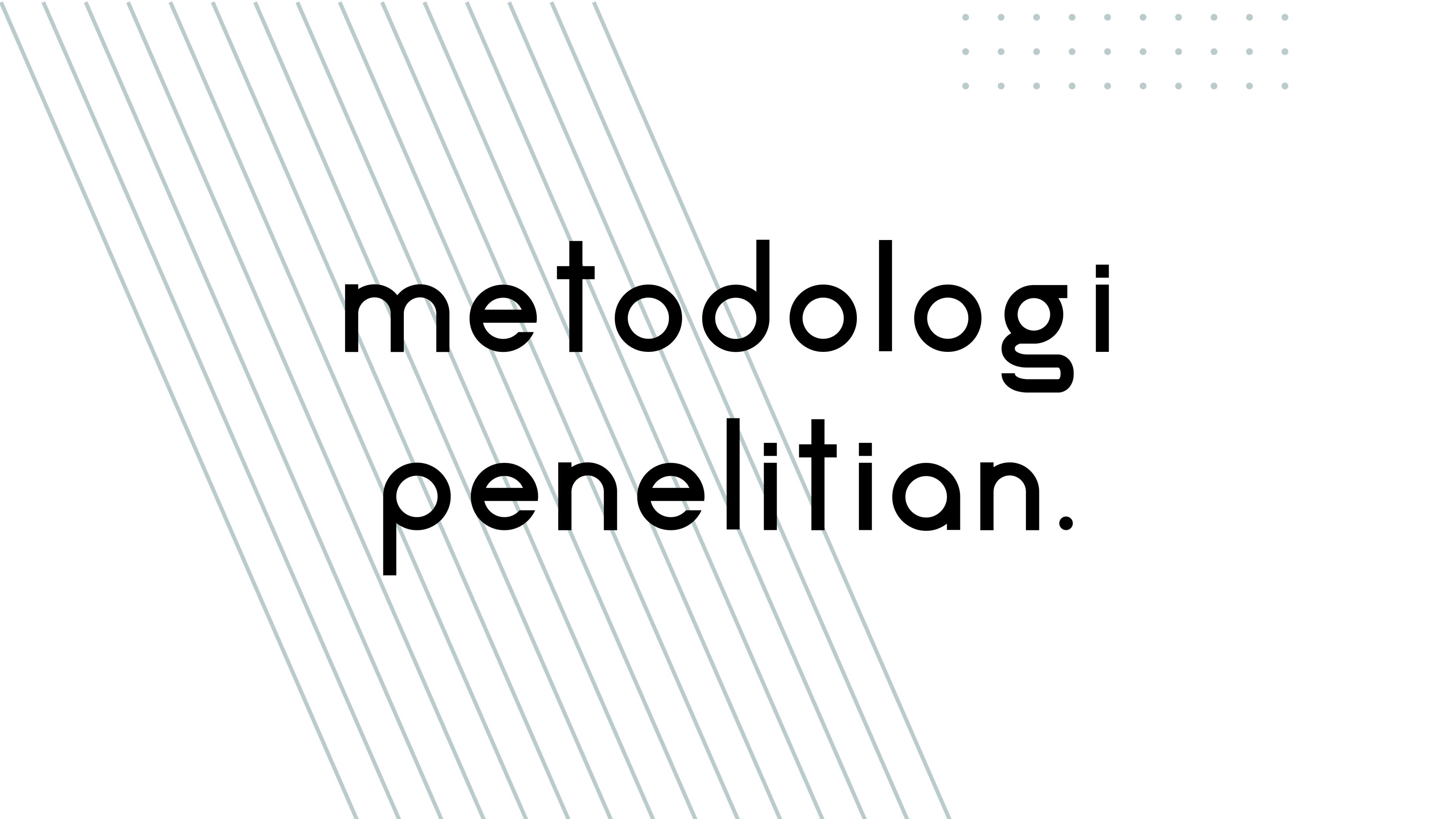
TUJUAN

- .klasifikasi citra huruf aksara Jawa
- .evaluasi kinerja model

MANFAAT

mengetahui performa model dalam kasus ini.
membantu orang awam memahami aksara Jawa.
referensi penelitian lebih lanjut.

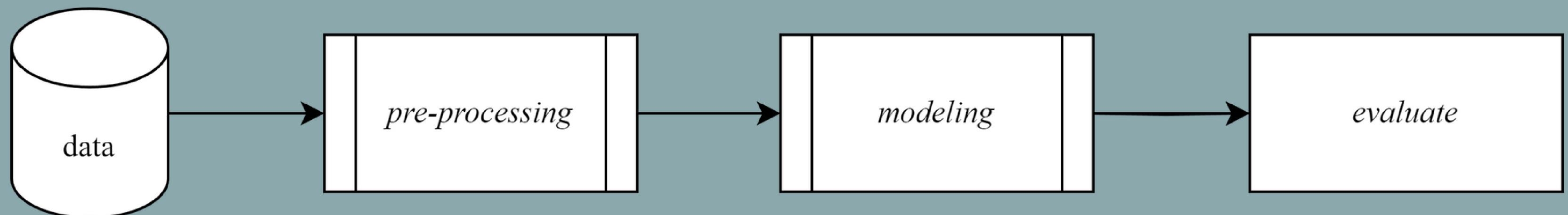




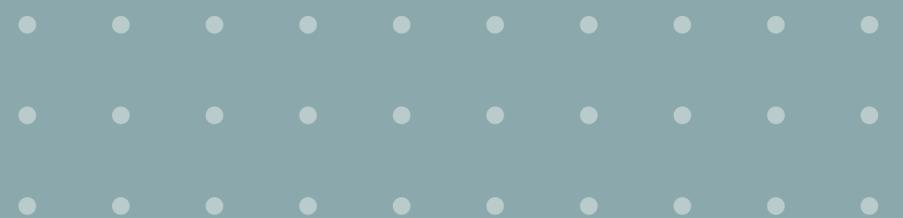
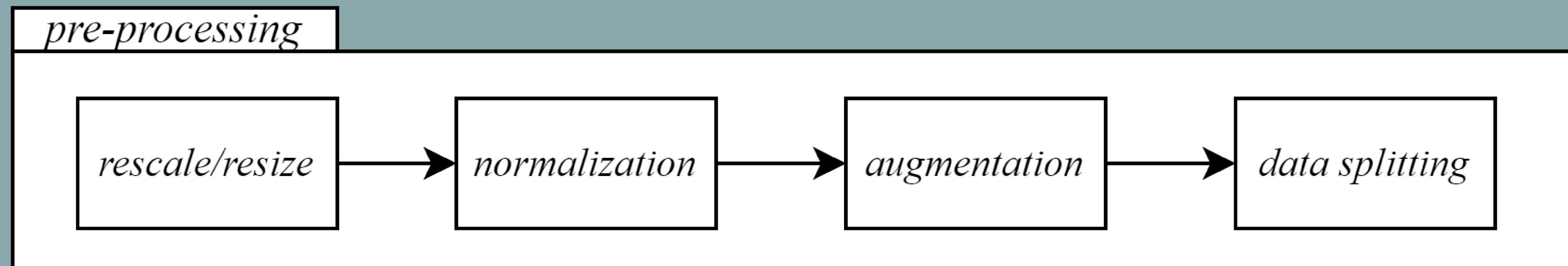
**metodologi
penelitian.**



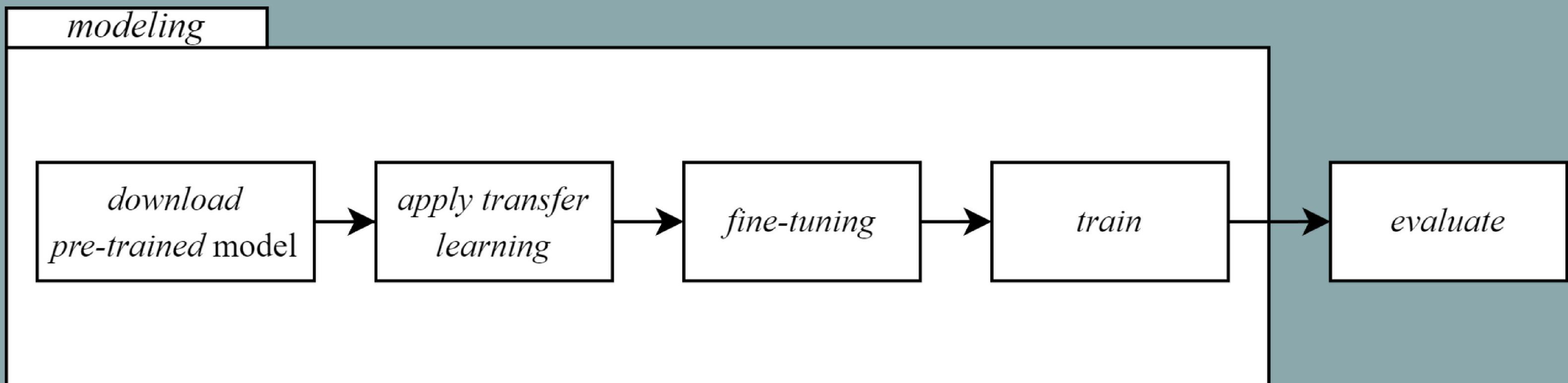
ALUR PENELITIAN



PRE-PROCESSING



MODELING



PREVIEW

DATA 1

<https://www.kaggle.com/datasets/vzrenggamani/hanacaraka>



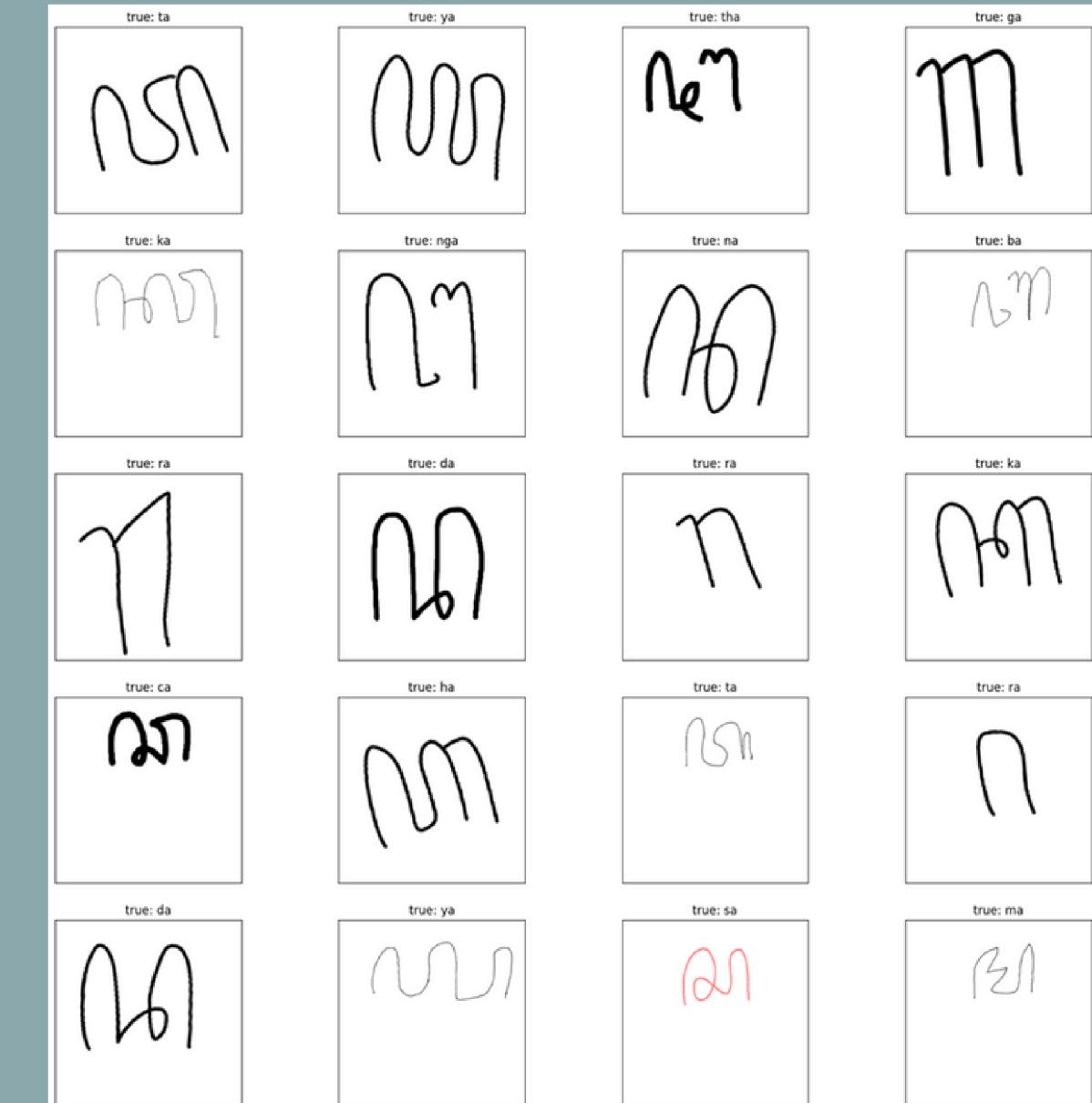
DATA 2

<https://www.kaggle.com/datasets/phiard/aksara-jawa>



MERGE

4242



1583

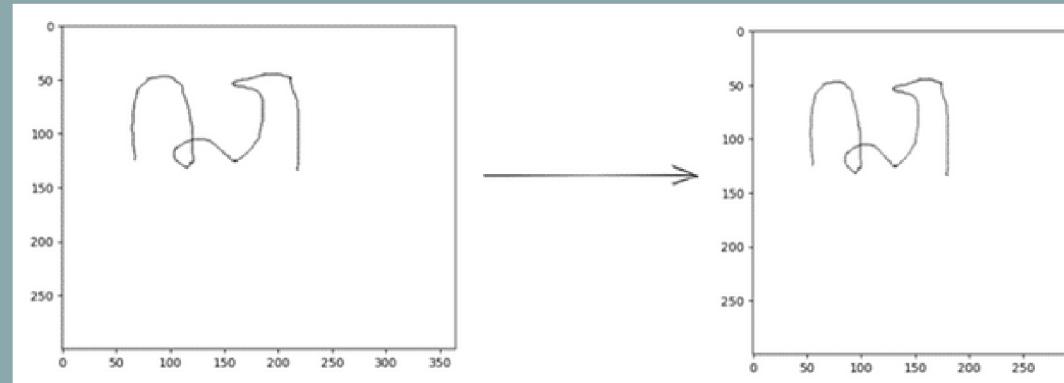
2659

4242

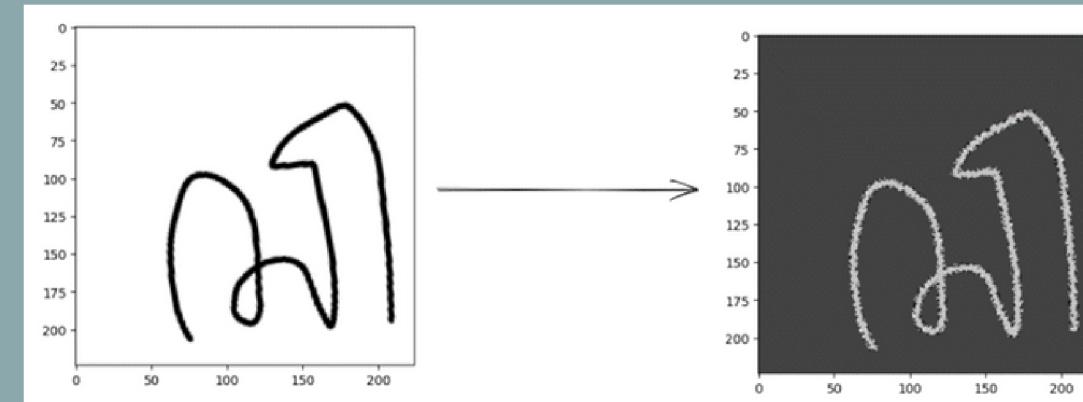
PREPROCESSING

rescale

$364 \times 300 \rightarrow 300 \times 300$

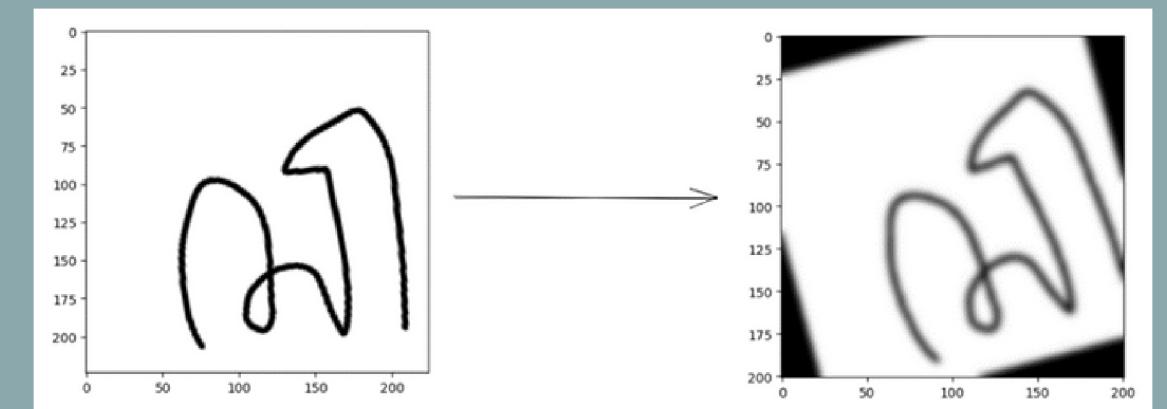


standardization



augmentation

-Rotation: 15°
-Image Scale: 0.9
-Blur Effect



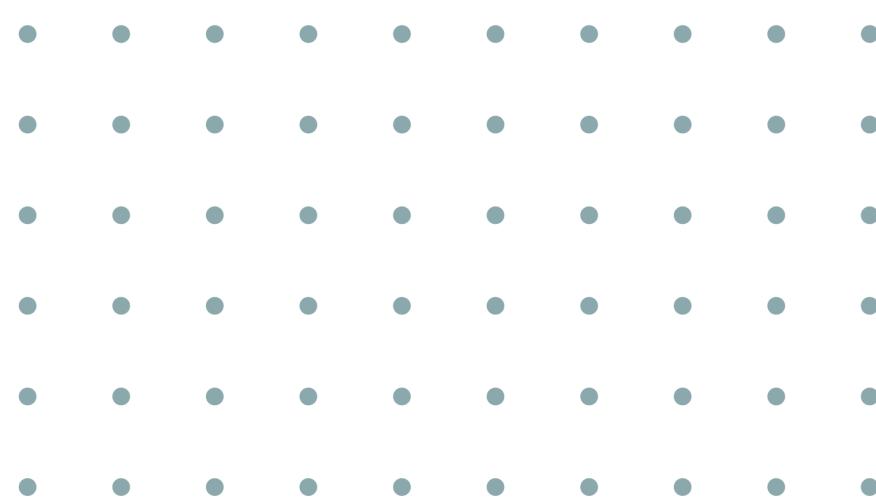
data splitting

4242

0.9 : 0.05 : 0.05

train : validation : test

3817 : 212 : 212



TRANSFER LEARNING

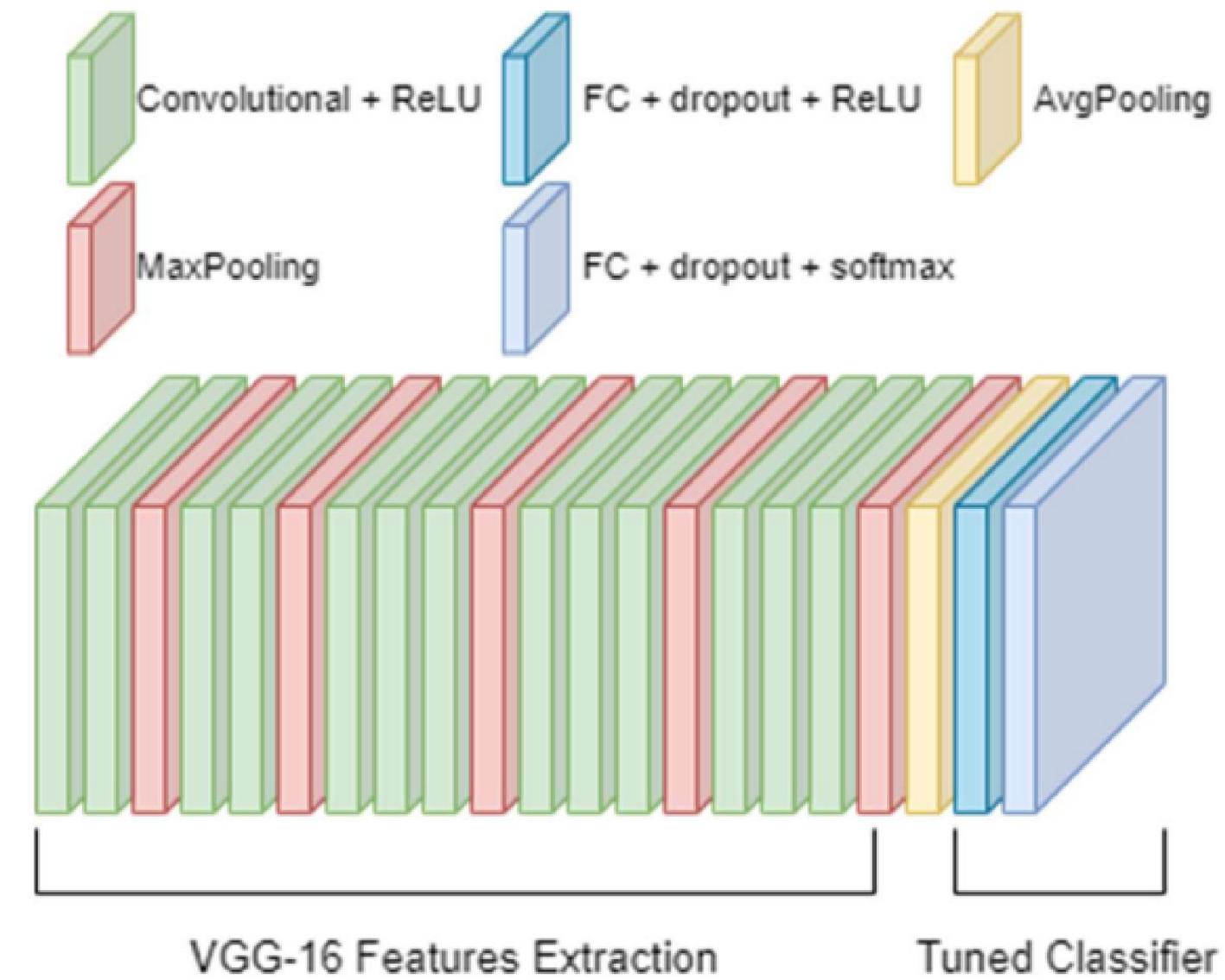


ILLUSTRATION OF VGG16 MODEL ARCHITECTURE USED

(Rizky, et al., 2023)

TRANSFER LEARNING

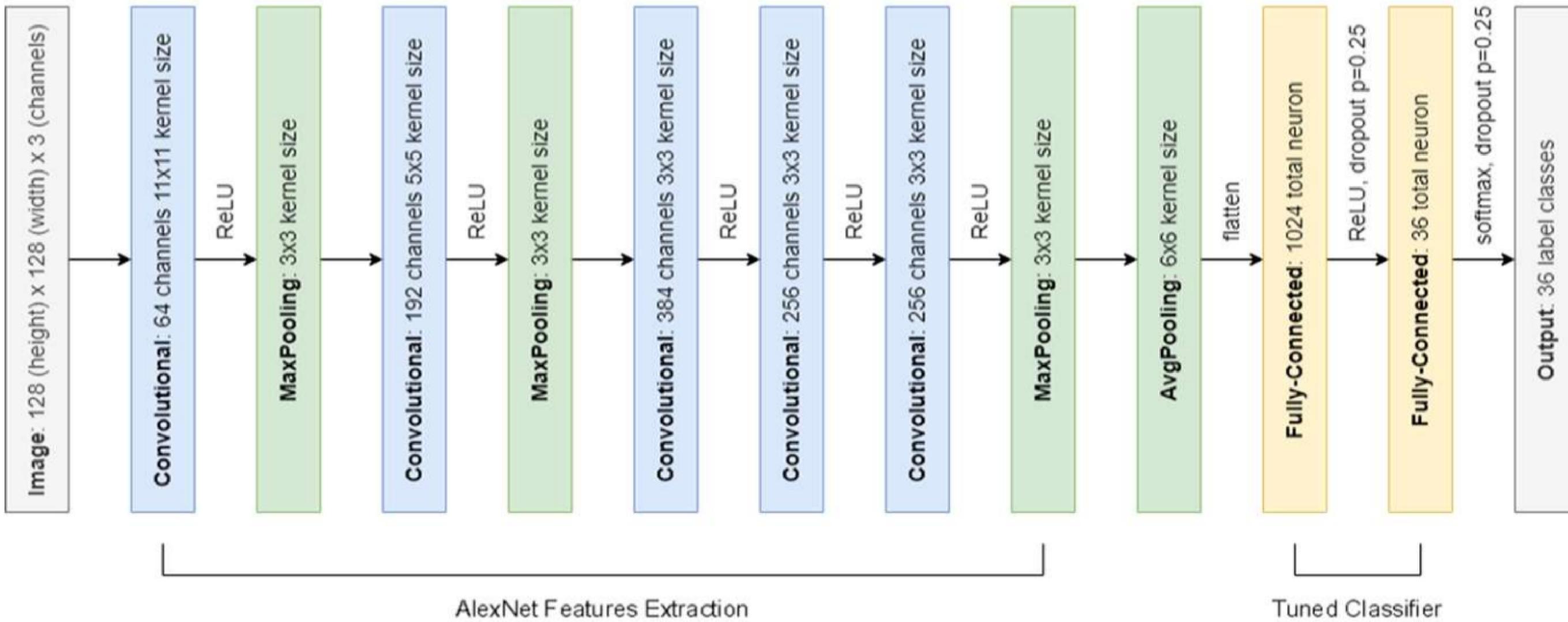


ILLUSTRATION OF ALEXNET MODEL ARCHITECTURE USED

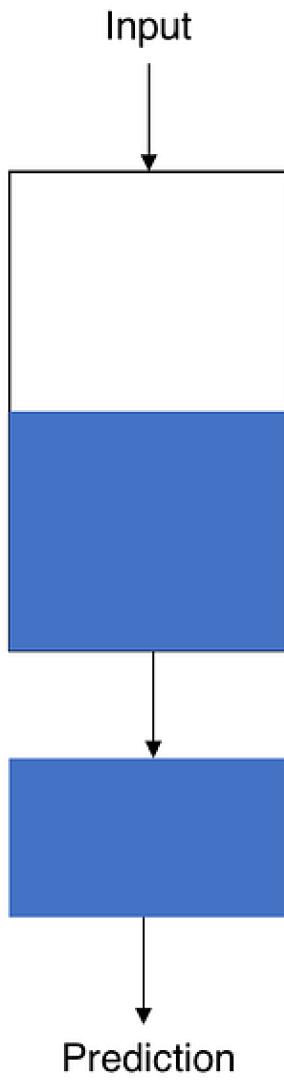
(Rizky, et al., 2023)

FINE TUNING

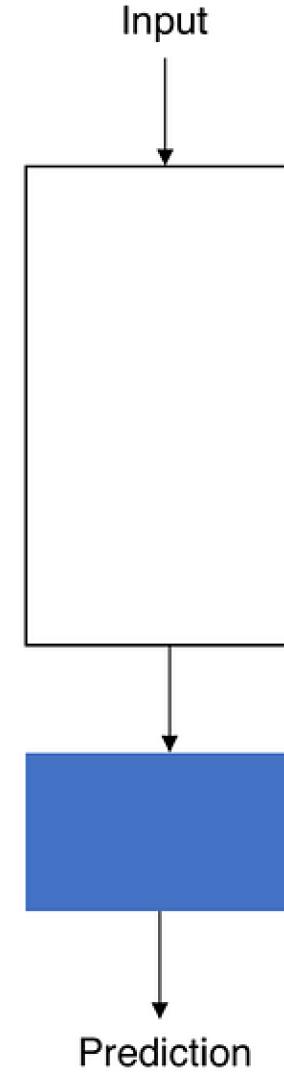
Strategy 1
Train the entire model



Strategy 2
Train some layers and leave the others frozen



Strategy 3
Freeze the convolutional base



Legend:

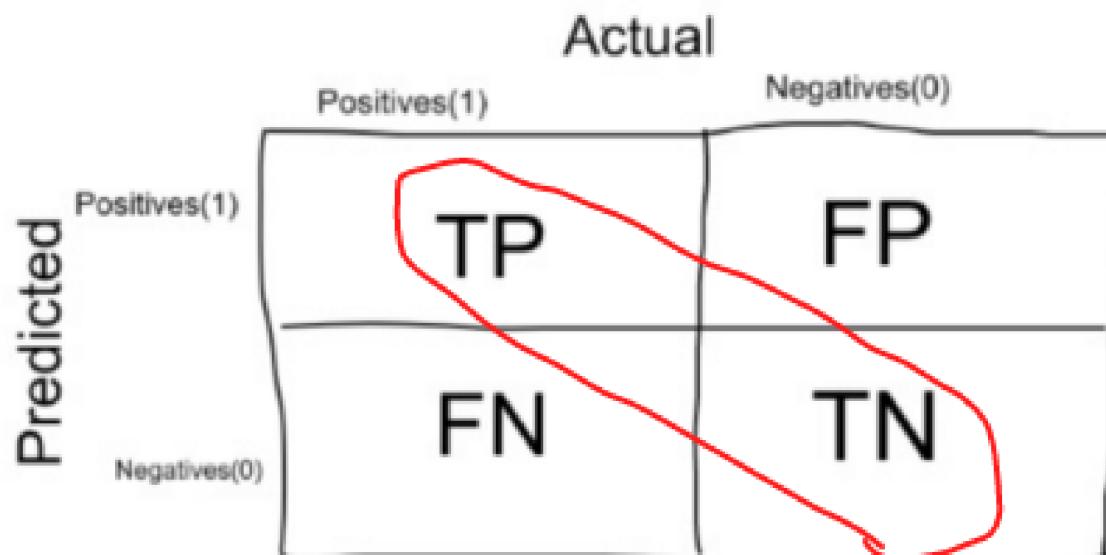
- Frozen
- Trained

ILLUSTRATION OF FREEZING LAYER TO DO FINE TUNING

source: <https://yesulee0311.medium.com/pytorch-transfer-learning-alexnet-how-to-freeze-some-layers-26850fc4ac7e>

EVALUASI

akurasi.



$$\text{Accuracy} = \frac{TP + TN}{TP + FP + FN + TN}$$

sumber: <https://ai.stackexchange.com/>

confusion matrix.

		Actural classes						
		class 1	class 2	class 3	class 4	class 5	class 6	class 7
Predicted classes	class 1	0.72	0.01	0.02	0.01	0.00	0.00	0.00
		0.18	0.75	0.10	0.03	0.03	0.00	0.00
Predicted classes	class 3	0.04	0.13	0.69	0.13	0.03	0.01	0.01
		0.06	0.05	0.13	0.65	0.16	0.06	0.00
Predicted classes	class 5	0.00	0.01	0.02	0.10	0.58	0.14	0.01
		0.00	0.01	0.02	0.03	0.12	0.43	0.03
Predicted classes	class 7	0.00	0.04	0.01	0.05	0.08	0.34	0.96

sumber: <https://www.researchgate.net>

skenario pengujian.

MODEL	AUGMENTASI	FREEZE
VGG	Yes No	Full $\frac{1}{2}$ None
Inception	Yes No	Full $\frac{1}{2}$ None
Xception	Yes No	Full $\frac{1}{2}$ None

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PEGUJIAN

jadwal.

terima kasih.