VISI KOMPUTER

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VGG

Setup & Dataset

Dataset: 50k CelebA 64x64

Label file: list_attr_celeba.txt (Male label) -> 1 = Male 0 = Female

Jumlah data yang digunakan: 10.000 images

Data Split

Training / Validation split: 80% / 20%

Training images: 8.000, shape: (8000, 64, 64, 3) -> 8000 Data, 64x64, RGB

Validation images: 2.000, shape: (2000, 64, 64, 3) -> 2000 Data, 64x64, RGB

Labels sesuai: (8000,) / (2000,) -> 8000 Untuk Training, 2000 Untuk Validasi

Model Architecture

VGG-like architecture untuk binary classification (Male/Female)

Total parameters: 4,629,921 (17.66 MB) -> Perkiraan memori RAM yang digunakan

Layer highlight:

Conv2D + MaxPooling -> Ekstraksi fitur gambar & reduksi resolusi.

Flatten + Dense + Dropout -> Ubah fitur 2D ke 1D, proses klasifikasi, cegah overfitting.

Output: Dense(1, sigmoid) -> Prediksi probabilitas Male/Female.

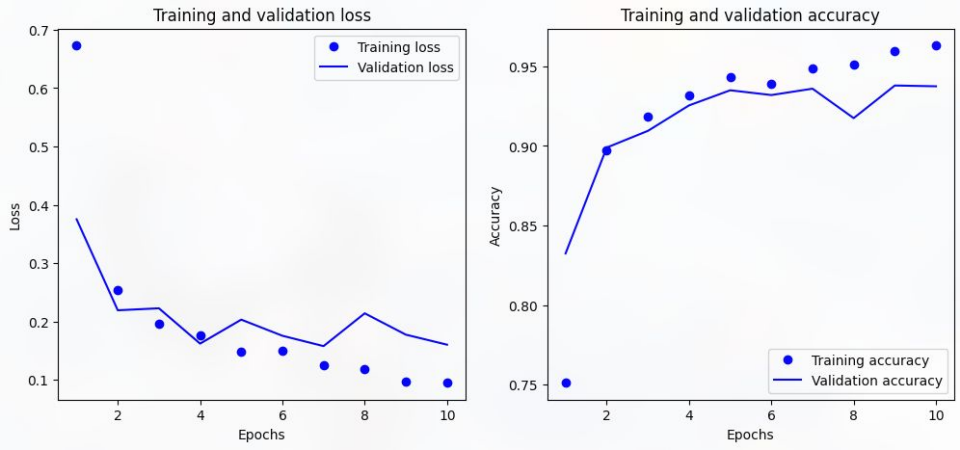
Training

Epochs: 10, Batch size: 32

Training Results:

- Training Accuracy terakhir: 96.61%
- Validation Accuracy terakhir: 93.75%
- Validation Loss terakhir: 0.1605

Plot


Training and validation loss
Training loss
Validation loss
Loss
Epochs
0.7
0.6
0.5
0.4
0.3
0.2
0.1
2
4
6
8
10
Training and validation accuracy
Training accuracy
Validation accuracy
Accuracy
Epochs
0.95
0.90
0.85
0.80
0.75
2
4
6
8
10

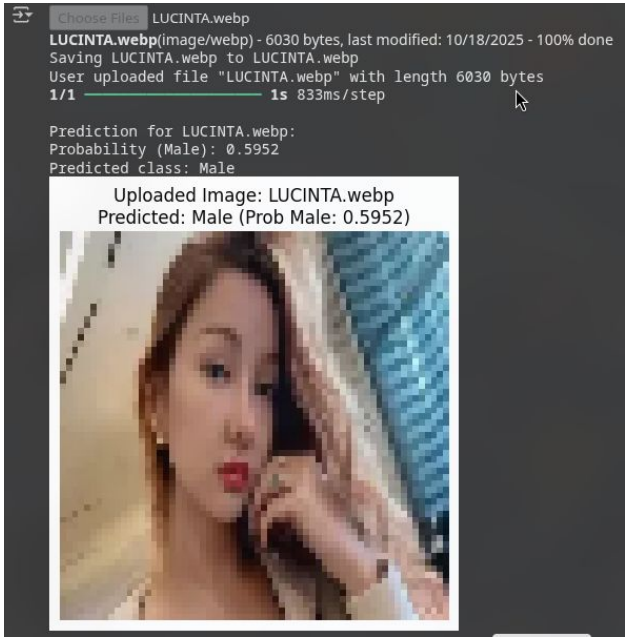
Evaluation & Insight

Validation Metrics: **Loss**: 0.1605, **Accuracy**: 0.9375

Model VGG ini cukup baik untuk klasifikasi Male/Female

Training cepat konvergen (akurasi stabil >90%)

Testing


Choose Files
LUCINTA.webp
LUCINTA.webp(image/webp) - 6030 bytes, last modified: 10/18/2025 - 100% done
Saving LUCINTA.webp to LUCINTA.webp
User uploaded file "LUCINTA.webp" with length 6030 bytes
1/1
1s 833ms/step
Prediction for LUCINTA.webp:
Probability (Male): 0.5952
Predicted class: Male
Uploaded Image: LUCINTA.webp
Predicted: Male (Prob Male: 0.5952)

GoogleNet

Setup & Dataset

Dataset: 50k CelebA 64x64

Label file: list_attr_celeba.txt (Male label) -> 1 = Male 0 = Female

Jumlah data yang digunakan: 10.000 images

Data Split

Training / Validation split: 80% / 20%

Training images: 8.000, shape: (8000, 64, 64, 3) -> 8000 Data, 64x64, RGB

Validation images: 2.000, shape: (2000, 64, 64, 3) -> 2000 Data, 64x64, RGB

Labels sesuai: (8000,) / (2000,) -> 8000 Untuk Training, 2000 Untuk Validasi

Model Architecture

GoogLeNet (Inception modules) untuk binary classification (Male/Female)

Total parameters: ±5,000,000 (≈19 MB)

Model Architecture

Layer highlight:

- Conv2D + MaxPooling -> Ekstraksi fitur dasar & reduksi resolusi.

- Inception Modules -> Multi-path Conv2D untuk menangkap fitur dari berbagai skala.

- AveragePooling + Dropout -> Reduksi dimensi fitur, cegah overfitting.

- Output: Dense(1, sigmoid) -> Prediksi probabilitas Male/Female.

Training

Epochs: 10, Batch size: 32

Training Results:

- Training Accuracy terakhir: 61.07%
- Validation Accuracy terakhir: 58.95%
- Validation Loss terakhir: 0.6771

Evaluation & Insight

Validation Metrics (GoogLeNet): Loss: 0.6771, **Accuracy**: 0.5895

Model GoogLeNet ini masih cukup rendah performanya untuk klasifikasi Male/Female.

Training tidak terlalu konvergen (akurasi terakhir 61%),

Validasi stagnan di 59%, menandakan model belum belajar fitur dengan optimal pada dataset ini.

Testing


Choose Files
LUCINTA.webp
LUCINTA.webp(image/webp) - 6030 bytes, last modified: 10/18/2025 - 100% done
Saving LUCINTA.webp to LUCINTA (1).webp
User uploaded file "LUCINTA (1).webp" with length 6030 bytes
1/1 4s 4s/step
Prediction for LUCINTA (1).webp:
Probability (Male): 0.4280
Predicted class: Female
Uploaded Image: LUCINTA (1).webp
Predicted: Female (Prob Male: 0.4280)

ResNet

Setup & Dataset

Dataset: Dataset: 50k CelebA 64x64

Label file: list_attr_celeba.txt (Male label) -> 1 = Male 0 = Female

Jumlah data yang digunakan: 2.000 images

Data Split

Training / Validation split: 80% / 20%

Training images: 1.600, shape: (1600, 128, 128, 3) -> 8000 Data -> ResNet expect min 224x224

Validation images: 400, shape: (400, 128, 128, 3) -> 2000 Data, 64x64, RGB

Labels sesuai: (1600,) / (400,) -> 1600 Untuk Training, 400 Untuk Validasi

Model Architecture

ResNet50 (pretrained ImageNet, frozen) untuk binary classification (Male/Female)

Total parameters: ±23,600,000 (±90 MB jika semua trainable)

Layer highlight:

GlobalAveragePooling2D → ubah feature map 2D ke 1D

Dropout(0.2) → cegah overfitting

Output: Dense(1, sigmoid) → prediksi Male/Female

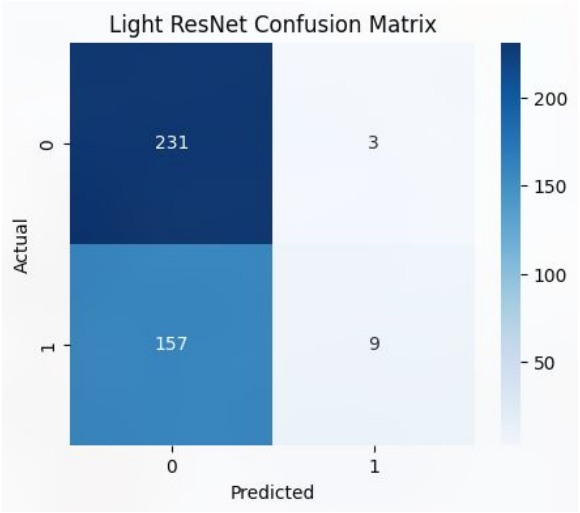
Training

Epochs: 10, Batch size: 8

Training Results:

- Training Accuracy terakhir: 61.35%
- Validation Accuracy terakhir: 59.75%
- Validation Loss terakhir: 0.6517

Matrix


Light ResNet Confusion Matrix
231
3
157
9
0
1
Actual
0
1
Predicted
200
150
100
50

Evaluation & Insight

Validation Metrics: **Loss**: 0.6517, **Accuracy**: 0.5975

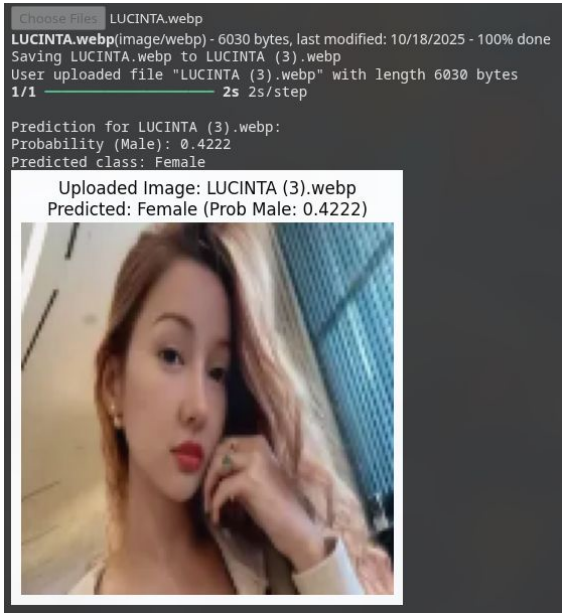
Insight singkat:

Model berat, kurang cocok untuk Colab Free / uji coba cepat

Macro F1-score rendah → performa imbalanced

Bisa ditingkatkan dengan fine-tuning beberapa layer ResNet

Testing


Choose Files
LUCINTA.webp
LUCINTA.webp(image/webp) - 6030 bytes, last modified: 10/18/2025 - 100% done
Saving LUCINTA.webp to LUCINTA (3).webp
User uploaded file "LUCINTA (3).webp" with length 6030 bytes
1/1 2s 2s/step
Prediction for LUCINTA (3).webp:
Probability (Male): 0.4222
Predicted class: Female
Uploaded Image: LUCINTA (3).webp
Predicted: Female (Prob Male: 0.4222)

AlexNet

Setup & Dataset

Dataset: Dataset: 50k CelebA 64x64

Label file: list_attr_celeba.txt (Male label) -> 1 = Male 0 = Female

Jumlah data yang digunakan: 2.000 images

Data Split

Training / Validation split: 80% / 20%

Training images: 1.600, shape: (1600, 128, 128, 3) -> 8000 Data -> ResNet expect min 224x224

Validation images: 400, shape: (400, 128, 128, 3) -> 2000 Data, 64x64, RGB

Labels sesuai: (1600,) / (400,) -> 1600 Untuk Training, 400 Untuk Validasi

Model Architecture

AlexNet-like model untuk binary classification (Male/Female)

Total parameters: 6,109,441 (~23.31 MB)

Layer highlight:

Conv2D + MaxPooling + BatchNorm -> ekstraksi fitur & reduksi resolusi

Flatten + Dense + Dropout -> ubah feature map 2D ke 1D, klasifikasi, cegah overfitting

Output: Dense(1, sigmoid) -> prediksi Male/Female

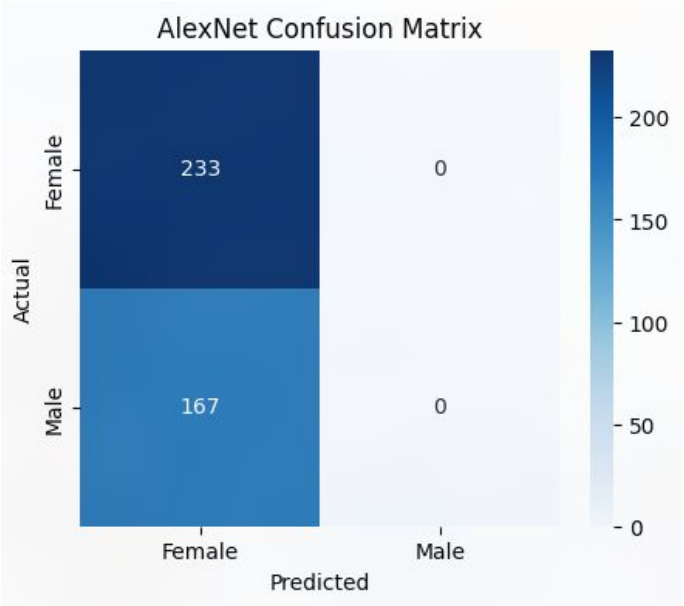
Training

Epochs: 10, Batch size: 32

Training Results:

- Training Accuracy terakhir: 73.44%
- Validation Accuracy terakhir: 58.50%
- Validation Loss terakhir: 0.6813

Matrix


AlexNet Confusion Matrix
Female
Male
Actual
233
0
167
0
Female
Male
Predicted
200
150
100
50
0

Evaluation & Insight

Validation Metrics: Loss: 0.6813, **Accuracy**: 0.5850

Insight singkat:

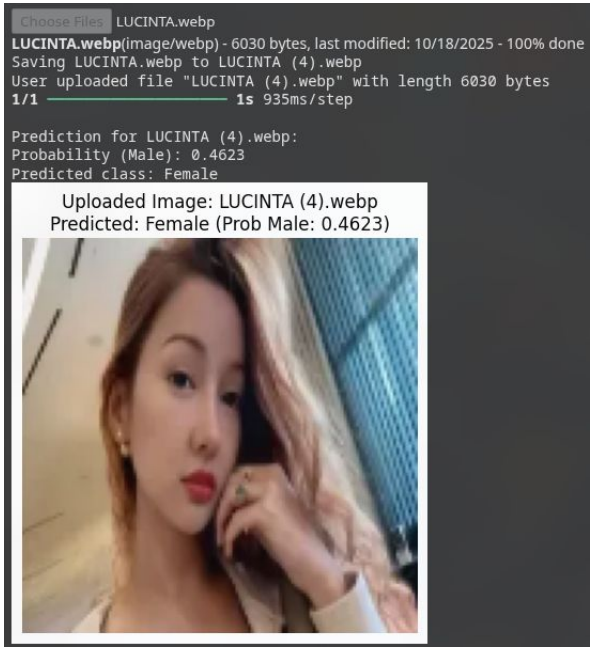
AlexNet cukup berat → ~6 juta parameter

Validation accuracy rendah → kemungkinan overfitting & dataset kecil

Macro F1-score rendah → performa imbalanced

Bisa ditingkatkan dengan fine-tuning, data augmentation, atau batch size lebih kecil

Testing


Choose Files
LUCINTA.webp
LUCINTA.webp(image/webp) - 6030 bytes, last modified: 10/18/2025 - 100% done
Saving LUCINTA.webp to LUCINTA (4).webp
User uploaded file "LUCINTA (4).webp" with length 6030 bytes
1/1 ━━━━━━━━━━━━━━━━━━━━ 1s 935ms/step
Prediction for LUCINTA (4).webp:
Probability (Male): 0.4623
Predicted class: Female
Uploaded Image: LUCINTA (4).webp
Predicted: Female (Prob Male: 0.4623)