IMAGE COLORIZATION USING AI

ABLAZE

AI-Powered Image Colorizer

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Introduction

- Old images carry memories, but when photographed in black and white, they lose emotional depth.
- ABLAZE uses contemporary AI to bring life, brightness, and warmth back to monochromatic photographs.
- ABLAZE converts grayscale photos into color images that look natural in a matter of seconds thanks to its deep-learning colorization models.
- The technology eliminates manual, time-consuming editing and makes colorization accessible to everyone, regardless of technical competence.

Problem Statement

Fixed Formulas

Traditional methods fail on unseen image conditions.

Adaptation Issues

Struggles with lighting and uniform dark pixel mapping.

Need for AI

AI understands context for realistic restoration.

Project Overview

ABLAZE is an AI-driven picture colorization platform that automates the conversion of grayscale photographs to color using state-of-the-art neural networks. The system, which is implemented with Flask, OpenCV, DeOldify, and a backup Caffe-based model, maintains computational efficiency while producing high-quality results. Additional customization is possible without adding to server load thanks to client-side enhancing settings like contrast, sharpness, and noise reduction.

The platform, which offers a full end-to-end colorization process in an easily navigable web interface, is designed to enable study, digital preservation, artistic experimentation, and useful restoration workflows.

Objectives

Natural Output

Colors that look realistic and balanced.

User Control

Real-time sliders for adjustments.

Fallback Logic

Switches automatically to backup model.

Model Sources

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DeOldify

GAN-based vivid colorization.

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Zhang Model

Lightweight fallback, stable results.

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GFPGAN

Enhances facial details.

Data Processing

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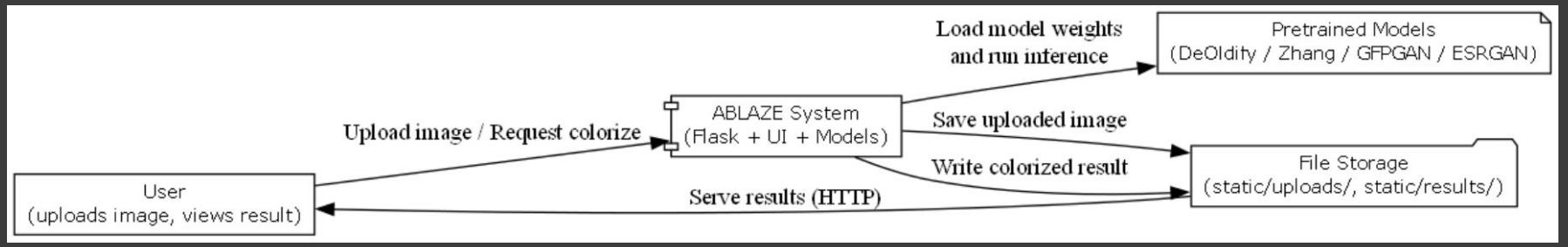
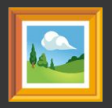
- The technology eliminates manual, time-consuming editing and makes colorization accessible to everyone, regardless of technical competence.

Data Flow Diagram



- ABLAZE receives the uploaded image and forwards it to the selected AI models for inference.
- Pretrained networks restore color and detail while the system saves both the input and output.
- The processed, colorized image is delivered back to the user through the web interface.

Image Processing Steps



Resizing

Fit model input (224px or full-res).

Normalization

Scaled pixel values improve accuracy.

Exposure Fix

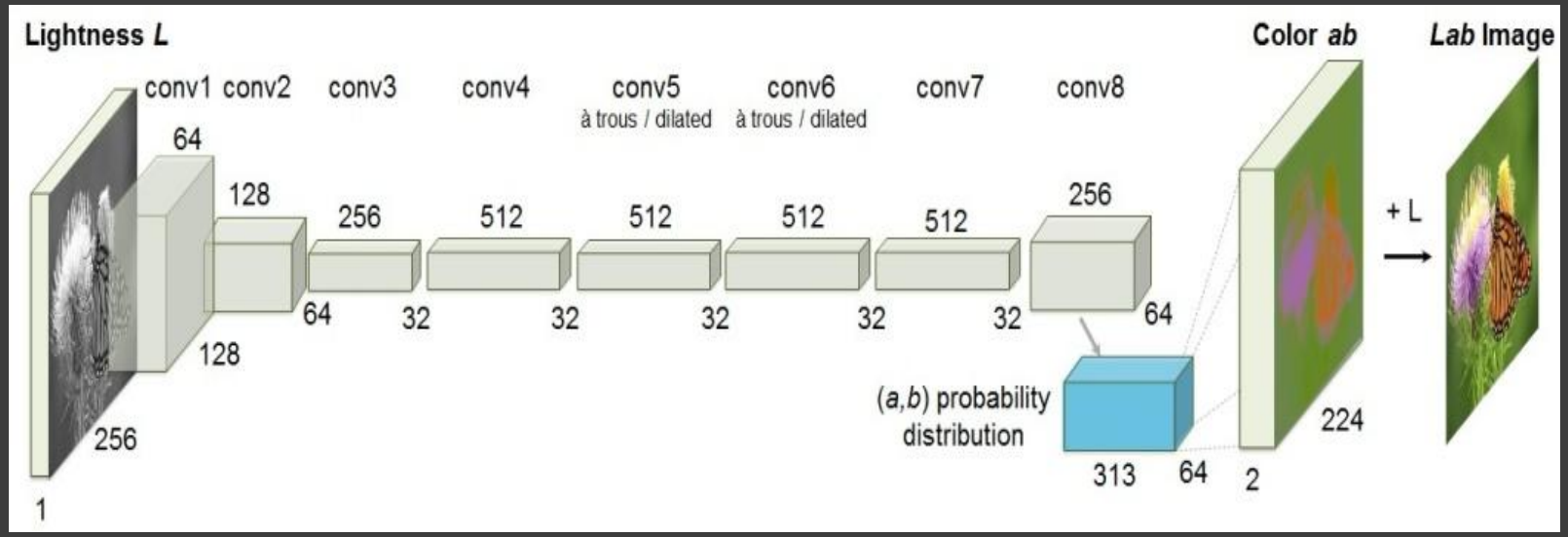
Balances brightness across the image.

Model 1: DeOldify

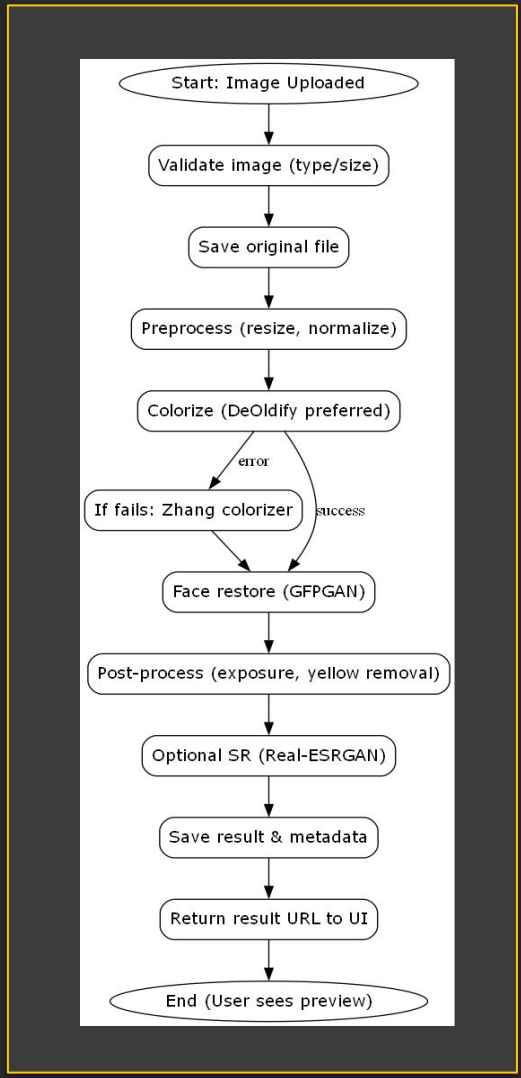
- GAN-based artistic colorization.
- Produces vivid, rich tones.
- Best for portraits and landscapes.

Model 2: Zhang

- Lightweight and reliable.
- Soft, natural color tones.
- Ideal for low-resource environments.



Architecture Diagram



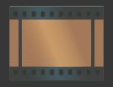
Challenges

Oversaturation

Skin tones may look unrealistic.

Flat Colors

Fallback model gives dull tones.



Old Noise

Vintage photos contain blur and scratches.

Solutions

Adaptive Exposure

Auto-adjusts brightness.

Color Cast Fix

Removes yellow tint in old photos.

Face Restoration

GFPGAN improves faces.

Handling Limitations

Face-aware processing avoids damage to facial details.
Exposure stabilization prevents washed-out output.
Fallback model used when DeOldify fails.

Conclusion

ABLAZE successfully restores black and white memories by integrating advanced AI models with a simple and interactive online interface.

The system excels at providing high-quality results without requiring user expertise.

Enhancements such as sharpening and noise reduction provide users with precise control, resulting in highly individualized color photos.

Future Scope

Batch Mode

Colorize many images at once.

Mobile App

Bring ABLAZE to smart-phones.

AI Storytelling

Narratives based on restored photos.

References

- Jason Antic – DeOldify
- Zhang et al. – Colorful Image Colorization (2016)
- Tencent ARC Lab – GFPGAN
- Xintao Wang – Real-ESRGAN
- Flask documentation
- OpenCV documentation

QUESTIONS?

Thank You