Title: Flux (text-to-image model)

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Flux (also known as FLUX.1) is a text-to-image model developed by Black Forest Labs (BFL), based in Freiburg im Breisgau , Germany. Black Forest Labs was founded by former employees of Stability AI . As with other text-to-image models, Flux generates images from natural language descriptions, called prompts .

History

Black Forest Labs (BFL) was founded in 2024 by Robin Rombach, Andreas Blattmann, and Patrick Esser, former employees of Stability AI. [2] [3] All three founders had previously researched the artificial intelligence image generation at Ludwig Maximilian University of Munich as research assistants under Björn Ommer. [4] [5] [6] They published their research results on image generation in 2022, which resulted in creation of Stable Diffusion . [6] [7] Investors in BFL included venture capital firm Andreessen Horowitz , Brendan Iribe , Michael Ovitz , Garry Tan , and Vladlen Koltun . [8] The company received an initial investment of US$ 31 million. [9] [10]

In August 2024, Flux was integrated into the Grok chatbot developed by xAI and made available as part of premium feature on X (formerly Twitter) . [11] [12] [13] [14] Grok later switched to its own text-to-image model Aurora in December 2024. [15]

On 18 November 2024, Mistral AI announced that its Le Chat chatbot had integrated Flux Pro as its image generation model. [16] [17]

On 21 November 2024, BFL announced the release of Flux.1 Tools, a suite of editing tools designed to be used on top of existing Flux models. The tools consisting of Flux.1 Fill for inpainting and outpainting, Flux.1 Depth for control based on extracted depth map of input images and prompts, Flux.1 Canny for control based on extracted canny edges of input images and prompts, and Flux.1 Redux for mixing existing input images and prompts. Each tools are available in both Pro and Dev models. [18] [19]

In January 2025, BFL announced a partnership with Nvidia for inclusion of Flux models as foundation models for Nvidia's Blackwell microarchitecture. [20] The company also announced the release of Flux Pro Finetuning API, designed for customisation and fine-tuning of Flux-generated images and a partnership with German media company Hubert Burda Media for usage of Flux Pro as part of content creation. [21]

On 29 May 2025, BFL announced Flux.1 Kontext, a suite of models that enable in-context image generation and editing, allowing users to prompt with both text and images. [22] [23] Alongside this, BFL Playground, an interface for testing Flux models was released. [22] [23]

On 31 July 2025, BFL announced Flux.1 Krea Dev, a model developed in collaboration with Krea AI that trained to achieve better performance, more varied aesthetics, and better realism compared to existing text-to-image models. [24]

Models

Flux is a series of text-to-image models. The models are based on rectified flow transformer blocks scaled to 12 billion parameters. [8] [25] Flux.1 models were released under different licences with Schnell (meaning Fast or Quick in German language) released as open-source software under

Apache License , Dev released as source-available software under a non-commercial licence (users can obtain a self-serving commercial licence for Dev from BFL), and Pro released as proprietary software and only available as API that can be licensed by third-party users. [26] [27] Users retained the ownership of resulting output regardless of models used. [28] [29]

The models can be used either online or locally by using generative AI user interfaces such as ComfyUI and Stable Diffusion WebUI Forge (a fork of Automatic1111 WebUI). [8] [30]

An improved flagship model, Flux 1.1 Pro was released on 2 October 2024. [31] [32] Two additional modes were added on 6 November, Ultra which can generate image at four times higher resolution and up to 4 megapixel without affecting generation speed and Raw which can generate hyper-realistic image in the style of candid photography . [33] [34] [35]

Flux.1 Kontext is a series with in-context image generation and editing capabilities. It is available in Pro , Max , and Dev models. Pro is the highest quality model and can be used to iteratively modify an existing image by using prompt while Max is optimised for speed of generation. [22] Dev is an open-weight model released under non-commercial licence, same as Flux.1 Dev. [36]

Related to Flux is text-to-video model SOTA, under development as of June 2025 [update] . [8]

Reception

According to a test performed by Ars Technica , the outputs generated by Flux.1 Dev and Flux.1 Pro are comparable with DALL-E 3 in terms of prompt fidelity, with the photorealism closely matched Midjourney 6 and generated human hands with more consistency over previous models such as Stable Diffusion XL. [37]

Flux has been criticised for its very realistic generated images. According to media reports, depictions ranged from an image of Donald Trump posing with guns to disturbing scenes, which triggered discussions about ethical implications of Flux models. [4] [13]

After the release of the model, social media platform X was flooded with Flux-generated images. [38] [39] Black Forest Labs has not provided exact details of the data used to train the model. [33] Ars Technica suspected that Flux is based on a large, unauthorised collection of images scraped from the internet , a controversial practice with potential legal consequences. [37] [40]

According to a test performed by Japanese technology news website Gigazine for Flux.1 Kontext, the model series has a good understanding in English language and can easily transfer style of image from photorealistic into anime-style according to prompts given by the user, however its capability to understand Japanese language is quite poor. [41]

Availability

In addition to the official BFL Playground on its website, [42] the Flux models are also widely available through various third-party platforms for creative and professional use. These include repositories on platforms like Hugging Face [43] and Replicate. [44]

References

External links

Official website

Flux models on Hugging Face

Flux models on Replicate

Flux models on FAL.ai

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Autoencoder

Deep learning

Fine-tuning
Foundation model
Generative adversarial network
Generative pre-trained transformer
Large language model
Model Context Protocol
Neural network
Prompt engineering
Reinforcement learning from human feedback
Retrieval-augmented generation
Self-supervised learning
Stochastic parrot
Synthetic data
Top-p sampling
Transformer
Variational autoencoder
Vibe coding
Vision transformer
Waluigi effect
Word embedding
Character.ai
ChatGPT
DeepSeek
Ernie
Gemini
Grok
Copilot
Claude
Gemini
Gemma
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2
3
J
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4o
4.5

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OSS
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Llama
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o4-mini
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Base44
Claude Code
Cursor
Devstral
GitHub Copilot
Kimi-Dev
Qwen3-Coder
Replit
Xcode
Aurora
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Flux
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Ideogram
Imagen
Midjourney
Qwen-Image
Recraft
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Kling
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Seedance
Sora
Veo
Wan
15.ai

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01.AI
Aleph Alpha
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Baichuan
Canva
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Cohere
Contextual AI
DeepSeek
ElevenLabs
Google DeepMind
HeyGen
Hugging Face
Inflection AI
Krikey AI
Kuaishou
Luma Labs
Meta AI
MiniMax
Mistral AI

Moonshot AI
OpenAI
Perplexity AI
Runway
Safe Superintelligence
Salesforce
Scale AI
SoundHound
Stability AI
Synthesia
Thinking Machines Lab
Upstage
xAI
Z.ai
Category
v
t
e
History timeline
timeline
Companies
Projects
Parameter Hyperparameter
Hyperparameter
Loss functions
Regression Bias–variance tradeoff Double descent Overfitting
Bias–variance tradeoff
Double descent
Overfitting
Clustering
Gradient descent SGD Quasi-Newton method Conjugate gradient method
SGD
Quasi-Newton method
Conjugate gradient method
Backpropagation
Attention
Convolution
Normalization Batchnorm

Batchnorm

Activation Softmax Sigmoid Rectifier

Softmax

Sigmoid

Rectifier

Gating

Weight initialization

Regularization

Datasets Augmentation

Augmentation

Prompt engineering

Reinforcement learning Q-learning SARSA Imitation Policy gradient

Q-learning

SARSA

Imitation

Policy gradient

Diffusion

Latent diffusion model

Autoregression

Adversary

RAG

Uncanny valley

RLHF

Self-supervised learning

Reflection

Recursive self-improvement

Hallucination

Word embedding

Vibe coding

Machine learning In-context learning

In-context learning

Artificial neural network Deep learning

Deep learning

Language model Large language model NMT

Large language model

NMT

Reasoning language model

Model Context Protocol

Intelligent agent

Artificial human companion

Humanity's Last Exam

Artificial general intelligence (AGI)

AlexNet

WaveNet

Human image synthesis

HWR

OCR

Computer vision

Speech synthesis 15.ai ElevenLabs

15.ai

ElevenLabs

Speech recognition Whisper

Whisper

Facial recognition

AlphaFold

Text-to-image models Aurora DALL-E Firefly Flux Ideogram Imagen Midjourney Recraft Stable Diffusion

Aurora

DALL-E

Firefly

Flux

Ideogram

Imagen

Midjourney

Recraft

Stable Diffusion

Text-to-video models Dream Machine Runway Gen Hailuo AI Kling Sora Veo

Dream Machine

Runway Gen

Hailuo AI

Kling

Sora

Veo

Music generation Riffusion Suno AI Udio

Riffusion

Suno AI

Udio

Word2vec

Seq2seq

GloVe

BERT

T5

Llama

Chinchilla AI

PaLM

GPT 1 2 3 J ChatGPT 4 4o o1 o3 4.5 4.1 o4-mini 5

1

2

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J

ChatGPT

4

4o

o1

o3

4.5

4.1

o4-mini

5

Claude

Gemini Gemini (language model) Gemma

Gemini (language model)

Gemma

Grok

LaMDA

BLOOM

DBRX

Project Debater

IBM Watson

IBM Watsonx

Granite

PanGu-Σ

DeepSeek

Qwen

AlphaGo
AlphaZero
OpenAI Five
Self-driving car
MuZero
Action selection AutoGPT
AutoGPT
Robot control
Alan Turing
Warren Sturgis McCulloch
Walter Pitts
John von Neumann
Claude Shannon
Shun'ichi Amari
Kunihiko Fukushima
Takeo Kanade
Marvin Minsky
John McCarthy
Nathaniel Rochester
Allen Newell
Cliff Shaw
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David Silver

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Ashish Vaswani

Noam Shazeer

Aidan Gomez

John Schulman

Mustafa Suleyman

Jan Leike

Daniel Kokotajlo

François Chollet

Neural Turing machine

Differentiable neural computer

Transformer Vision transformer (ViT)

Vision transformer (ViT)

Recurrent neural network (RNN)

Long short-term memory (LSTM)

Gated recurrent unit (GRU)

Echo state network

Multilayer perceptron (MLP)

Convolutional neural network (CNN)

Residual neural network (RNN)

Highway network

Mamba

Autoencoder

Variational autoencoder (VAE)

Generative adversarial network (GAN)

Graph neural network (GNN)

Category