



# FlowLab: Simplifying AI & Medical Imaging for All

A no-code platform empowering students and researchers with accessible machine learning and image analysis

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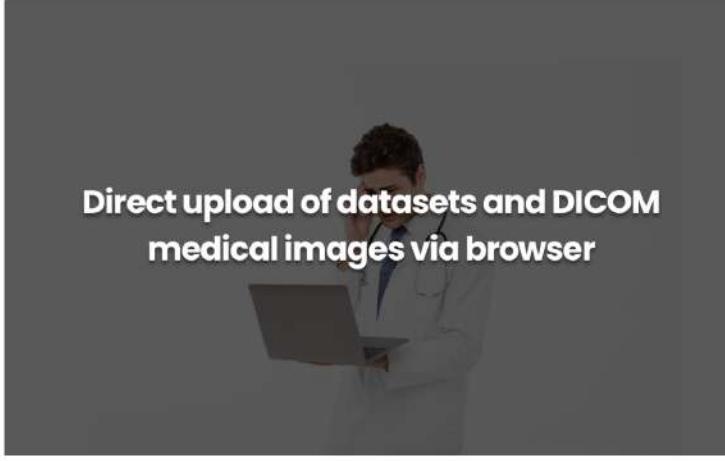
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# Streamlining Machine Learning with FlowLab

Simplify complex workflows and medical image analysis without coding



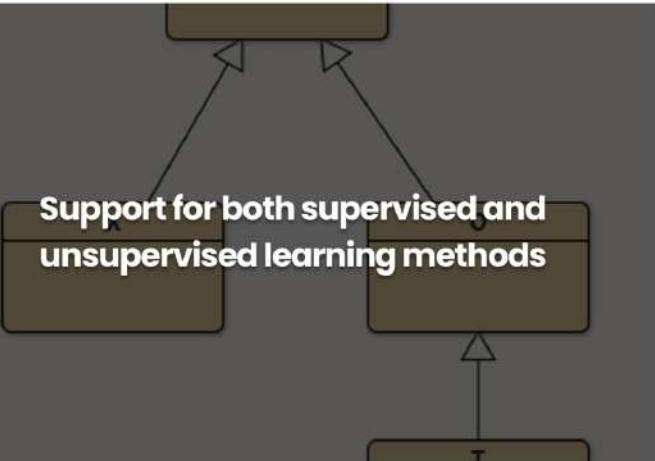
No-code platform enabling users to build ML workflows without programming



Direct upload of datasets and DICOM medical images via browser



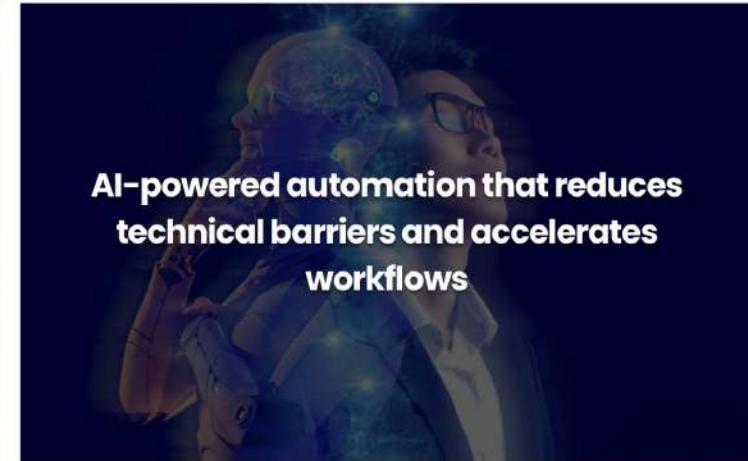
Automated preprocessing tools for data and image preparation



Support for both supervised and unsupervised learning methods



Interactive visualization of models and analysis results



AI-powered automation that reduces technical barriers and accelerates workflows

# Breaking Barriers in AI Medical Imaging

Simplifying access with no-code, browser-based tools



**Complex programming and software installation** limit accessibility for beginners in AI medical imaging.



Manual data preprocessing and complex parameter tuning demand advanced technical skills.



Specialized medical formats like **DICOM** add extra complexity for image analysis.



These barriers discourage students and researchers unfamiliar with coding.



**FlowLab offers a fully browser-based, no-code environment** to eliminate technical barriers.



Users focus on deriving AI insights without needing programming expertise.



**AI Insight:** Lowering technical barriers accelerates AI democratization and fosters faster innovation.

# FlowLab's Core Objectives

Simplifying AI and Medical Imaging Workflows for All Users

Provide a **no-code platform** that simplifies complete machine learning workflows



Automate **data preprocessing** and visualize key metrics to enhance understanding



Support both **supervised and unsupervised machine learning algorithms**



Enable enhancement and analysis of medical images in **DICOM format**



Make AI and medical imaging technology accessible to beginners and researchers, promoting faster experimentation without programming overhead



# FlowLab System Architecture

Modular design enabling scalable, flexible AI and medical imaging workflows

## User Interface

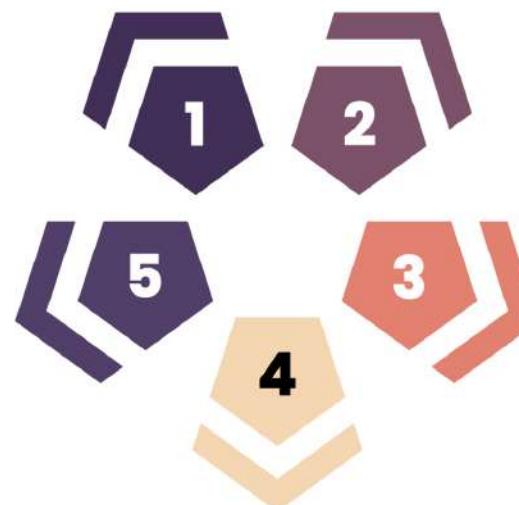
Facilitates intuitive interaction with FlowLab's system for users across data science and medical imaging.

## Visualization & Export Module

Displays analytical results clearly and provides options to share or export findings efficiently.

## DICOM Image Processing Unit

Specializes in enhancement and preparation of medical images using DICOM standards for accurate analysis.



## Data Preprocessing Module

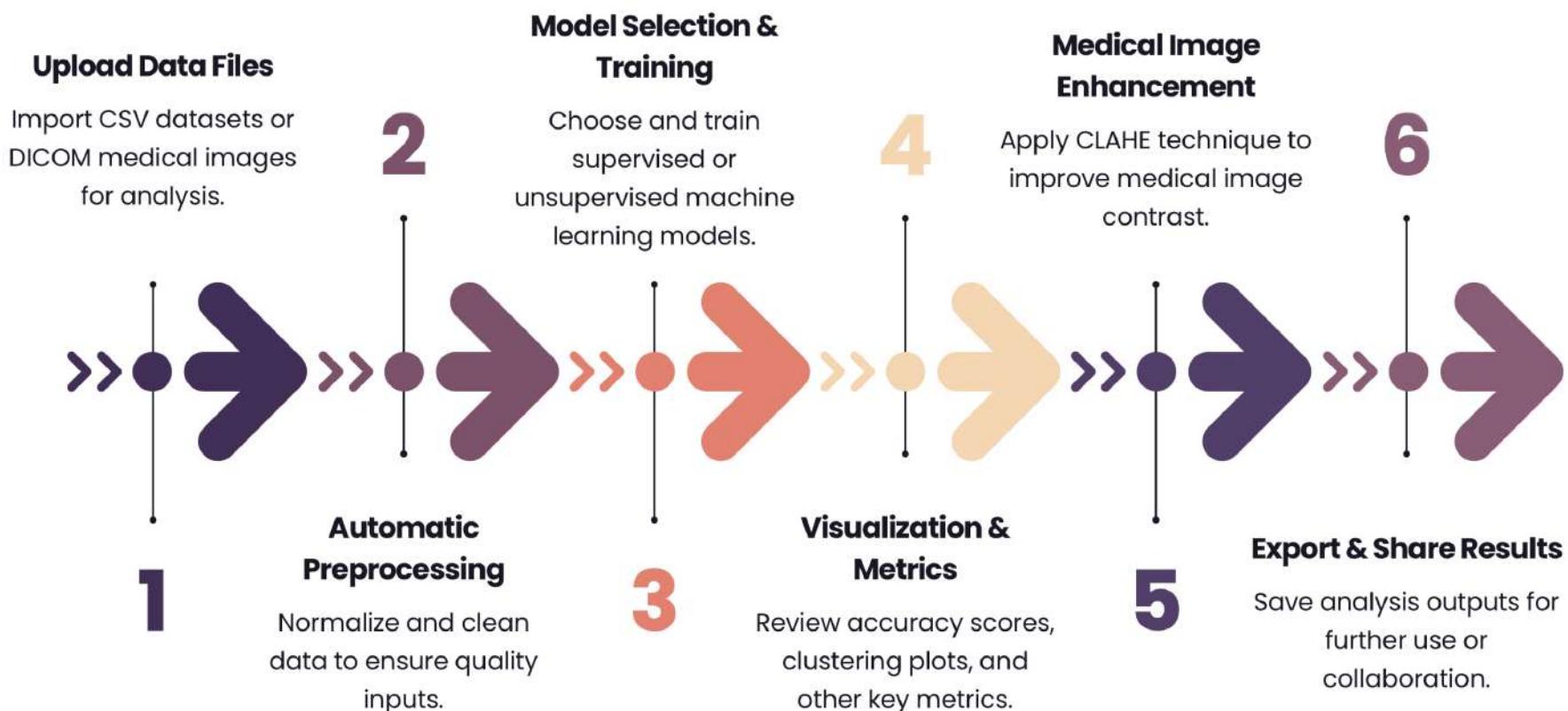
Automates cleaning and transformation of raw data, ensuring quality input for downstream AI processes.

## Machine Learning Engine

Supports training, evaluation, and deployment of machine learning algorithms for predictive modeling.

# FlowLab User Workflow: From Data to Insight

Streamlining AI Experimentation for Accessible Data Science



# Machine Learning Algorithms Empowering FlowLab

Diverse Models for Versatile and Explainable AI Solutions



**Supervised Learning:**  
Logistic Regression,  
Support Vector Machines  
(SVM), Random Forest,  
Decision Tree, K-Nearest  
Neighbors (KNN)



**Unsupervised Learning:** K-  
Means Clustering, DBSCAN



**Medical Imaging**  
**Enhancement:** CLAHE  
(Contrast Limited Adaptive  
Histogram Equalization)  
Improves MRI And Medical  
Image Quality



AI Insight: Interpretable  
Algorithms Like Decision  
Trees And Logistic  
Regression Aid Beginners  
In Understanding Model  
Behavior, Fostering  
Learning In No-Code  
Environments.

# Visualizing FlowLab: Key Interfaces & Results

Explore how FlowLab's intuitive visuals simplify complex medical AI workflows and enhance explainability.

## Data Upload & Preprocessing

Streamlined interface enabling efficient data import and preprocessing with clear progress indicators and user-friendly controls.

## AI Visualization Benefits

Clear visual feedback builds user confidence and supports explainability in sensitive medical AI applications, fostering trust and engagement.



## Model Training & Visualization Metrics

Dynamic metrics visualization displaying training progress, accuracy, and loss graphs in an accessible format for improved model interpretability.

## Medical Image Enhancement Results

Side-by-side visual comparison of original versus enhanced images demonstrating FlowLab's powerful medical image processing capabilities.

# Implementation & Tools Driving FlowLab

Core technologies powering data manipulation, ML, visualization, and user interface



Python 3.9 as the primary programming language



Pandas and NumPy for efficient data manipulation



Scikit-Learn enabling machine learning algorithm implementation



Plotly for dynamic, interactive data visualization



OpenCV and pydicom for specialized medical image processing



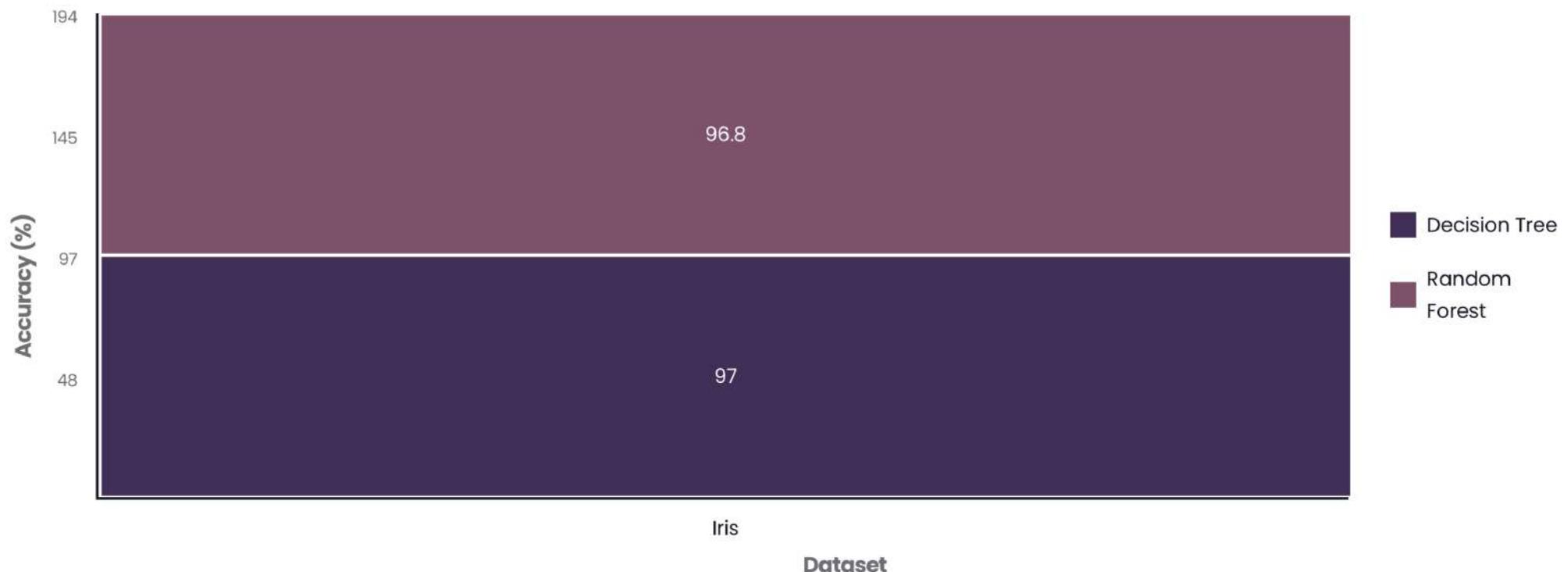
Streamlit framework building the web-based user interface



Leveraging open-source AI libraries accelerates no-code tool development, fostering collaboration and rapid prototyping

# FlowLab: Proven Accuracy and Enhanced Imaging

High-performance AI models and advanced MRI contrast enhancement



# FlowLab: Empowering Accessible AI & Medical Imaging

Simplifying AI workflows with no-code tools for education and research

- 1** FlowLab democratizes machine learning and medical image analysis through a no-code, browser-based platform accessible to beginners and researchers
- 2** Simplifies complex AI workflows to enhance learning and experimentation in academic and research environments
- 3** Future enhancements include adding support for deep learning models to expand AI capabilities
- 4** Incorporation of Explainable AI (XAI) tools to improve model transparency and interpretability
- 5** Deployment of cloud GPU execution to enable scalable and efficient processing
- 6** Integration with PACS systems to streamline medical data management and accessibility
- 7** These enhancements will extend FlowLab's impact and broaden its capabilities in AI research and education