



NLU Chatbots: The Complete AI Development Workbench

Your Single Platform for Building, Training, and Deploying Any AI Model

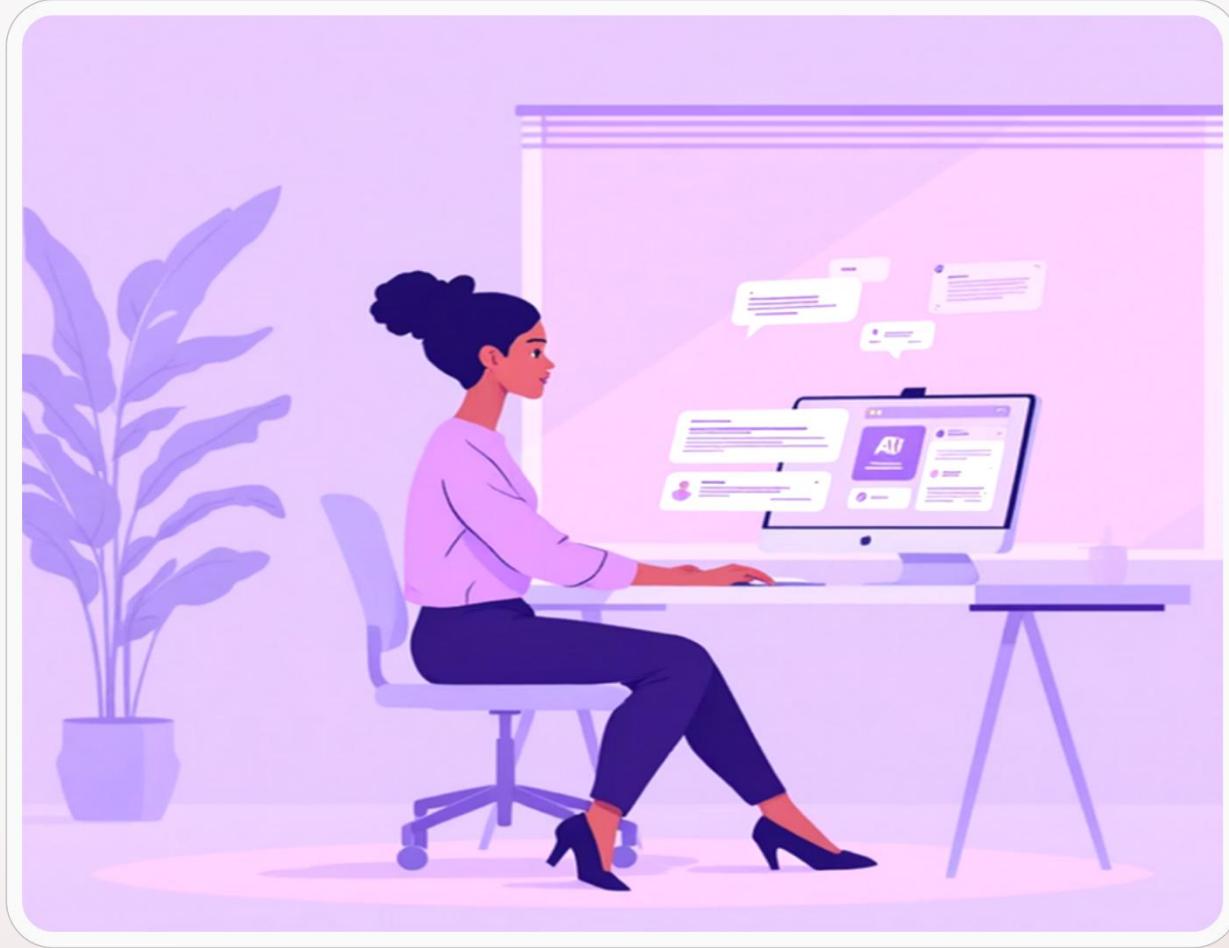
Moving from Simple Words to Deep Understanding and Prediction



Machine Learning Workbench

Our platform offers a full Machine Learning Workbench for data analysis, prediction, and grouping (Supervised/Unsupervised Learning).

Our tool does **both**, moving from simple words to deep understanding and prediction. Our dual-service design ensures stability, speed, and specialization for both ML and NLU tasks, providing a robust foundation for your AI models.



NLU Builder

Our platform is an NLU Builder that finds the **Intent** (what the user really wants) and **Context** (the hidden meaning in language).

Navigating the Complexities: Key Challenges in AI Development

Building and deploying effective AI models, especially NLU chatbots, presents several significant hurdles for organizations.



Data Scarcity & Quality

Sourcing, cleaning, and labeling sufficient high-quality data remains a formidable task, often delaying development and impacting model accuracy.



Model Explainability

Understanding the 'why' behind a model's prediction is crucial for trust and compliance, yet complex AI models often operate as opaque "black boxes".



Deployment & Maintenance

Moving models from development to production, then continuously monitoring and updating them, is a labor-intensive process requiring specialized expertise.



The High Cost of Unreliable, Fragmented Tools



Too Fragmented

Users need separate, expensive tools for ML prediction vs. NLU chatbots.



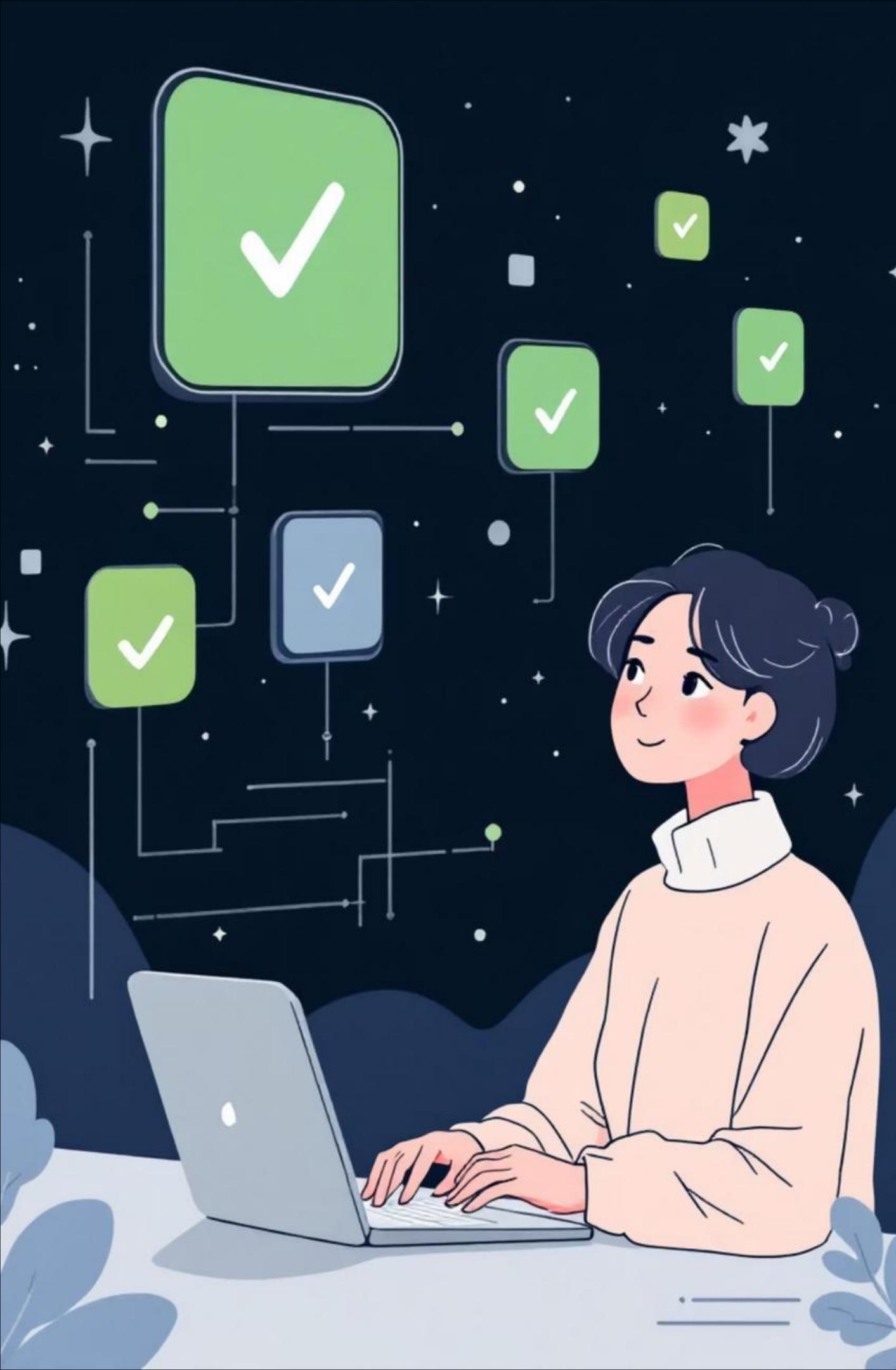
The Black Box

Advanced models can't explain why a prediction was made, leading to lack of trust.



Slow Training

It's hard to quickly upload, test, and compare the best models, hindering agility.



Our Solution: The NLU Chatbots Advantage



All-in-One Power

Train all 22+ models (Classification, Regression, Clustering, NLU) from one platform.



Easy Model Comparison

Train multiple algorithms simultaneously to find the best performing one fast.



Testing Sandbox

Instant **Single or Batch Prediction** testing to confirm model reliability before deployment.

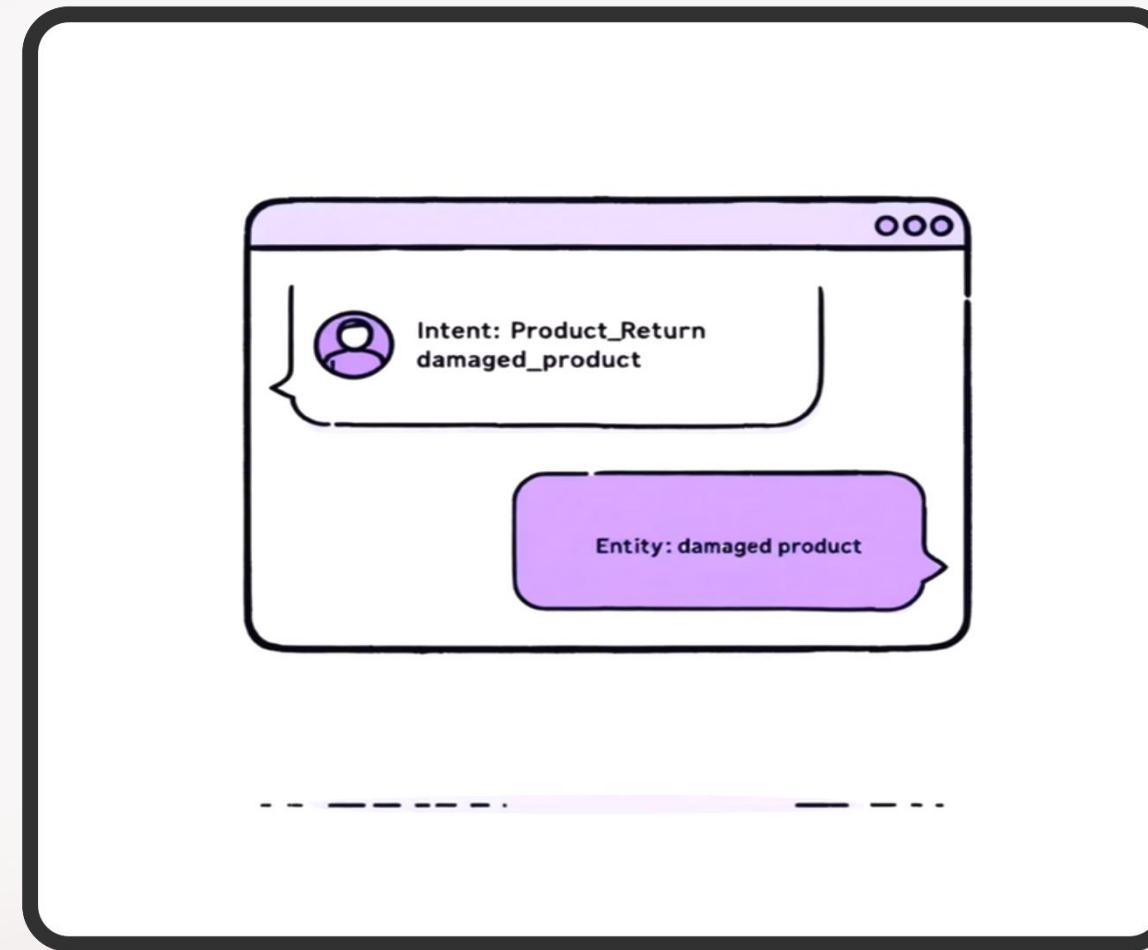
NLU Chatbots in Action: Solving Two Problems At Once



ML Prediction

High-confidence prediction for critical decisions,
powered by advanced algorithms like XGBoost.

The same platform seamlessly handles both high-confidence prediction and sophisticated language understanding.



NLU Chatbot

Complex language understanding, accurately identifying user
intent and entities for smart interactions.

Our Modern and Robust Technology Stack

Core Technologies

Frontend

User interface built with Next.js for speed and modernity.



Backend

Python-powered engine driving AI functionalities.

NLU Core

RASA-based system for natural language understanding.

ML Core Libraries

scikit-learn and XGBoost executing diverse algorithms.

Security

JWT-based authentication ensuring secure access.

Technology



Frontend (UI)

Description

Next.js (Fast, modern web interface)



Backend (Engine)

Python (The best language for AI)



NLU Core

RASA (Industry standard for NLU Chatbots)



ML Core Libraries

scikit-learn & XGBoost (Execute all 22+ algorithms)

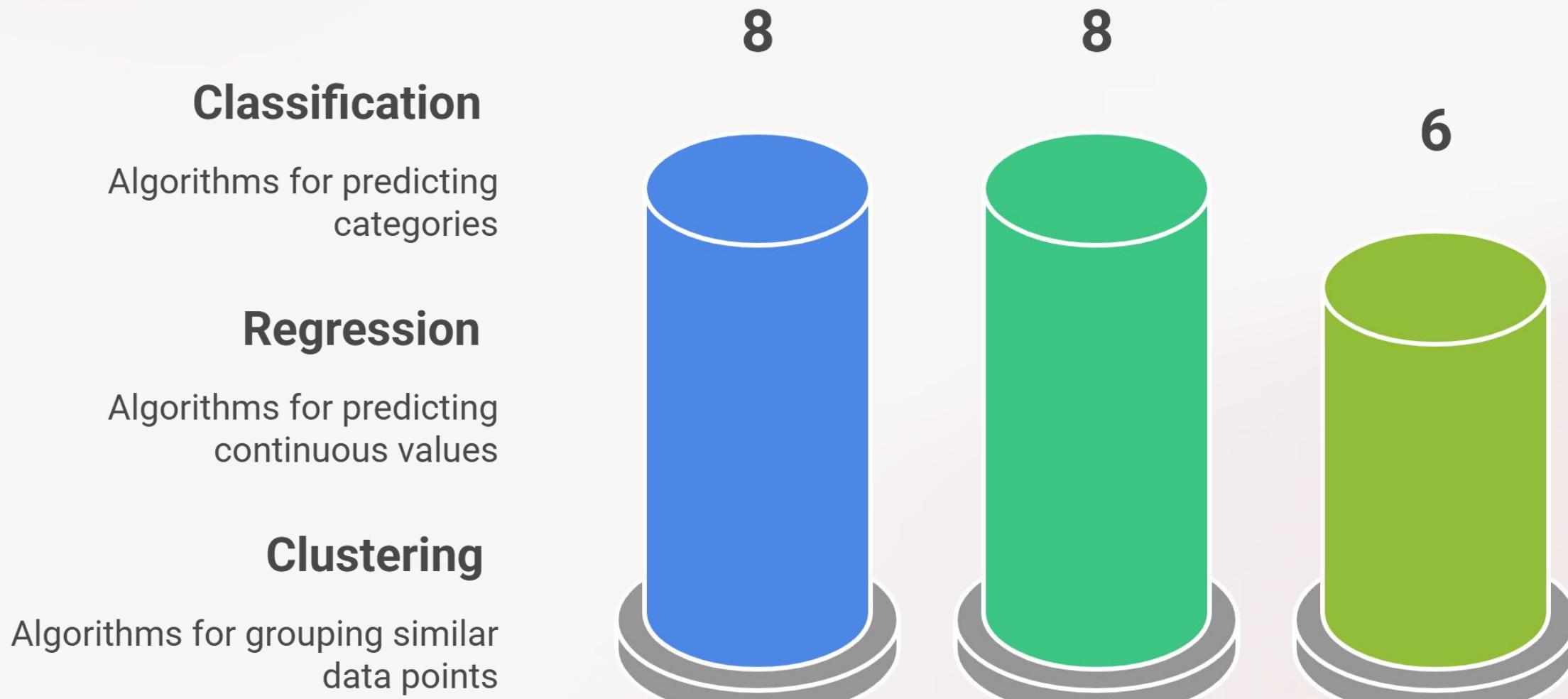


Security

JWT-based authentication (Secure access to all tools)

Our Modern and Robust Technology Stack

Number of Algorithms Supported by Category



Supported Algorithms

Classification

Random Forest, Gradient Boosting, SVM, Logistic Regression, Decision Tree, KNN, Naive Bayes, XGBoost



Clustering

K-Means, DBSCAN, Hierarchical Clustering, Gaussian Mixture Models (GMM), Mean Shift, Spectral Clustering



Regression

Linear Regression, Ridge, Lasso, Random Forest Regressor, SVR, Decision Tree Regressor, Gradient Boosting Regressor, XGBoost Regressor



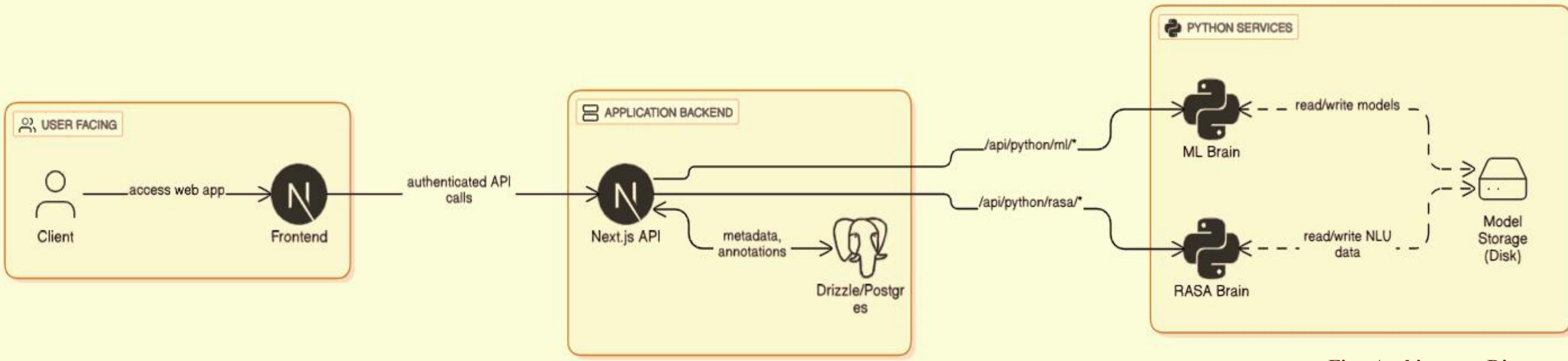


Fig : Architecture Diagram

The 7-Step Path to a Deployed AI Model

01

Upload Data

04

Evaluate Results

07

Deploy

02

Annotate

05

Test Predictions

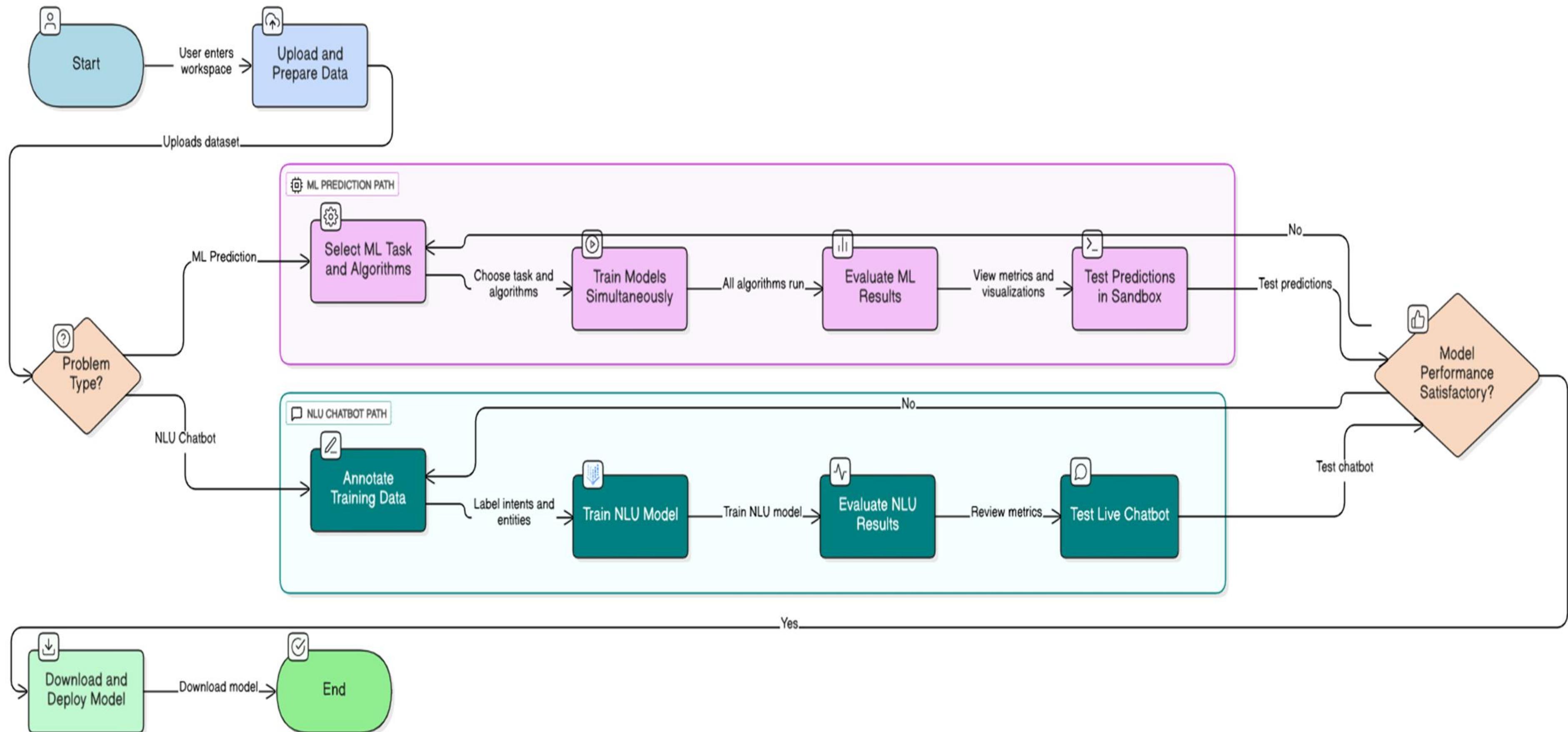
03

Train Models

06

Download Model

WORKFLOW DIAGRAM : Model Training and deployment



The 7 Core Modules

A secure, modular environment designed to manage the entire AI lifecycle from **data ingestion** to **model deployment**.

Intelligent Workspace Manager

Model Metadata & Export Registry

NLU Chatbot Builder



Smart Dataset Management

Multi-Algorithm ML Training

Advanced Model Evaluation

Prediction & Testing Lab

Module 1

Intelligent Workspace Manager



Module 1: Intelligent Workspace Manager



JWT Authentication

Secure login and registration system protecting user credentials and session data.



Session Management

Keeps user data completely isolated and secure across different workspace environments.



Multi-Tenancy Support

Create and manage unlimited workspaces for different projects like "E-Commerce" or "HR Support".



Scalable

Manage unlimited workspaces from a single unified dashboard



Purpose: Provides a secure, organized environment to manage different AI projects with complete data isolation and user access control.

Welcome back

Sign in to your account to continue

Email Address
you@example.com

Password
.....

Remember me for 30 days

Sign In

Don't have an account? [Create one](#)

Demo Account
Email: demo@nluapp.com
Password: demo123456

Build Intelligent Chatbots

Harness the power of ML and NLU to create advanced conversational AI

NLU ML Platform

Welcome back, srawya! 🙌

Manage your ML workspaces and build intelligent chatbots

5 Workspaces Active Status

Your Workspaces

Create and manage ML projects

Stravya Chatbot
Demonstration
 Invalid Date
Open Workspace

Trail2
Demonstration in video
 Invalid Date
Open Workspace

Trail1
Demonstration of NLU Chatbot
 Invalid Date
Open Workspace

+ New Workspace

Algorithm Selection

All Algorithms SVM 200 Random Forest Neural Networks

NLU & ML Learning Training

Machine Learning Training Model Training Machine Learning Metrics

NLU ML Platform

Create Account

Start building intelligent chatbots today

Full Name
John Doe

Email Address
you@example.com

Password
.....

Minimum 8 characters

Confirm Password
.....

Sign Out



Module 2

Smart Dataset Management

Module 2: Smart Dataset Management

The Entry Point for Data

Smart Dataset Management serves as the foundation for all AI operations, handling data ingestion and intelligent preprocessing automatically.

01

Multi-Format Support

Seamlessly accepts CSV, JSON, and YML files for maximum flexibility.

02

Interactive Preview

Instantly visualizes the first 10-20 rows to verify data structure.

03

Automated Analysis

Auto-detects column types and provides statistics including null values and row counts.



Sravya Chatbot
Demonstration

Dataset Upload
Upload & manage CSV/JSON/YML files

Train Models
Multi-algorithm ML training

Predict & Test
Test models with new data

Model Evaluation
Metrics, charts & confusion matrix

Model Info
Download & retrain models

NLU Chatbot
RASA-powered chatbot

Dataset Management

Upload and manage your datasets in CSV, JSON, or YML format for ML training

Sravya Chatbot
Demonstration

Upload Dataset

Upload File **Download**

Supported Formats:

- **CSV** - Comma-separated values with headers
- **JSON** - Array of objects or single object
- **YML/YAML** - YAML structured data
- Maximum file size: 100MB
- Supports large datasets for ML training

Available Datasets (1)

ecommerce_chatbot.csv 84 rows • 2 columns • CSV 2.74 KB
--

Dataset Information

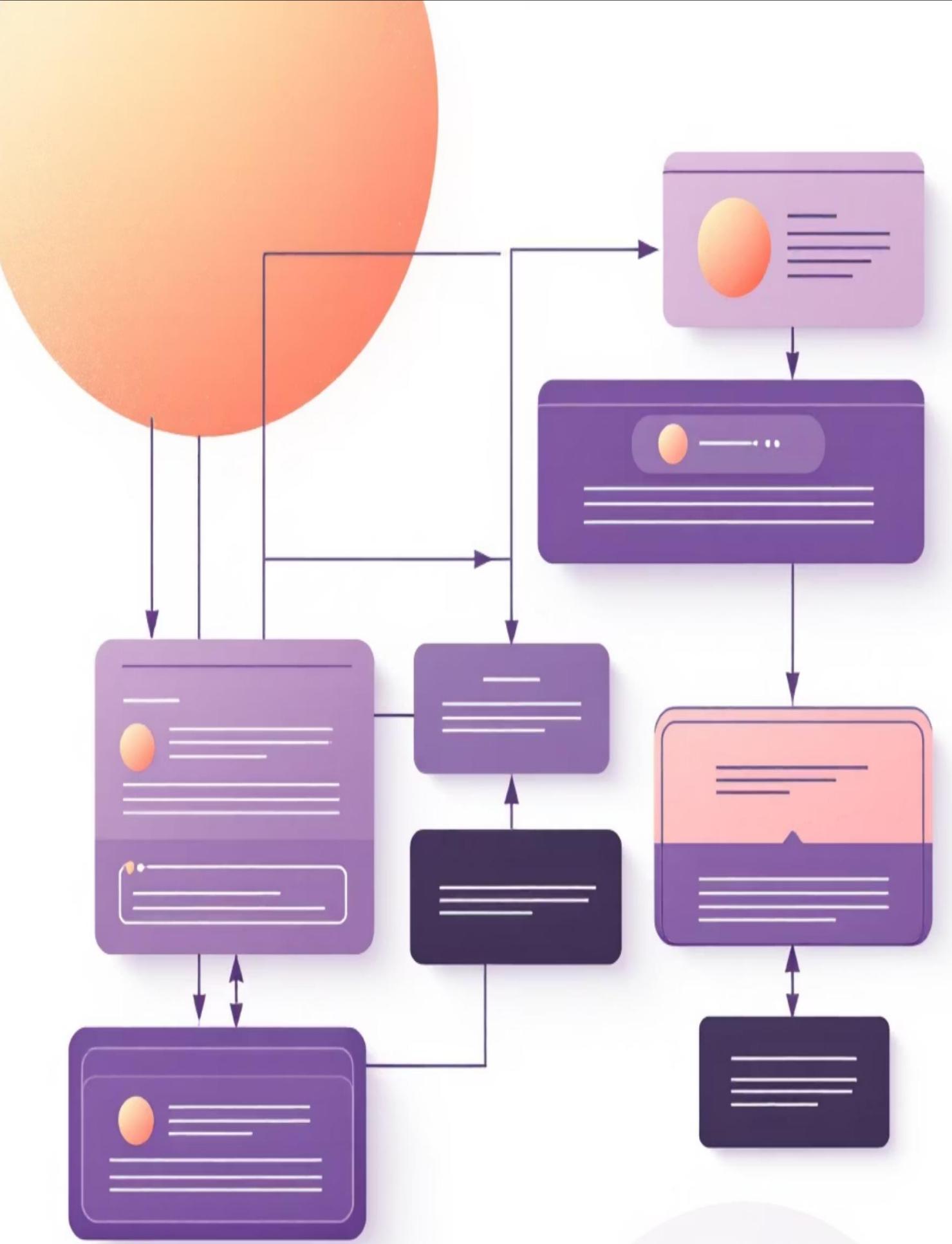
Name	Format	Rows	Columns	Size
ecommerce_chatbot.csv	CSV	84	2	2.74 KB

Columns (2)

text **intent**

Module 3

Multi-Algorithm ML Training Engine





Module 3: Multi-Algorithm ML Training Engine

The Core Intelligence Processing Unit

Our training engine represents the heart of the platform, simultaneously building and comparing multiple models to identify optimal solutions.

Simultaneous Training

Trains up to 6 algorithms concurrently and supports 21+ ML algorithms: Random Forest, SVM, XGBoost, Logistic Regression, KNN, and Decision Tree.

Problem Type Support

Intelligently handles Classification, Regression, and Clustering tasks with optimized hyperparameters.

Auto-Selection

Automatically compares performance metrics and highlights the "Best Performing Model" based on accuracy scores.

Model Training

Train multiple ML algorithms for supervised and unsupervised learning

Python ML Backend Status

ML Service: Connected Active

Select Problem Type

Classification

Supervised Classification

Predict categorical labels from labeled training data

Training Configuration

Select Dataset

ecommerce_chatbot.csv (84 rows, CSV) ▼

Target Column (Label)

intent ▼

Select Supervised Algorithms (3 selected)

Random Forest

Ensemble learning with decision trees

XGBoost

Gradient boosting framework

Gradient Boosting

Boosting ensemble method

Support Vector Machine

Maximum margin classifier

Logistic Regression

Linear classification model

Decision Tree

Tree-based classification

Training Results

Python ML Backend

Random Forest Best Model

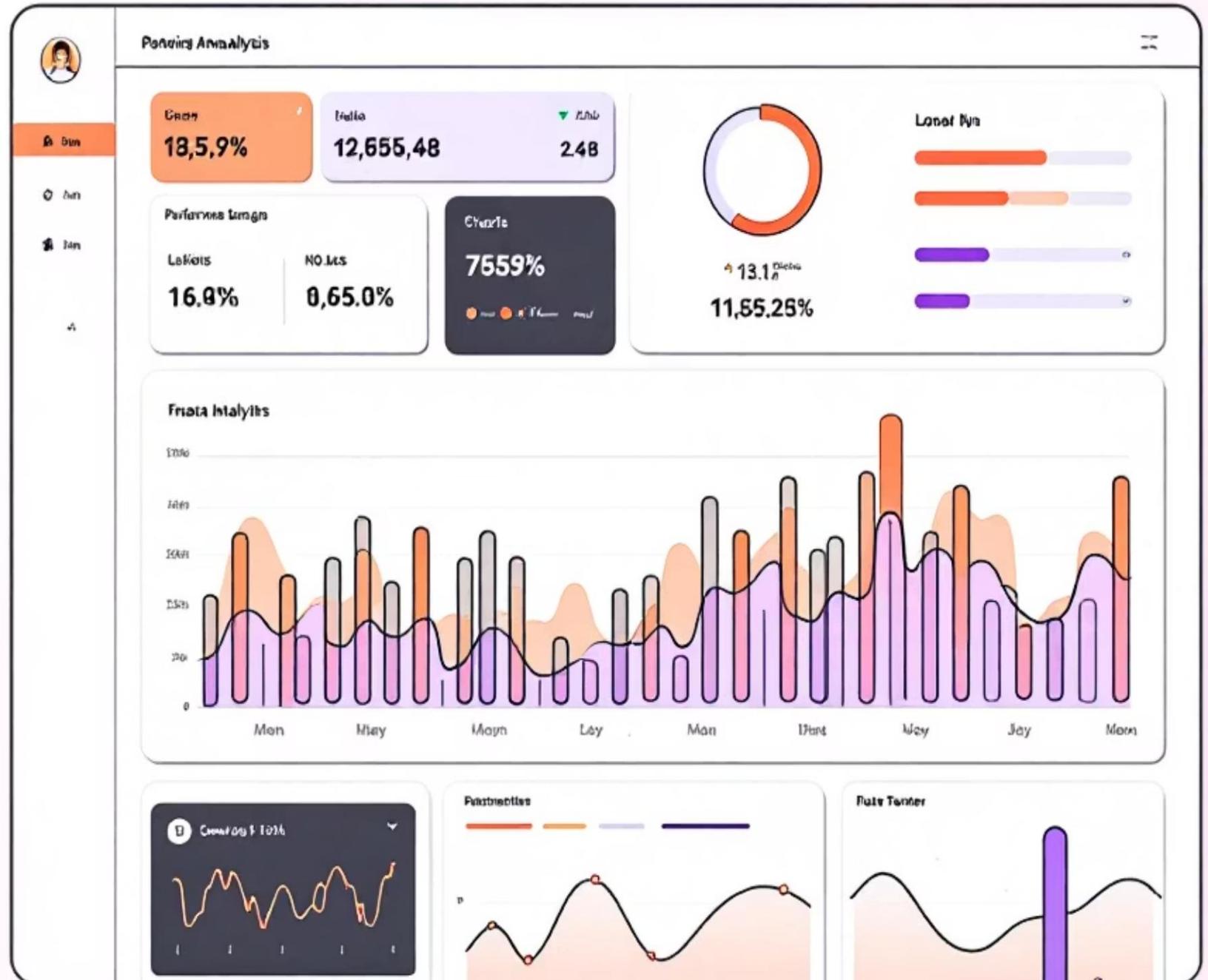
Accuracy	Precision	Recall	F1 Score
47.06%	38.89%	47.06%	40.39%

XGBoost

Accuracy	Precision	Recall	F1 Score
17.65%	7.35%	17.65%	8.50%

Support Vector Machine

Accuracy	Precision	Recall	F1 Score
35.29%	19.02%	35.29%	22.55%



Module 4

Advanced Model Evaluation

Module 4: Advanced Model Evaluation

Transparency & Trust

Comprehensive performance analytics provide the transparency needed to trust and validate your AI models before deployment.

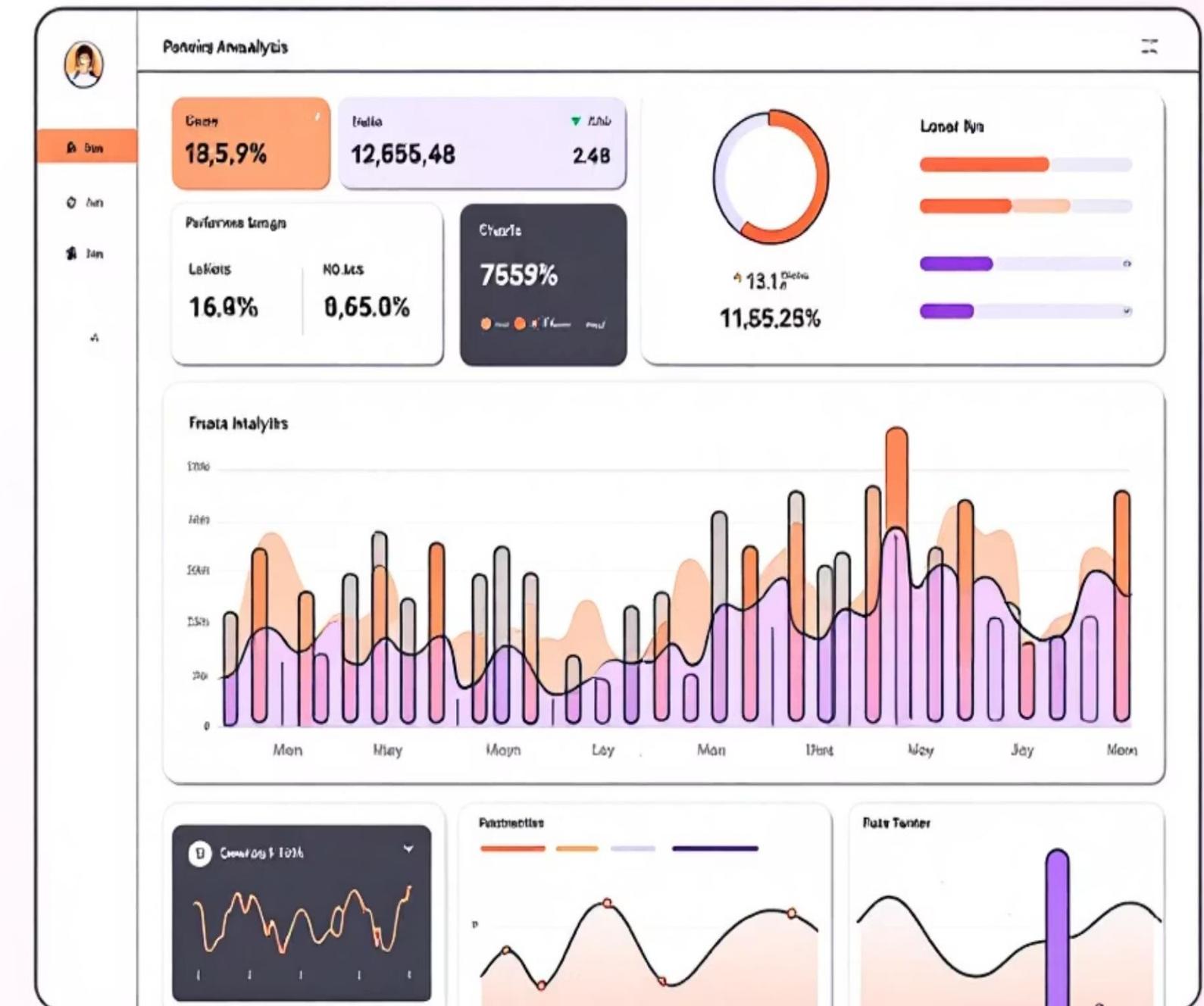
Key Metrics Tracked

- Accuracy scores across all algorithms
- Precision and Recall for classification
- F1-Score for balanced assessment
- Confusion matrix heatmaps

21+
Algorithms Compared

4
Core Metrics

100%
Visual Transparency



Confusion Matrix

	Predicted 0	Predicted 1	Predicted 2	Predicted 3	Predicted 4	Predicted 5	Predicted 6	Predicted 7	Predicted 8	Predicted 9
Actual 0	1	0	0	0	0	0	0	0	0	0
Actual 1	0	0	0	0	0	0	0	0	0	0
Actual 2	0	0	0	0	0	0	0	0	0	0
Actual 3	0	0	0	0	0	0	0	0	0	0
Actual 4	0	0	0	0	0	0	0	0	0	0
Actual 5	0	0	0	0	0	0	0	0	0	0

- Dataset Upload**
Upload & manage CSV/JSON/YML files
- Train Models**
Multi-algorithm ML training
- Predict & Test**
Test models with new data
- Model Evaluation**
Metrics, charts & confusion matrix
- Model Info**
Download & retrain models
- NLU Chatbot**
RASA-powered chatbot

Model Evaluation

Comprehensive metrics, charts, and confusion matrices for trained models

Select Model

Random Forest - 19/11/2025, 11:24:53 pm - random_forest ★

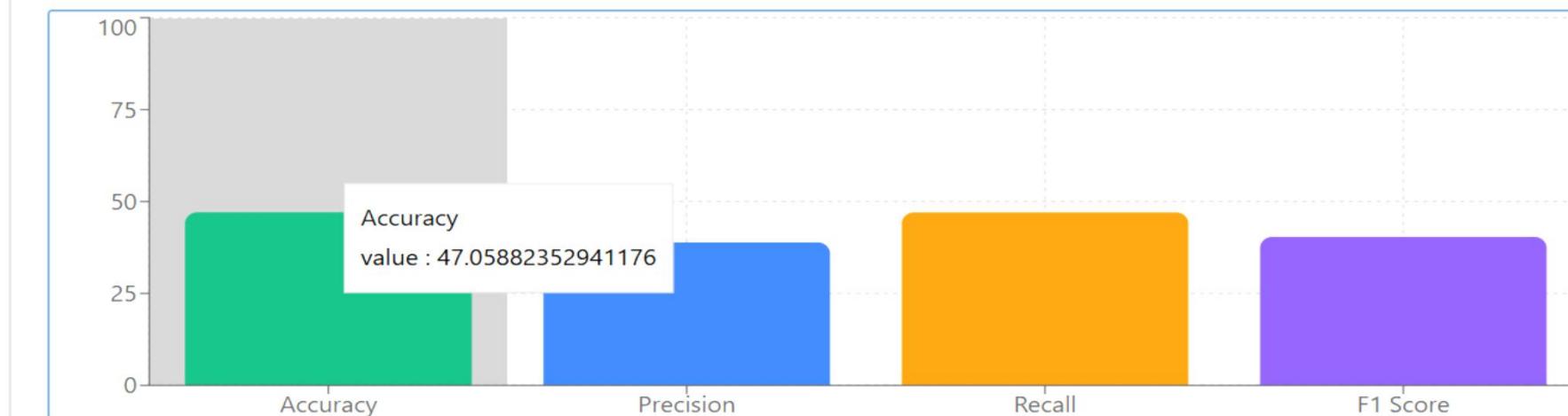
Accuracy **47.06%**

Precision **38.89%**

Recall **47.06%**

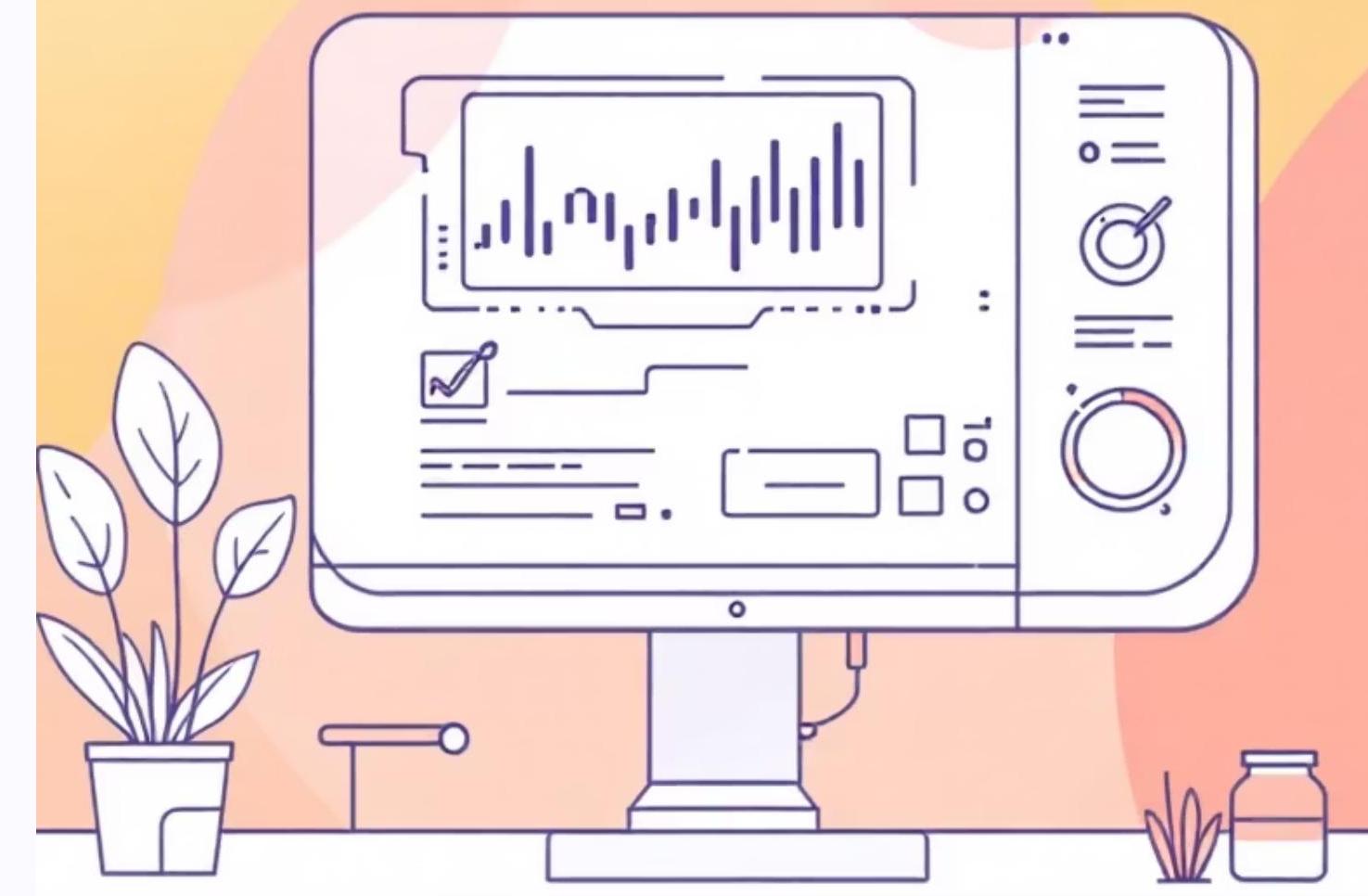
F1 Score **40.39%**

Performance Metrics



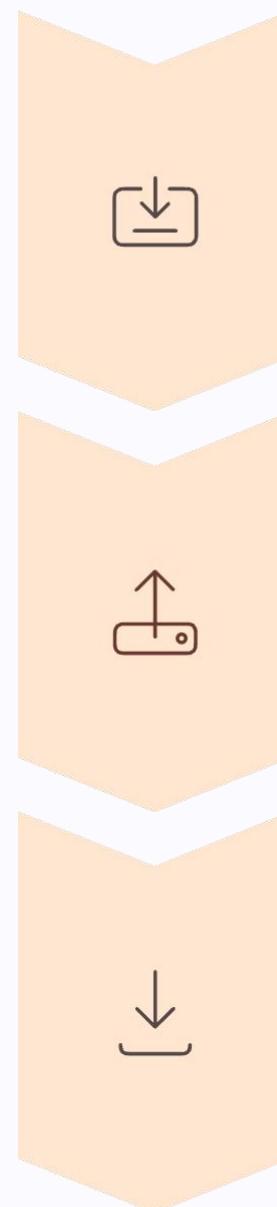
Module 5

Prediction & Testing Laboratory



Module 5: Prediction & Testing Laboratory

A comprehensive sandbox environment enabling teams to validate model performance before production deployment.



Real-Time Prediction

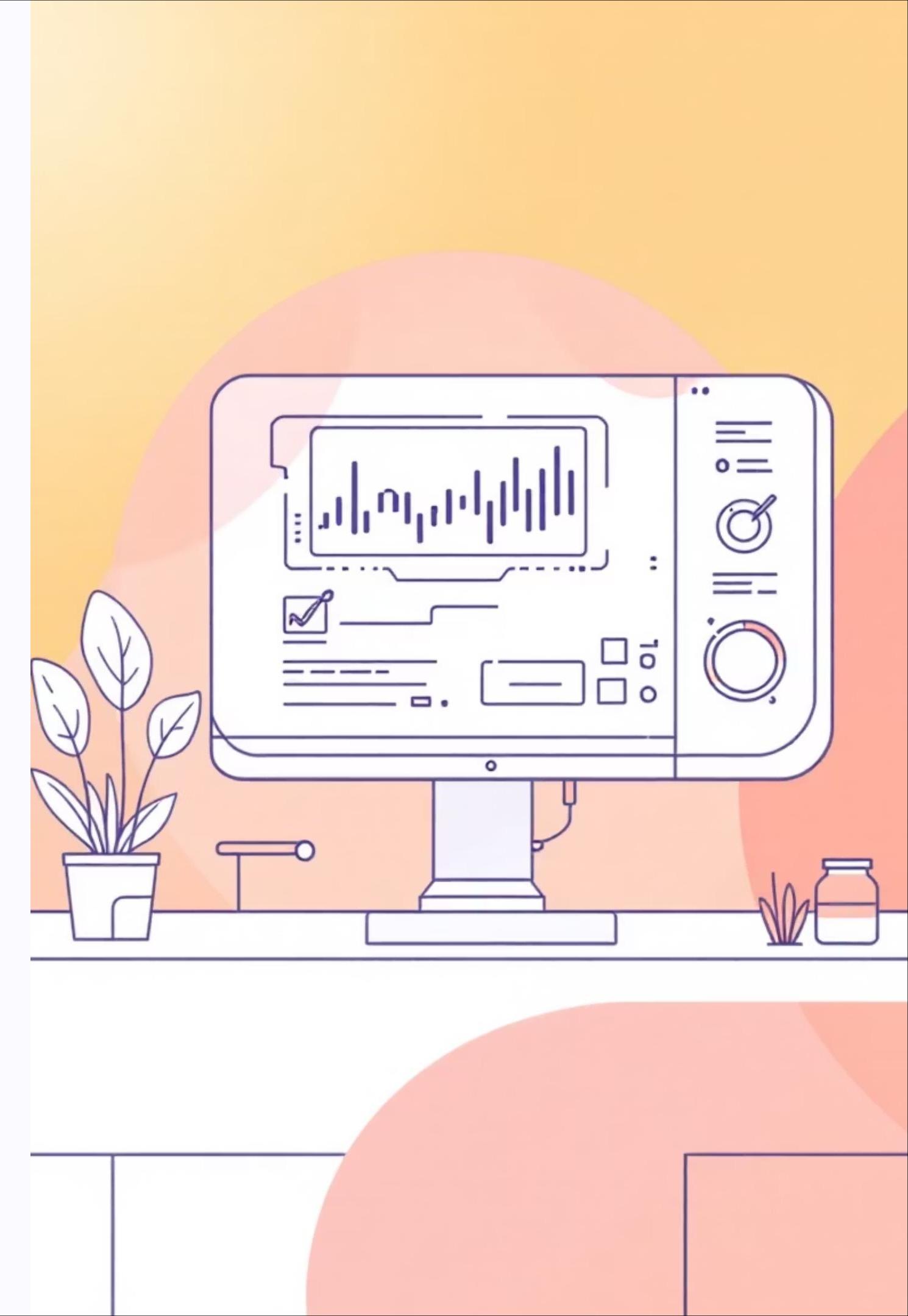
Input manual values to receive instant predictions with detailed confidence scores.

Batch Processing

Upload entire files to generate bulk predictions for large-scale dataset analysis.

Exportable Results

Download prediction results as JSON or CSV formats for seamless external integration.



Prediction Results (1) Python ML

Export JSON

#	text	Predicted intent	Confidence
1	Hi	greet	10.5%

Input Mode



Single Prediction

Enter values manually



Batch Prediction

Upload JSON data

Batch Input (JSON Format)

Paste JSON Array

```
[  
  {  
    "text": ""  
  },  
  ...  
]
```

Expected Format:

```
["text": "value"]
```

Dataset Upload

Upload & manage CSV/JSON/YML files

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Multi-algorithm ML training

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Test models with new data

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Metrics, charts & confusion matrix

Model Info

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NLU Chatbot

RASA-powered chatbot

Model Testing & Prediction

Test trained models with new data and get real-time predictions

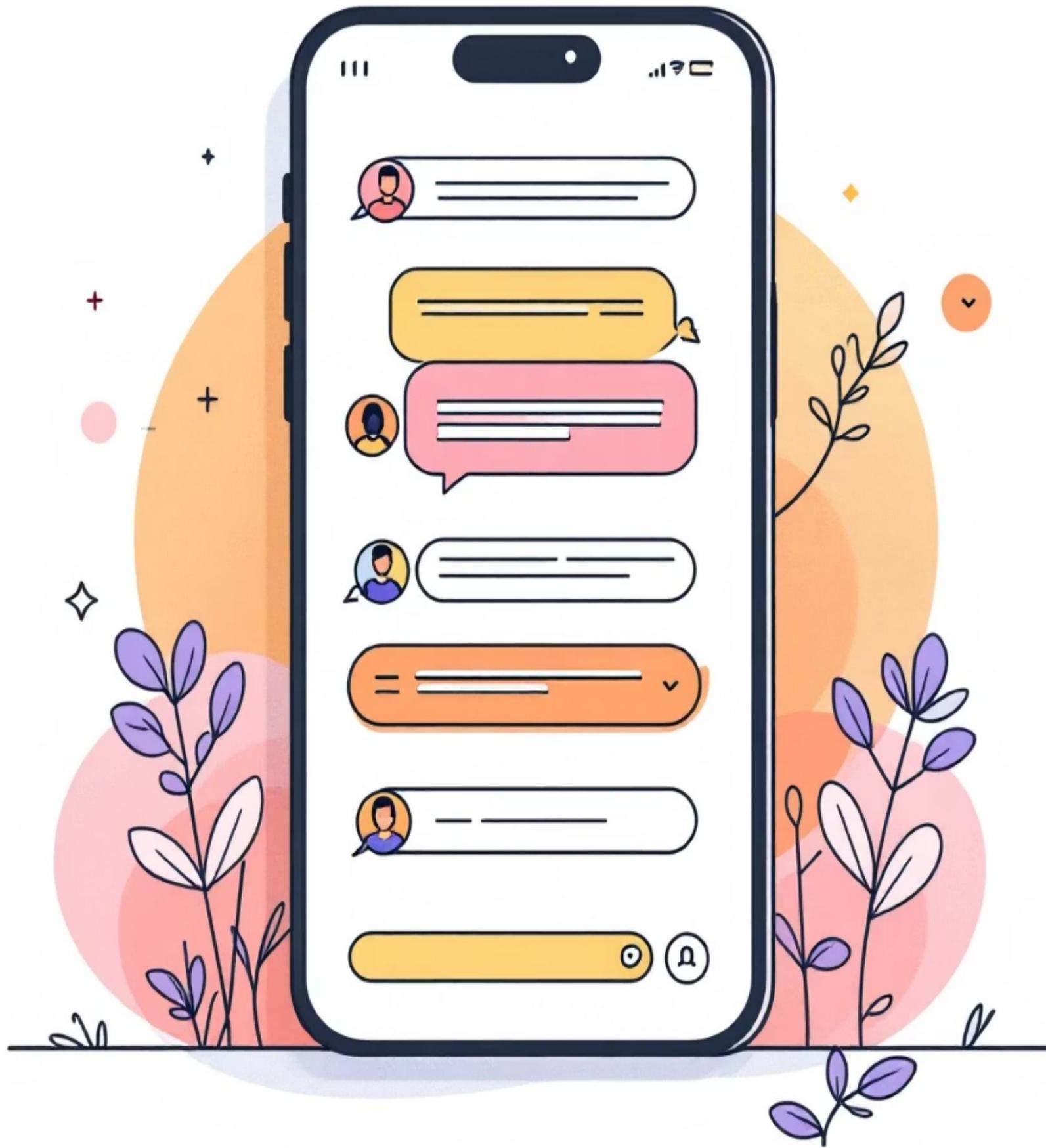
Python ML Backend Status

ML Service: Connected

Select Model

Support Vector Machine - 19/11/2025, 11:24:53 pm - svm

Algorithm	Target Column	Accuracy	Features
Svm	intent	35.29%	1 columns



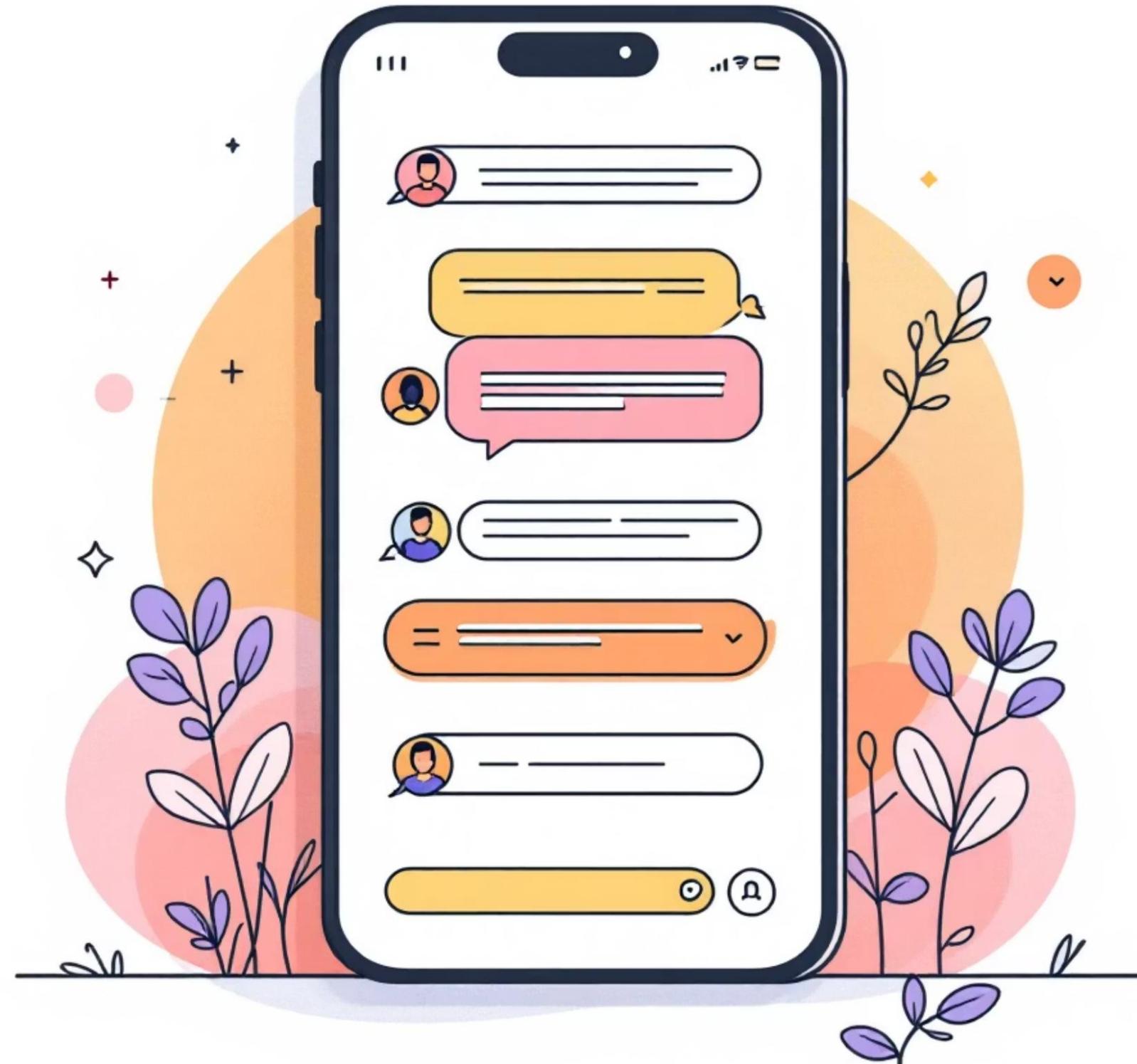
Module 6

NLU Chatbot Builder

Module 6: NLU Chatbot Builder

Conversational AI Made Simple

Build sophisticated conversational interfaces powered by industry-standard RASA framework for intent classification and entity extraction.



01

RASA Integration

Leverage enterprise-grade NLU capabilities for robust intent recognition.

02

Dynamic Training

Train workspace-specific chatbots for domains like Weather, Shopping, or Support.

03

Interactive Testing

Real-time chat window for immediate conversation testing and response validation.

ML-Powered NLU Chatbot

Test your trained ML models with interactive conversation

ML Backend Status

- ML Service: Connected
- Trained Models: 7

Select Trained Model

- RANDOM_FOREST - Accuracy: 47.1% ★ ✓
- SVM - Accuracy: 35.3%
- XGBOOST - Accuracy: 17.6%
- RANDOM_FOREST - Accuracy: 47.1% ★ ✓
- LOGISTIC_REGRESSION - Accuracy: 41.2%
- SVM - Accuracy: 35.3%
- XGBOOST - Accuracy: 17.6%
- RANDOM_FOREST - Accuracy: 47.1% ★

NLU Chatbot
RASA-powered chatbot

10:49:23 pm

Hello! Welcome to our store. How can I help you today?

Intent: greet 94.0%
10:49:24 pm

Show me laptops under \$1000

10:49:43 pm

I'd be happy to help you find products! What are you looking for?

Intent: product_search 92.0%
10:49:44 pm

Add the Dell XPS 15 to my cart

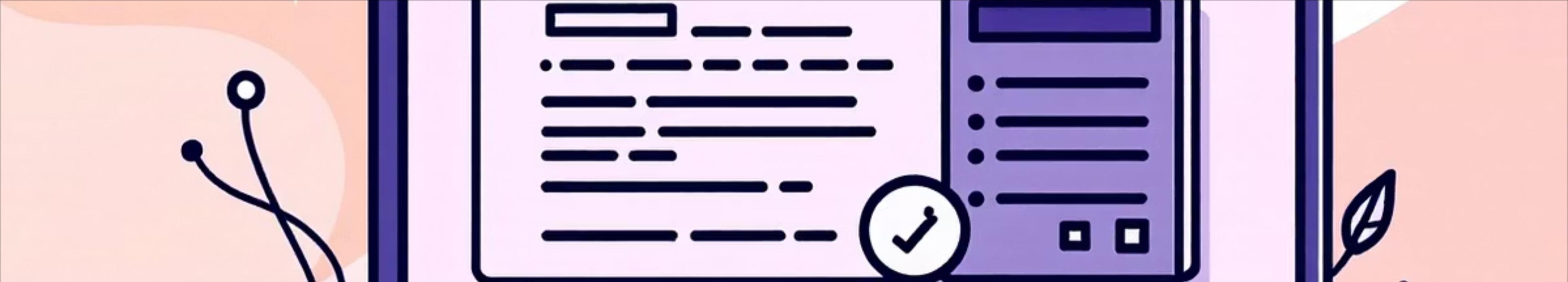
10:50:03 pm

ML Powered NLU Chatbot

Module 7

Model Metadata & Export Registry





Module 7: Model Metadata & Export Registry

Model Versioning

Complete tracking of training timestamps, data sources, and configuration parameters for full lifecycle visibility.

Portable Formats

One-click download of models as .pickle for Scikit-learn or .h5 for deep learning frameworks.

Retraining Capability

Seamlessly update existing models with new data to maintain accuracy over time.

Purpose: Comprehensive deployment and lifecycle management ensuring your models are always production-ready and maintainable.

Dataset Upload
Upload & manage CSV/JSON/YML files

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Multi-algorithm ML training

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Model Evaluation
Metrics, charts & confusion matrix

Model Info
Download & retrain models

NLU Chatbot
RASA-powered chatbot

Model Metadata

View model details, download trained models, and retrain with new data.

Select Model

- Support Vector Machine - 19/11/2025, 11:24:53 pm - svm
- Support Vector Machine - 19/11/2025, 11:24:53 pm - svm ✓
- XGBoost - 19/11/2025, 11:24:53 pm - xgboost
- Random Forest - 19/11/2025, 11:24:53 pm - random_forest ★
- Logistic Regression - 16/11/2025, 8:46:07 pm - logistic_regression
- Support Vector Machine - 16/11/2025, 8:46:07 pm - svm
- XGBoost - 16/11/2025, 8:46:06 pm - xgboost
- Random Forest - 16/11/2025, 8:46:06 pm - random_forest ★

Feature Columns

text intent

Model Actions

Download as Pickle Download as H5 Retrain Model

About Retraining:

- Retrain the model with updated dataset to improve accuracy
- Previous model version will be saved
- Training may take several minutes depending on dataset size

Select Model

Random Forest - 16/11/2025, 8:46:06 pm - random_forest ★

Random Forest - 16/11/2025, 8:46:06 pm

Random Forest

Target Column: intent

Features: 2 columns

Trained At: 16/11/2025, 8:46:06 pm

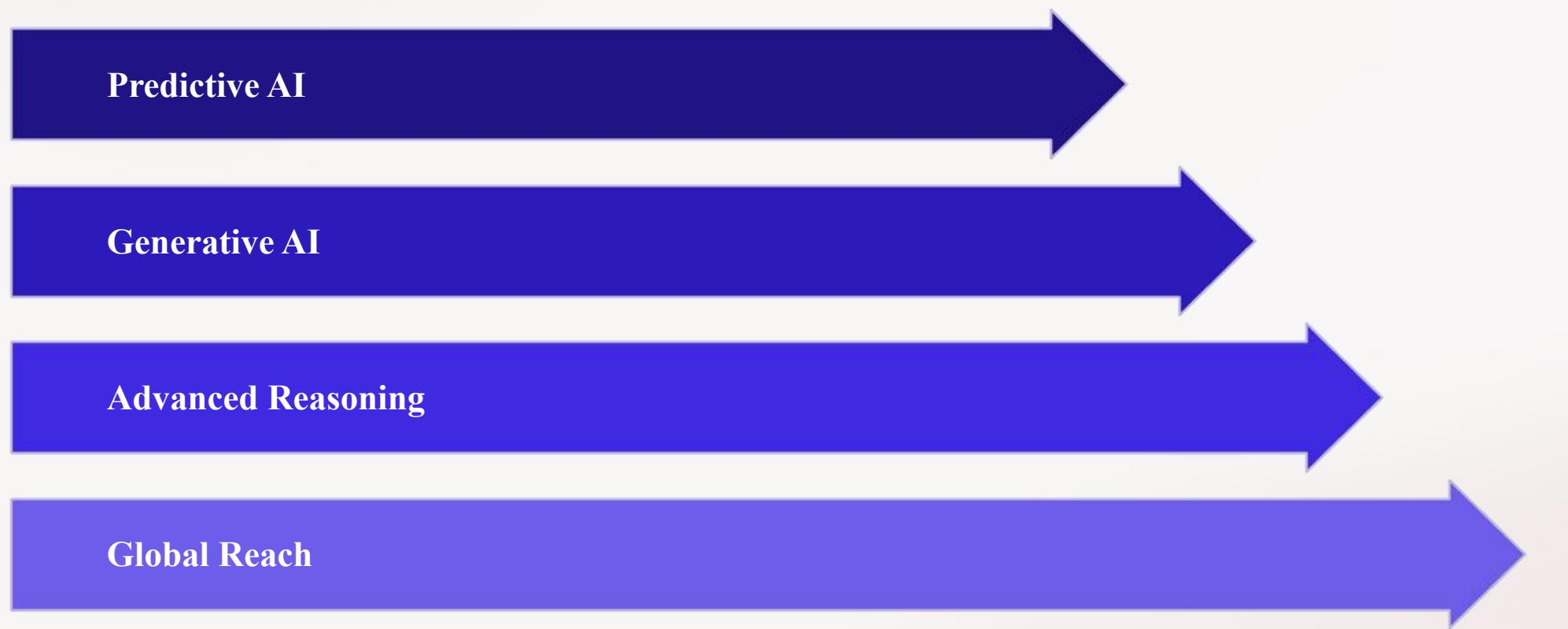
Training Duration: 0s

Accuracy: **47.06%**

F1 Score: **40.39%**

The Future: Smarter, Proactive AI

NLU Chatbots are evolving, moving beyond current predictive capabilities to embrace a future of generative AI and advanced reasoning. This progression will unlock more human-like interactions and sophisticated understanding.



Our roadmap includes integrating generative AI for more natural responses, enhancing reasoning to handle complex nuances like sarcasm, and expanding global reach through multi-language support. This ensures our platform remains at the forefront of AI innovation.



Conclusion: Intelligence That Understands and Delivers

The [NLU Chatbots](#) platform provides the fastest, most flexible, and most complete solution for training, testing, and deploying high-confidence ML and NLU models.

THANK YOU..



Thank You

Connect With Us:

- Team : [C](#)
- GitHub: <https://github.com/thotasravyavardhani/nlu-ml-chatbot-maker/tree/master>

"The best way to predict the future is to invent it."

