



# GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

## Department of Information Technology

### Mini Project Review-1

## SwiftML

Accelerating machine learning journeys.

Under the esteemed guidance of

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# Abstract

SwiftML is an interesting tool designed to simplify the process of automated machine learning models. It is a tool that is accessible even to non-experts. It is a user-friendly tool where users can evaluate the performance of different algorithms based on their datasets and choose a best-suited model. SwiftML performs essential tasks such as preprocessing, model training and testing. SwiftML supports both supervised and unsupervised learning tasks. With an intuitive Streamlit interface, users can easily upload datasets, choose algorithms, and view real-time results. The Pickle library integration allows users to save and download trained models for offline use, making it ideal for production deployment or personal use. SwiftML supports a wide range of 10-15 machine-learning algorithms. After training, it provides detailed performance metrics such as Mean Absolute Error, R2, Mean Square Error, and Root Mean Square Error, which helps users easily compare and select the best model. Using the Pycaret library, SwiftML processes the training and evaluating models, which helps save time and effort. SwiftML has become a valuable resource for data scientists, analysts, and anyone looking to implement machine learning models without any domain experts or extensive coding.

**Keywords:** Automated machine-learning, Pycaret, Streamlit, Pickle.

# Literature Survey

Ref No	Author and Journal/Year	Methodology	Advantages	Disadvantages
[1]	Shubhra Kanti Karmaker Santu Md. Mahadi Hassan ArXiv, 2020	Proposed a seven-tier taxonomy to classify AutoML systems based on their autonomy.	Identifies manual bottlenecks in AutoML, examines challenges in achieving full automation.	Taxonomy may not generalize well; lacks practical implementation details.
[2]	Xiang Wang *Volume 212, 5 January 2021	AutoML techniques, categorizing them by pipeline stages.	Enables ML application in diverse domains with minimal expert knowledge.	Limited real-world applicability; lacks domain-specific refinements.
[3]	Journal of Information and Intelligence 2024	Analyzed data processing requirements and existing NAS algorithms.	Improves model selection and hyperparameter tuning.	No empirical validation; outdated AutoML strategies.

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[4]	Youngho Park Journal of Minimally Invasive Surgery,2024	Offering code-based instructions, to demonstrate the application of AutoML tools in R.	Automates complex tasks such as data preprocessing, model selection, and hyperparameter tuning.	R-specific; not user-friendly for non-programmers.
[5]	Gilbert Lim Daniel Ting Scientific Reports,2024	AutoKeras (AK) is compared against custom deep learning models.	AutoKeras performs well compared to handcrafted deep learning models.	AutoKeras may not always outperform manual models; risk of overfitting.
[6]	Springer,2024	AutoML automates the process of model creation by defining a search space, using a search strategy, optimizing	AutoML makes machine learning accessible, efficient, and optimized, reducing manual effort and enabling	Limited flexibility in complex, domain-specific problems and may require manual fine-tuning for optimal results.

THANK YOU!