ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

DataCraft AI: A Data-to-Insight Application Using Machine Learning

S. Dhanush[1], G. Mohamad Muthawakal[2], Mohamed Ghouse[2], Gulam Hussain[2], Mubarak Pasha[2]

[1]Department of Artificial Intelligence and Machine Learning, S J M Institute of Technology, Chitradurga, Karnataka, India
[2]Department of Computer Science and Engineering, S J M Institute of Technology, Chitradurga, Karnataka, India

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Abstract

This paper presents DataCraft AI, an AI-powered data-to application framework that integrates dataset ingestion, automated analysis, visualization, machine learning, and interactive application development into a unified workflow. The platform aims to simplify data science processes, reduce workflow fragmentation, and improve accessibility to data driven insights. Loan approval prediction serves as a case study, demonstrating model development, classification evaluation, and the communication of predictions and relevant features. The framework will be evaluated based on functional correctness, analytical reliability, predictive performance, and workflow efficiency. This work proposes an integrated approach to bridging automated data analytics and intelligent application development.

Keywords: Data-to-application framework; automated data analytics; machine learning; data visualization; intelligent application development; loan approval prediction; predictive analytics

1 Introduction

Using data to make decisions has made it more important to have tools that turn information into useful ideas and real uses. Old ways of doing data science usually need different tools for cleaning data showing it visually making machine learning models and building applications. This makes the work harder and keeps people from using these tools easily. To solve these problems this paper introduces DataCraft AI, an intelligent tool that brings together data ingestion, automatic analysis, data visualisation, machine learning model building and building interactive applications in one place. The tool is meant to make data science easier and help more people create applications that use data.

Predicting whether a loan will be approved is an example that shows how the tool works with machine learning. It shows how information about people applying for a loan can be processed how models can be tested and how the results can be shown through an interface. The main thing this work adds is a system that links data analysis, with smart application building. Its success will be checked by how it works how reliable it is, how good the predictions are and how quickly it can do the work.

2 Research gap and motivation

Current data science workflows usually depend on tools for data preprocessing, exploratory data analysis, visualization, machine learning and application development. This division can make the process harder to manage and forces users to keep track of separate steps. Even though automated analytics and machine learning platforms make some tasks easier building a interactive datatoapplic-

ation workflow that brings everything together is still a real problem. In addition, it is not enough to give users raw model predictions; the results must be shown in a way that lets users understand and judge them.

This study is driven by the desire for one platform that makes it simple to turn data into useful insights and smart applications. DataCraft AI seeks to meet that desire by mixing data analysis, visualization, machine learning and application delivery in one place. The loanapproval prediction example is used to show how DataCraft AI can handle a classification task from preparing the data and checking model performance to displaying the final predictions. The focus of the study is on the whole DataCraft AI workflow than just, on improving a single prediction model.

3 System objective

The primary objective of DataCraft AI is to simplify the transformation of raw datasets into meaningful insights and intelligent applications through an integrated, AI-powered platform. It aims to automate key data science tasks, including data preprocessing, exploratory data analysis, visualization, and machine learning, while presenting results through an interactive interface. The system also incorporates loan approval prediction as a practical use case to demonstrate how users can prepare applicant data, evaluate predictive models, and view prediction results within the same environment. Overall, DataCraft AI aims to reduce human effort and make data-driven application development more accessible and efficient.

4 Related work

Automated data science and machine learning platforms have been created to make data preprocessing, feature engineering, model selection and evaluation easier. Work on Automated Machine Learning (AutoML) shows how these steps can be done with less manual work and make machine learning easier for more people. However, the features of these platforms and the amount of automation they offer are different. Putting the process into a data-to-application environment that people can use interactively is still a big challenge [1, 2].

Studies on end-to-end machine learning pipelines have also shown that it is important to look at the process instead of just looking at individual models. Systems that work together need to think about data preparation, model building putting models into use and making sure they work well over time. This helps make results that can be repeated [3]. These results helped start the development of DataCraft AI. This system is meant to bring data collection, automatic analysis, visualizing data, machine learning and delivering applications into one place.

In the area of loan approval, predicting whether a loan will be approved has been studied a lot using classification methods and techniques that use many models together. More recent studies have used prediction models with AI tools, like SHAP and LIME to make loan-related predictions easier to understand [4, 5]. Other research has looked at tools and ways to explain decisions so that people can see what factors affect credit decisions [6].

With all these advances bringing together automatic data analysis, machine learning, visualizing data and delivering applications is still a topic that needs more study at the system level. DataCraft AI tries to solve this by offering new things.

5 Methodology

DataCraft AI brings data processing, automated analysis, machine learning and application development together in a workflow. DataCraft AI lets users upload datasets in CSV or Excel format. DataCraft AI examines each column to identify its type and searches for missing values or inconsistencies. DataCraft AI then performs preprocessing steps such as filling missing data, standardizing numbers converting categories into numbers and removing columns that are empty or unchanging.

Next exploratory data analysis generates summaries and charts that help users see patterns and relationships in the data. In the loan approval example DataCraft AI uses the information to train classification models. DataCraft AI evaluates these models with metrics such as precision, recall, F1-score, ROC-AUC and a confusion matrix to assess performance.

At the end DataCraft AI presents results in an interface that makes it easy to understand insights and predictions. The platform undergoes checks, reliability tests and efficiency measurements. These evaluate how DataCraft AI functions, as a data-to-application solution.

6 System architecture

DataCraft AI has a design that brings together data processing, machine learning and interactive application development in one place. The system has a user interface, backend services, a data storage layer and a machine learning service. The overall architecture is shown in Figure 1.

- **User Interface Layer:** The user interface gives a place where people can upload data sets look at analysis results explore charts and get machine learning predictions. It is made to make it easy for people to work with data science tasks.
- **Backend Service Layer:** The backend takes care of requests from the application makes sure different parts of the system talk to each other handles data tasks and connects the user interface with the machine learning service. It also takes care of user sign-ins.
- **Data Storage Layer:** The storage layer takes care of the data that the application uses information about users and other important records. The database helps different parts of the system talk to each other. It keeps the information needed for the system to work.
- **Machine Learning Layer:** The machine learning layer works on data sets gets them ready for use builds prediction models and looks at how they work. Loan approval prediction is an example where the information about people applying for loans is used to make predictions and check how good the classification is.

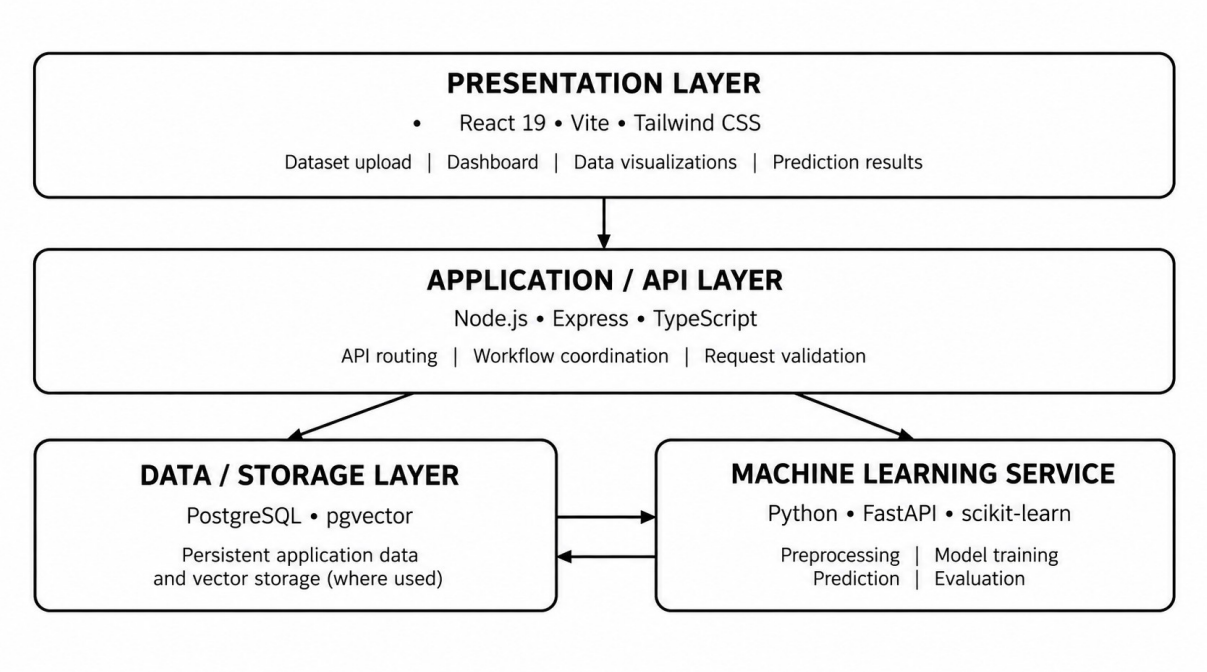


Figure 1. DataCraft AI system architecture.

7 Conclusion

DataCraft AI offers a way to make data science easier by bringing steps together such as preparing data analyzing it automatically showing results visually building machine learning models and creating applications all in one place. The case study about predicting loan approvals shows how DataCraft AI can help with a task that involves classifying information, from getting the data ready to sharing the predictions. DataCraft AI is meant to make things simpler and help more people use data to get insights. In the future the team plans to test DataCraft AI with kinds of data make the analysis more reliable and add features that explain how DataCraft AI makes decisions. More tests are needed to prove that DataCraft AI works well can handle amounts of data and provides benefits.

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References

[1] Eldeeb H, Maher M, Elshawi R, Sakr S. *AutoMLBench: A comprehensive experimental evaluation of automated machine learning frameworks*. Expert Systems with Applications. 2024;243.

[2] Zender A, Humm BG. *Ontology-based meta AutoML. Intelligent Decision Technologies*. 2022.

[3] Agal S, Katariya R. *PipeBench: A benchmarking framework for end-to-end machine learning pipelines*. Scientific Reports. 2026.

[4] [Authors not given]. *Artificial intelligence-based and explainable AI-driven loan approval prediction system*. IEEE conference publication; 2026.

[5] Gawande K, et al. *An explainable ensemble learning framework for transparent and accurate loan approval prediction*. Discover Artificial Intelligence. 2026.

[6] Sachan S, et al. *An explainable AI decision-support system to automate loan underwriting*. Expert Systems with Applications. 2020;144.