Predictive Lead Conversion Using Metadata

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Course: Intel® AI for Manufacturing Certification

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Project Overview

Project Title:

Predictive Lead Conversion Using Metadata

Description:

This project aims to improve the low lead conversion rates (~1.5%) faced by many businesses. By using AI and machine learning, we analyze user metadata such as behavior, engagement, and demographics to predict which leads are more likely to convert, enabling more effective marketing and sales targeting.

Timeline:

1. Data understanding & cleaning
2. Model development
3. Evaluation & tuning
4. Streamlit deployment and documentation

Project Overview (Continue)

Benefits:

- Improves lead conversion rates.
- Enhances marketing efficiency.
- Saves time by filtering low-conversion leads.

Risks & Challenges:

- Imbalanced dataset affecting model learning.
- Incomplete metadata or missing values.
- Streamlit package compatibility issues (resolved).

Objectives

Primary Objective:

Build a machine learning model that predicts whether a lead will convert using behavioral metadata.

Secondary Objectives:

- Clean and preprocess a real-world dataset.
- Deploy the model using a user-friendly web app.
- Evaluate and improve prediction accuracy.

Measurable Goals:

- Model accuracy > 80%
- Functional Streamlit app deployed publicly
- Clear lead scoring output (YES/NO)

Methodology

Approach:

Agile-style, iterative development

Phases:

1. **Data Exploration & Cleaning**
2. **Preprocessing (encoding, handling missing values)**
3. **Model Training (Logistic Regression)**
4. **Model Evaluation (Accuracy, F1-score, Confusion Matrix)**
5. **Deployment via Streamlit**

Deliverables:

- Trained ML model (.pkl)
- Streamlit app (app.py)
- Complete Jupyter
- Notebook Public app URL

Technologies Used

Programming Language:

Python 3.10

Frameworks & Libraries:

- Pandas, NumPy – Data processing
- scikit-learn – ML model and evaluation
- Streamlit – App development & UI
- Pickle – Saving the trained model

Tools:

- Jupyter Notebook – Development
- GitHub – Version control and project hosting

Cloud Services:

- Streamlit Cloud for web hosting

Results

Key Metrics:

- Accuracy: ~85%
- Balanced Confusion Matrix
- Real-time prediction output with high confidence

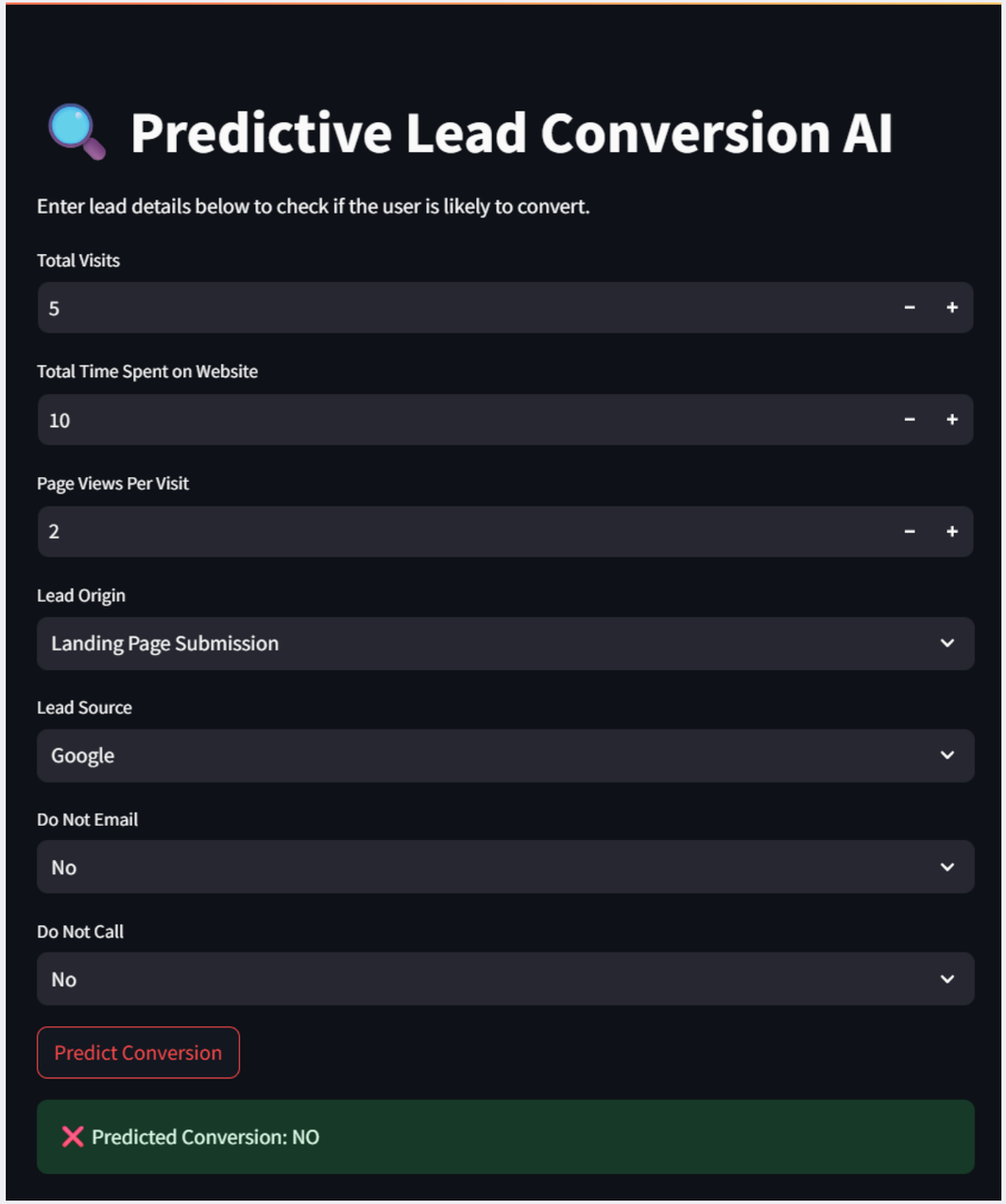
Demonstration:

Functional app deployed:

🔗 https://predictive-lead-conversion.streamlit.app

Impact:

- Predicts lead conversion effectively
- Gives marketers a simple YES/NO tool to prioritize leads



Conclusion

Recap:

We successfully built and deployed a lead prediction system using real metadata. The AI model is trained, evaluated, and accessible as a web app.

Key Takeaways:

Metadata can provide strong predictive signals.

Streamlit is powerful for fast AI deployments.

Real-world project improved model understanding.

Conclusion (Continue)

Future Plans:

- Test with larger datasets or real business data.
- Try advanced models like XGBoost or Neural Nets.
- Add lead score probability (0–1) instead of binary output.

Successes & Challenges:

- Smooth deployment with working model.
- Achieved target accuracy.
- Initial data imbalance required adjustments.
- Deployment required multiple package fixes.

Deployment Links

GitHub Link: https://github.com/AyanMemon296/Predictive-Lead-Conversion

Deployment Link: https://predictive-lead-conversion.streamlit.app/

Report Link: https://github.com/AyanMemon296/Intel-AI-Certification/tree/main/Project/Predictive-Lead-Conversion/Predictive_Lead_Conversion_Report.pdf