

## Scenario

Your team at Waze is close to completing their project for developing a machine learning model to predict user churn. Previously, you completed a project proposal, and used Python to explore and analyze Waze's user data, create data visualizations, and conduct a hypothesis test. Most recently, you built a binomial logistic regression model based on a variety of variables.

Leadership appreciates all your hard work. Now, they want your team to build and test different machine learning models to predict user churn. Your work will help leadership make informed business decisions to prevent user churn, improve user retention, and grow Waze's business.

At a meeting with project stakeholders, your team suggests building and testing the following machine learning models: random forest and XGBoost. At the end of the meeting, the Operations Manager says that he will share the suggestion with leadership.

A few days after the meeting, you receive an email from Emrick Larson, Waze's Finance and Administration Department Head. Emrick says that leadership likes the idea of building and testing the two models to predict user churn, and asks the team to share more details about the models. You also receive a follow-up email from Harriet Hadzic, the Director of Data Analysis. Harriet asks you to build the two models, and prepare an executive summary to share your results.

Note: Team member names used in this workplace scenario are fictional and are not representative of Waze.

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Email from Emrick Larson, Finance and Administration Department Head

Subject: Approval of Algorithm

From: "Emrick Larson," Emrick@waze

Cc: "Harriet Hadzic," Harriet@waze; "Chidi Ga," Chidi@waze; "Sylvester Esperanza," Sylvester@Waze; "May Santner," May@waze; "Ursula Sayo," Ursula@waze

Hello Data Team,

Thank you for providing the details for the final phase of the prediction algorithm we have requested. I apologize for missing many of the weekly project meetings, but I've been keeping informed of your progress. We discussed in detail your proposal for building and testing the following models for prediction: random forest and XGBoost. We agree with this approach.

Please go ahead with the creation of the algorithm. It would be very helpful if you could share what data indicators the algorithm is based on, and describe the confidence your team has in the model performance

Thank you for your great work,

Emrick Larson

Finance and Administration Department Head

Waze

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Email from Harriet Hadzic, Director of Data Analysis

Subject: RE: Approval of Algorithm

From: "Harriet Hadzic," Harriet@waze

Cc: "Chidi Ga," Chidi@waze

Hello data pros!

Great work so far. The results of your analysis will help us make data-driven business decisions.

Please build the models we discussed using the Waze user data. As you're aware, you've already cleaned and run this data through a binomial logistic regression model, but you always need to validate your variables and data. So, please revisit the dataset.

Once complete, please send a draft of your executive summary to May and myself. Be sure to include the key info that leadership requested: a summary of the variables used to make the prediction, and an indication of how we can test the accuracy of the model.

I look forward to seeing what you build!

Harriet Hadzic

Director of Data Analysis

Waze

**Project background**

Waze's data team is near the end of the churn project. The following tasks are needed to complete the project:

- Model building
- Model evaluation
- Summarize findings for cross-departmental stakeholders within Waze

## **Your assignment**

You will create the final machine learning model for the churn project. You will be responsible for leading these final tasks, which include feature engineering, model development, and evaluation.

## **Specific project deliverables**

With this end-of-course project, you will gain valuable practice and apply your new skills as you complete the following:

- Complete the questions in the Course 6 PACE strategy document
- Answer the questions in the Jupyter notebook project file
- Design and implement the following machine learning models: random forest and XGBoost
- Create an executive summary to share your results with cross-departmental stakeholders within Waze

Good luck with this project! Waze looks forward to seeing how you communicate your creative work and approach problem-solving!