# Visual Diagnostics of a Model Explainer: Tools for the Assessment of LIME Explanations from Random Forests

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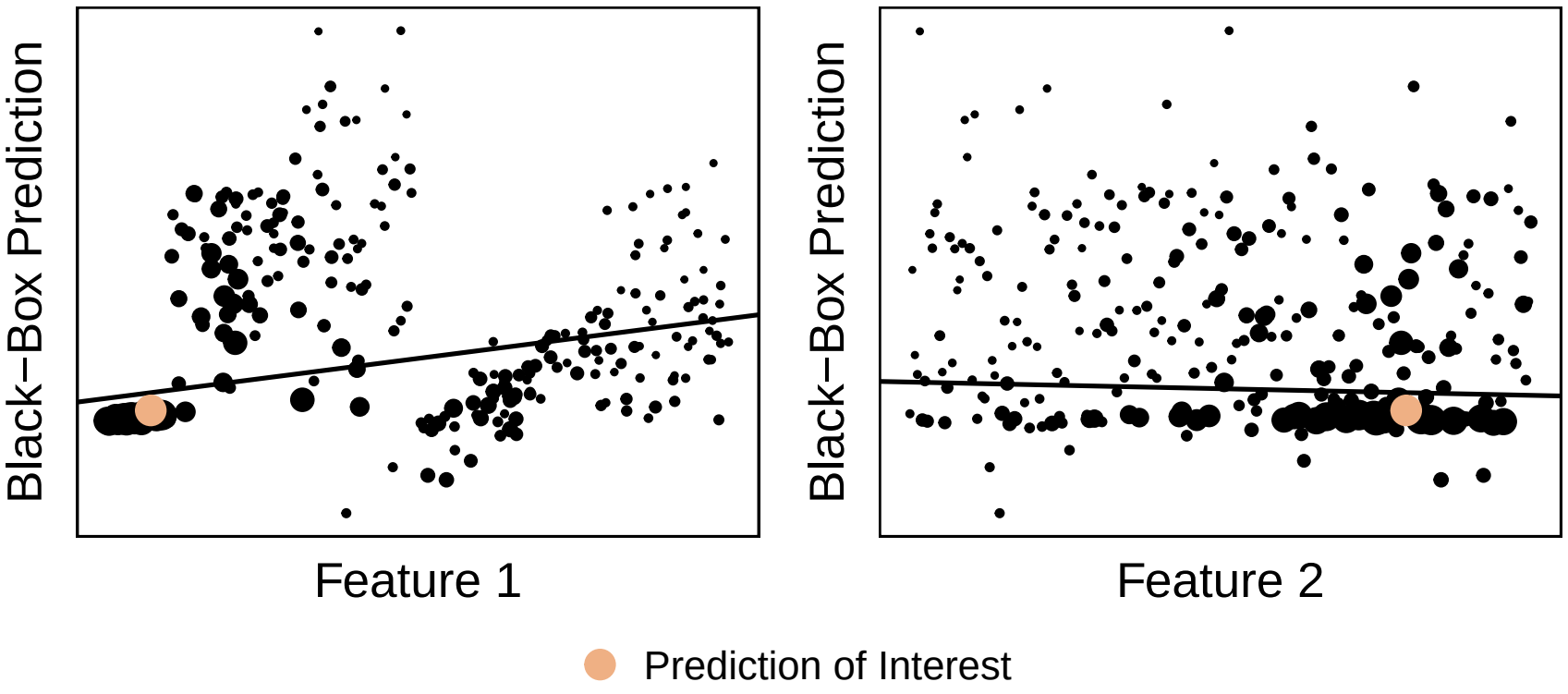
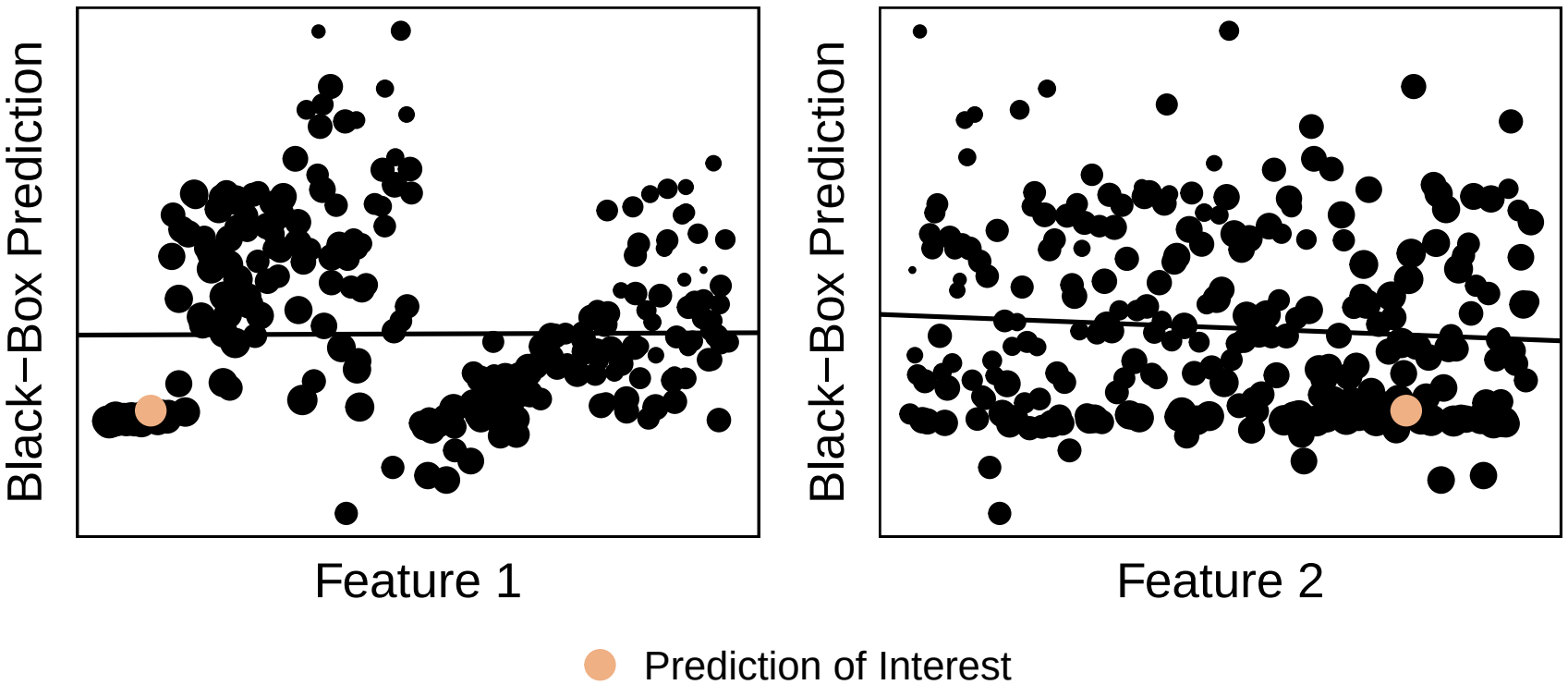
# Background on LIME (Ribeiro et al. 2017)

- Local Interpretable Model-Agnostic Explanations
- Provides "explanations" for black-box model predictions to determine if trustworthy



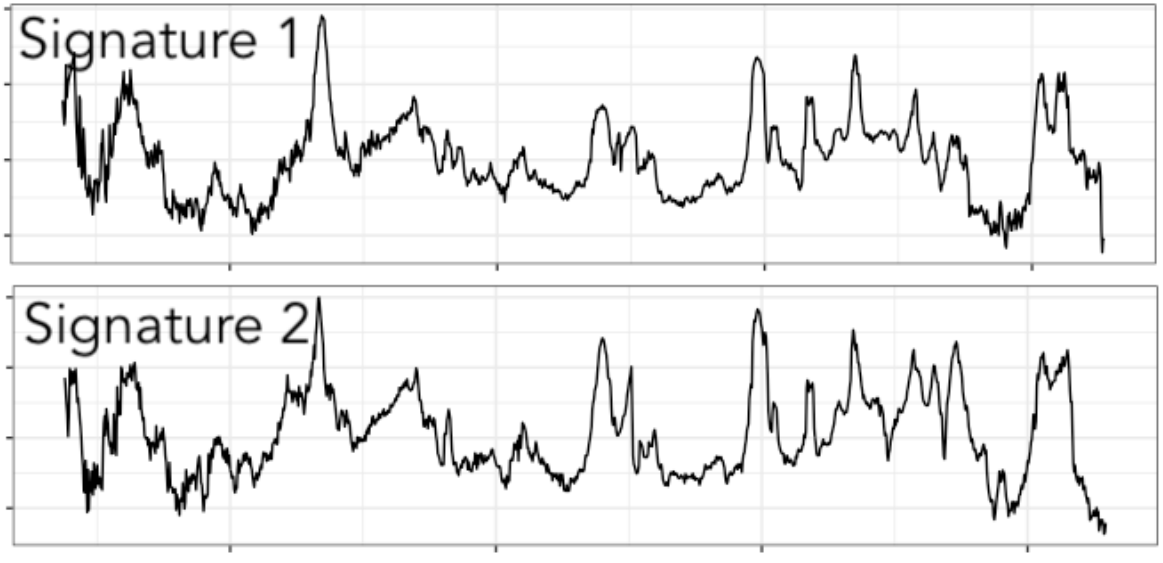
# Assessment Goals

- How do we know if LIME explanations are trustworthy?
  - Simple model a good approximation?
  - Explanation local?
  - Explanations consistent across implementation methods (form of explainer model, distance metric, etc.)?



# Forensics Bullet Matching Example

Random forest model used to predict if two bullets were fired from the same gun based on markings on bullets (Hare, Hofmann, and Carriquiry 2017)



# LIME Diagnostic Plot

Top features selected by LIME applied to all predictions in bullet testing dataset using several implementation methods