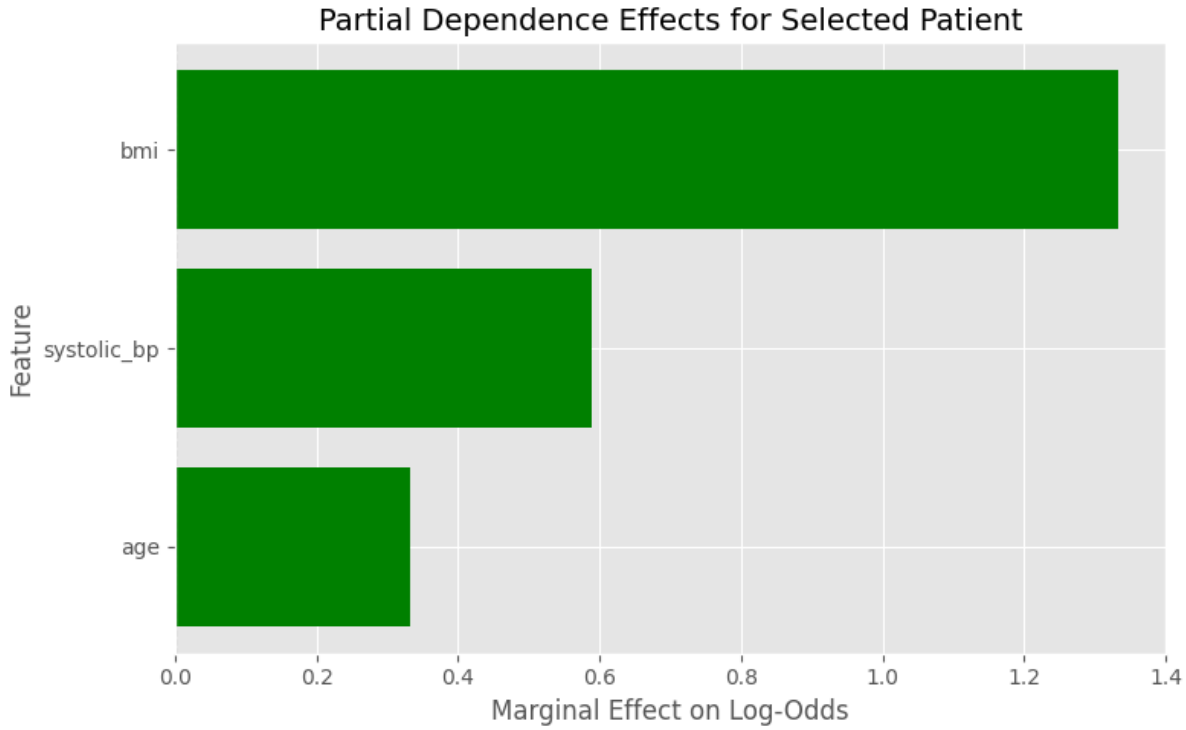
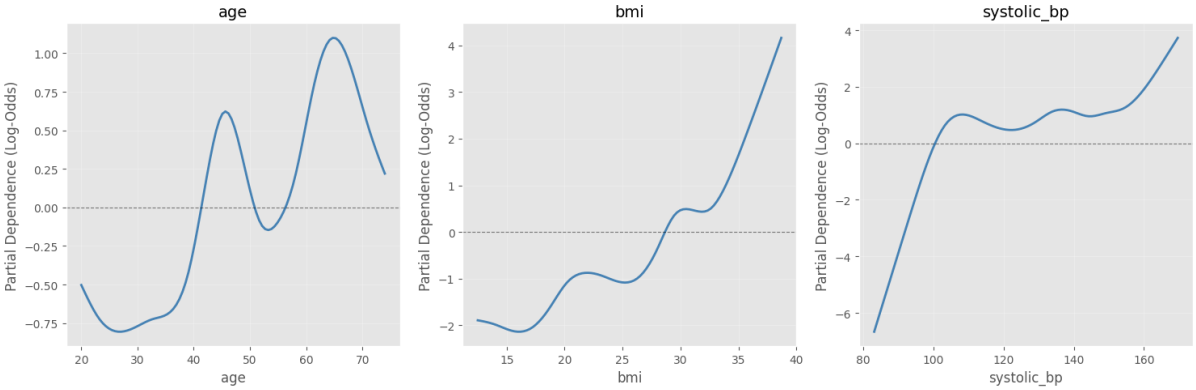
Name: Prateek P SRN: PES1UG23AM211

Explainable AI Banana Problem – 1

Feature Importance plot:



Global Shape Plots:



Model statistics:

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Selected Patient Features:
  age: 43.00
  bmi: 34.50
  systolic_bp: 117.40

Model Intercept: -0.2006
Total Effect (Log-Odds): 2.0536
Predicted Probability: 0.8863
Predicted Class: Disease

Interpretation:
The model predicts that this individual has a HIGH risk of disease.

Key Risk Factors (Positive Contributors):
  • bmi: +1.3334
  • systolic_bp: +0.5889
  • age: +0.3319

Model Performance:
  Overall Test Accuracy: 0.6667
```

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Final Conclusion:

The model predicts that the individual falls into a higher disease-risk category.

Based on the Generalized Additive Model (GAM), this prediction is driven by the combined effect of multiple risk factors, where some features contribute positively (increasing risk) and others negatively (reducing risk). The partial dependence and feature contribution analysis show that a few key variables have a strong upward influence on the predicted risk, outweighing the protective effects of the remaining features.

Because GAMs are additive and interpretable, this result means the elevated risk is not due to a single factor, but rather the accumulation of moderate-to-strong risk contributions from specific health indicators. This makes the prediction reliable and clinically interpretable, as each contributing factor can be independently examined and addressed.

Code available on GitHub : https://github.com/Prateek-P1/Sem-6-XAI