**Executive Summary – Blood Donation Prediction using AutoML**

This project, developed as part of a data analytics traineeship at MedTourEasy, addresses the critical problem of predicting potential future blood donors based on historical donation patterns. Ensuring a stable and sufficient blood supply is a significant healthcare challenge, and timely predictions can aid in efficient blood inventory management.  
  
Objective  
To build a predictive model that identifies individuals likely to donate blood again, thereby supporting proactive outreach and donor engagement strategies.  
  
Dataset  
The dataset consists of anonymized records of past blood donations, including:  
- Donation frequency  
- Time since last donation  
- Total donated volume  
- Whether the donor donated in a future window  
  
Methodology  
The project leverages:  
- Data preprocessing using Pandas and NumPy  
- Feature engineering and EDA  
- Modeling using Logistic Regression and TPOT AutoML, an automated machine learning tool that selects the best pipeline  
- Evaluation using accuracy, precision, and recall metrics  
  
Results  
- Achieved 85% prediction accuracy  
- Reduced manual pipeline tuning time through TPOT AutoML  
- Developed actionable insights for blood bank management  
  
Impact  
The model allows healthcare organizations to forecast donation trends, target lapsed donors, and maintain adequate inventory levels—ultimately saving lives.