**Project Writeup: SurvivalNet – A Machine Learning Prognosticator**

**Ideation & Inspiration:**  
The concept for SurvivalNet emerged from a desire to harness data-driven insights for healthcare. Inspired by real-world scenarios where early intervention could save lives, I envisioned a tool that could predict patient survival outcomes using clinical data. As my first Hackathon project, I aimed for a simple yet impactful solution.

**Development Process:**

1. **Data Collection & Preprocessing:**  
   I started by gathering clinical data containing features like age, tumor stage, and biomarker statuses. The preprocessing phase involved cleaning the data—removing unnecessary columns, handling missing values, and encoding categorical variables using techniques like one-hot encoding.
2. **Model Building:**  
   I chose a logistic regression model as the baseline due to its simplicity and interpretability. With Python's scikit-learn, I split the data into training and testing sets, applied feature scaling, and addressed class imbalance issues by experimenting with class weights and oversampling techniques like SMOTE.
3. **Iteration & Tuning:**  
   The initial models tended to favor the majority class. To improve performance, I adjusted the decision threshold, tuned hyperparameters, and iterated on the model design. This iterative process provided valuable insights into the challenges of handling imbalanced datasets.
4. **Validation & Evaluation:**  
   Using metrics beyond simple accuracy—such as the confusion matrix, precision, and recall—I validated the model’s performance. Although the model was basic, these evaluations confirmed its potential to deliver meaningful predictions.

**Outcomes & Next Steps:**  
SurvivalNet is a modest yet effective prototype that translates raw clinical data into actionable survival predictions. Through this project, I learned critical lessons about data preprocessing, the nuances of model tuning, and the importance of handling imbalanced data. Moving forward, I plan to integrate additional data sources and explore advanced modeling techniques to further enhance its predictive capabilities.